THE LONDON SCHOOL OF ECONOMICS
AND POLITICAL SCIENCE

Discretion in a Bureaucracy: Evidence from Pakistan

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Declaration

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Abstract

Most bureaucracies today are rule-based. This is the result of a powerful intellectual tradition that argues that allowing discretion in decision making could lead to favoritism and collusion, with substantial costs to the organization. This thesis draws on newly digitised data from one public sector bureaucracy, the Pakistan Administrative Services (PAS) in Punjab, and presents novel evidence on discretionary promotions and lateral job allocations of junior bureaucrats by their seniors.

The first set of results show that when senior bureaucrats have discretion to promote juniors, they do so meritocratically. By showing that promotions of juniors by their seniors is meritocratic, the result challenges conventional ideas on discretion in bureaucracies and opens the debate on rules vs. discretion. A decadal analysis, of cohorts from 1980-2010, shows that discretionary promotions became meritocratic starting in the 1990s.

The thesis then investigates the reasons behind meritocratic promotions by seniors. It investigates two potential channels i.e. direct self-interest of the senior through discretion in the choice of their team and reputation concerns of seniors on referrals of juniors. Results show that direct self-interest of the senior has a more important role to play in meritocratic promotions. However, reputation concerns of seniors on referrals of juniors, might be a driver of the change towards meritocracy starting in the 1990s.

The thesis next tests whether seniors use not just public information but also their private information on juniors meritocratically. Results show that seniors do use their private information to promote juniors meritocratically. Seniors decipher not just hidden lemons from the stars but also hidden gems from the bottom of the distribution.

The last part of the thesis studies lateral allocations of juniors by their seniors. It draws on newly digitized administrative data on stated preferences of junior bureaucrats for location of tax collection jobs. Based on this data, the study creates four different types of job locations: non-competitive & non-preferred by juniors; non-competitive & preferred; competitive & non-preferred and competitive & preferred. Results show that lateral allocations by seniors are meritocratic, so that high type are moved out of competitive & non-preferred locations, while low type are moved out of competitive ones that they prefer. However, an investigation into how different types of juniors perform in tax collection in these locations, shows that this might not be the most efficient allocation. Results show that in lateral allocations by seniors there is a tension between meritocracy and efficiency. Taken together these results have wider implications for how we think about the use of subjective judgment in organizations.

Acknowledgments

The PhD process has given a personal meaning to the metaphor 'standing on the shoulder of giants.' This work could not have been possible without the many intellectual giants that I met along the way, through their writings and in person, and who were generous enough to engage and argue, disagree and be ready to be convinced. First and foremost, I owe a huge intellectual debt to my supervisors Oriana Bandiera, Tim Besley, Robin Burgess and Gerard Padro-i-Miquel who were always there to listen, question and help me find my own way: through the phase when the project was nothing more than ideas and curiosity, to the phase where there was a possibility of access to archival data, to getting the data, to multiple grant applications, and then innumerable hours of discussion on how best to tackle the question that I wanted to answer. Each one of them has shown me the beauty of the research process in their own way and for that I am forever indebted.

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Contents

6

List of Tables

List of Figures

Chapter 6: Do seniors improve lateral allocations?   **88**

13

Chapter 1

Introduction

Fathers of modern bureaucracy envisaged an ideal system of administration as one which was completely 'dehumanized' (Weber (1922), p.975; Northcote et al. (1854)). Corruption, nepotism and arbitrariness resulting from the exercise of discretion were seen as main impediments to an efficient administration. Later studies also highlighted how discretion could open the door to favoritism or collusion and worsen the information environment (Tirole (1986); Prendergast & Topel (1993); Prendergast & Topel (1996); Xu (2018)). This powerful intellectual tradition has meant that when we look around us today, most bureaucracies are rigid and follow fixed, rule-based decision making. To avoid costs of patronage, it is almost taken for granted that bureaucracies would have mechanical promotions through rules of seniority, fixed wages and tenure at a job. But rule-based decision making is itself not cost-less. Consider the case of fixed tenure based promotions. Promoting on the basis of fixed rules can result in lowering of incentives (Bertrand et al. (2017)). It also means discarding local, decentralized information that colleagues and supervisors hold on the type and effort of workers. This begs the question: can discretion result in meritocracy of allocation in bureaucracies? If it does, then this has implications for our understanding of the rules versus discretion trade-off and the use of subjectivity in decision making in organizations.

This thesis links long run careers of newly recruited bureaucrats to increases in the discretion or power of their seniors and carries out four main sets of analysis. First, I ask: are discretionary promotions meritocratic? Promotions are meritocratic if with increases in power of seniors, high merit new recruits are more likely to be promoted than low merit ones.

Second - which to the best of my knowledge has not been investigated in the literature before - the study asks whether discretionary promotions are meritocratic because it is in the self-interest of the senior to promote meritocratically. More specifically, I test the existence and relative strength of two possible mechanisms for meritocratic promotions by seniors i.e.

discretion in the choice of their team and reputation concerns of seniors on referrals of juniors to other teams. Investigating not just whether there are meritocratic discretionary promotions, but also why there is meritocracy, helps in understanding the specific conditions under which allowing discretion can improve information in organizations.

The third set of analysis - which is unique to the thesis - tests whether seniors use, not just public information, but their private information on merit of juniors when exercising discretion. Observing a measure of merit of juniors, which is just observed by seniors and the researcher, offers a unique opportunity to study how information is used in a system with discretion. This aims to shed light on the true value of allowing discretion.

The last set of analysis looks at another kind of discretionary allocations. It investigates allocations by seniors of jobs that are similar in all aspects except location and tests whether seniors allocate these heterogeneous lateral jobs meritocratically. This analysis allows a first step towards an understanding of the efficiency implications of a meritocratic system.

The data for this study is based on a large-scale data digitization effort. I digitized and combined data from 5 different sources i.e. career charts of 5 different groups of bureaucrats (i.e. Pakistan Administrative Services (PAS), Provincial Civil Services (PCS), Provincial Secretariat Services (PSS), Provincial Management Services (PMS), Ministerial Services); exam-rank data of PAS bureaucrats; tax collection data across Punjab;[1] incumbency board data with details of vacancy and tenure of Assistant Commissioners (tax collector) positions across Punjab; and preferences of juniors for location of Assistant Commissioner (tax collector) jobs across Punjab (see appendix C for details).

The data used in the analysis is a subset of the bigger data-set that was digitized. Outcomes are only studied for the Pakistan Administrative Services (PAS) bureaucrats in Punjab, while other civil service groups are included when classifying seniors of PAS. There are a couple of reasons for focusing on PAS bureaucrats. PAS is an elite cadre of civil servants responsible for running all key government departments at the federal and provincial level as well as a number of public sector enterprises and companies. They are responsible for the roll out of health programs, education programs, protection of property rights and implementation of various UN and World Bank projects etc. Therefore, understanding the allocation of talent within PAS can have significant implications for understanding state effectiveness and welfare on its own. A second reason is that I could only access exam rank data of PAS bureaucrats. Since the study investigates meritocracy of discretionary promotion, observing measures of merit, like exam rank, are important. A

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[1]Pakistan is administratively divided into provinces, districts and tehsils. Punjab is the wealthiest and largest province in terms of population

third reason is the rule that is used to allocate PAS in their first jobs. This is the rule that I exploit to get a source of variation in the set of seniors. However, using this rule means that the set of data on which this study is based is constrained. I observe data on first jobs for only a subset of PAS bureaucrats (see figure 2.3 for details).

While promotions of juniors are considered throughout the long-run career of juniors, the chapter investigating discretionary lateral allocations of juniors restricts attention to just Assistant Commissioner (tax collector) jobs. These are jobs that juniors perform at the start of their careers and for which job location preference and tax performance data has been digitized. Preference data is available for a subset of 13 cohorts of PAS civil servants between 1998-2015. For consistency, the analysis in that chapter is carried out on cohorts that start between 1998-2012.

To summarize, the analysis on discretionary promotions is based on a civil servant-month panel data-set of Pakistan Administrative Services cohorts that start between 1975-2012, that is a subset of the larger data digitized. While the analysis of lateral allocations is based on a civil servant-month panel data set from 1998-2012.

The core outcome that I use to study promotions is fast-track promotions. Fast-track promotions allocate junior bureaucrats to higher positions ahead of their stipulated time as per rules. These are at the discretion of senior bureaucrats and the chief executive of the province. In fact, the higher the rank of the senior, the higher the chance that they can exercise discretion over careers of juniors. Fast-track are different from official promotions, that are based on a bureaucrat's experience, mandatory training and subjective performance evaluation by their immediate bosses. These promotions are discretionary only to the extent that they use subjective performance evaluation of bosses. However, how the evaluation will be used to decide official promotions is dictated by rules.

The outcomes I consider for the analysis of lateral allocations by seniors is heterogeneity of a location in terms of both individual and average preferences of juniors. Average preferences help shed light on the competitiveness of a job location. The aim is to understand how competition for a location can affect discretionary allocations of juniors to their preferred locations. It is quite possible that discretion is more easily exercised in locations that are individually preferred, but for which there is no aggregate preference. On the other hand, discretion might be less important in positions that are highly competitive. In order to understand these issues further, probability of juniors working as Assistant Commissioners (tax collectors) in four different types of locations are considered: non-competitive & non-preferred location; non-competitive & preferred location; competitive & non-preferred location and

competitive & preferred location. Competitiveness of a job location is the index of competitiveness of the location that the junior works in. The index of competitiveness is defined as the average preference for a location, i.e. total demand for a location as a percentage of maximum demand for any location. Working in preferred location is a dummy that turns on 1 if the junior is working in a location that he or she stated as their preferred location.

The seniors considered are those that the PAS new recruits work with in their first job. Attention is restricted to just the first set of seniors, as these are the set of people with whom the juniors have the longest time together in the organization. Moreover, just considering the first set of seniors also helps keep causal identification tractable. This is because it helps in exploiting a rule of initial allocation of juniors. It is worth emphasizing that the outcomes of the juniors are studied, not those of the seniors. This helps overcome mechanical correlations that have been discussed at length in the literature (Manski (1993), Angrist (2014), Guryan et al. (2009), Caeyers & Fafchamps (2016)). I categorize power of seniors ($\overline{Power}$) as the average, over time, official promotions of seniors that work with juniors in their first job.

There are two immediate challenges to a causal identification. First, bureaucrats (both senior and junior) select into who they work with. Second, in this context, how high the senior rises in the organizations depends on their official promotions. This is determined by their subjective performance evaluation and that could be correlated with unobservables of junior bureaucrats.

To address the first challenge, initial job allocation rules of the government are exploited. The method of initial allocation is that new recruits can be assigned jobs that are either vacant or where the incumbent has spent at least one year on the job.[2] This rule gives a set of potential positions that any cohort of newly recruited PAS bureaucrats could have been allocated in their first job. Potential seniors are classified as all the bureaucrats that are working in district departments with a vacancy at the time of first job of newly recruited juniors.

The second challenge is addressed by using the Minimum Length of Service Rules of the government to create rule-based measures of rise of the potential seniors. Minimum Length of Service Rules stipulate that a bureaucrat can be promoted once if they have completed five years in the government, twice if they have completed twelve years, thrice if they have completed 17 years and four times if they have 22 years in the government.[3] Using both the initial allocation and promotion rules of the government, allows a classification of a cohort-based, time varying measure: power of potential seniors ($\overline{Power}^p$).

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[2]cf. 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. The idea behind this rule was to give some stability of tenure to existing Assistant Commissioners.

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

It is defined as the average rule-based rank, of the first set of potential seniors, of newly recruited cohorts of PAS bureaucrats.

To test meritocracy, the publicly observable measure of merit I use is a ranking of juniors based on their recruitment exam. This is published in newspapers (see appendix C for details). High (low) merit bureaucrats are classified as those that are in the top (bottom) 10% of their cohort in the recruitment exam.[4] This measure is correlated with performance on the job. Bureaucrats in the top 10% of their cohort in the recruitment exam, collect 3% more taxes than bottom 90% and are 10% more likely to be awarded an 'outstanding' by their immediate bosses. When I consider those PAS that work in the monitoring of schools, exam performance also positively predicts educational outcomes like enrollment.

To define a measure of merit that is only privately observable to the seniors, I use tax collection performance of PAS new recruits on their first job and exploit a peculiar institutional feature which ensures that this performance is only observed by the first set of seniors. Seniors at the fist job observe the individual tax performance of juniors in meetings that all must attend. Tax performance is reported to a central revenue agency i.e. Board of Revenue (BOR) in a letter with annexes. This has the aggregate performance at the top and individual tax collection by juniors as annexes. Clerks at the BOR administratively handle these letters. They take the district level averages of tax collection and share it with the organization, while tax performance of juniors is dumped in gunny bags and thrown in record rooms (a glimpse of the record keeping of BOR can be seen in in appendix B, figure B.3 and online at: https://www.shanamanrana.com/research-in-the-field-a-snapshot). This information on individual performance of juniors never makes it to their formal files and never gets discussed. It remains private information of the set of people that work in the district.[5] High merit juniors are classified as those that are in the top 10% of their cohort in tax collection (see appendix figure C.2 and table C.3 for details of data).[6]

Exam performance does not perfectly predict tax performance. A top 10% exam performer has a 33% probability of being a top 10% tax collector, while the bottom 10% exam performer still has a 14% chance of being a top10% tax collector (see figure 5.1). This suggests that the seniors that are privy to the tax

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[4]I also present results for top 5% to top 15% of exam performers and then top 20%, 30%, 40% and 50% (See appendix tables A.1 to A.4 and appendix tables A.5 till A.5).

[5]There can be many reasons why this information is not demanded by the organization. One can be apathy and inefficiency, but a potential reason can be discretion accorded to the senior most person in the district administration. Seniors are held responsible for performance of the whole office, while they are allowed discretion to hold their teams responsible for performance.

[6]I also present results for top 20% to top 50% of tax collectors.

collection performance have local information on merit of the juniors that can be exploited by the organization through discretion.

Results show that discretionary promotions of juniors by their seniors are meritocratic. For every one rank above average increase in the power of the potential seniors, the top 10% exam performer is 9% more likely to get fast-tracked than the mid 80%. On the other hand, the bottom 10% exam performer is 4% less likely to be fast tracked than the mid 80%. The effect for the top 10% exam performers is both statistically and economically significant. It is one-fifth the mean of fast-track promotions.

Results show that discretionary promotions have not always been merito-cratic. I investigate heterogeneity of the effect across decades and find that, for cohorts that started between 1981-1990, the bottom 10% exam performers were 22% more likely to be fast-tracked than the mid 80%. However, this trend reversed in the 1990s. With a rise in the power of the senior, cohorts that start between 1991-2000, have a 38% higher probability than the base category to be fast-tracked, while the bottom 10% have a 41% lower probability of being fast-tracked. The differential effect at the top and bottom end of the distribution is statistically significantly different from each other. This continues for cohorts that start in the 2000s. For every one rank above average increase in the power of the potential seniors, the bottom 10% exam performers in the 2000s cohorts have a 69% lower probability of being fast-tracked than the base category, while the top 10% and mid 80% have a positive probability. The differential effects at the top and bottom are statistically significantly different from each other. The reversal towards meritocracy of discretionary promotions opens up further questions around the drivers of this change.

Next the study investigated the reason behind meritocracy. Results show that with an increase in their power, the log of relative risk ratio is 1.5 times lower for a bottom 10% exam performer to be pulled into the senior's team and promoted (relative to the base). This effect reverses for the top 10%. The effect at the bottom is larger in magnitude than the top 10% and it is also statistically significantly different from the top. Both these effects are larger for the senior's own team versus teams of others. Of the two competing mechanisms behind meritocracy of promotions, it appears that discretion in choice of the team is a more significant channel, rather than referrals to other teams.

I then investigate the decadal trends in these two mechanisms, to under-stand whether (and which) of the two competing mechanisms can help shed light on the move to meritocracy in the 1990s. There are two main takeaways. First, in all decades tops 10% have a higher probability of being pulled into the senior's team and fast-tracked, while the bottom 10% have a lower probability. Second, meritocratic referrals by seniors started in the 1990s. This change mimics the move to meritocratic discretionary promotions starting in the 1990s.

For the 1980s cohorts, with an increase in the power of seniors, bottom 10% exam performers are more likely, than the base category, to move teams and be fast-track promoted. This effect reverses for the cohorts that start in the 1990s and 2000s. Results of the decadal analysis are consistent with the idea that it was a change in reputation concerns of seniors that might be a driver of the change towards meritocracy starting in the 1990s. What triggered this change is an exciting agenda for future research.

This study then investigates whether seniors use their private information on juniors meritocratically. Results show that with increases in the power of potential seniors, those top 10% exam performers that are not top 10% tax collectors are 50% less likely to be fast-tracked than those that are star performers in both dimensions. The effects are statistically significantly different across the two categories of performance. These results are also economically significant, with the difference between the two being 1.5 times the mean of fast-track promotions. More importantly, with a one rank above average increase in the power of potential seniors, those bottom 10% exam performers who are in the top 10% of tax collectors, have a two times higher probability of being fast-tracked than those who are bottom in both dimensions. Again, the two effects are statistically significantly different from each other. Taken together these results suggest that seniors are not just able to decipher hidden lemons from the true stars but also hidden gems from the bottom of the distribution. This sheds light on the true value of discretion in organizations.

The fourth set of results on lateral allocations show that with an increase in their power, seniors are more likely to move top 10% exam performers out of competitive jobs that they do not prefer. On the other hand, they are less likely to allocate preferred and competitive jobs to bottom 10% exam performers. These results are in line with the results on promotions. Seniors allocate heterogeneous lateral jobs meritocratically and use their power to accommodate the high types. However, further investigations show that this might not be the most efficient allocation. Descriptive evidence on the tax performance of different types of juniors in these heterogeneous locations, suggests that a system that supports the bottom 10% exam performers is more likely to improve performance. Bottom 10% exam performers perform relatively better in jobs that are preferred by them and for which there is very little outside competition. On the other hand, bottom 10% exam performers perform the worst in jobs that are competitive but which they do not prefer. Therefore, if anybody has to be moved out of such job locations it should be the bottom 10% exam performers rather than the top 10%. These results highlight the tension between meritocracy and efficiency. This trade-off might be more prominent for public sector organizations where workers have job security for

life and there is limited exit of workers. Results suggest that in such a system preferences of low types also need to be given due consideration.

To the best of my knowledge this is the first analysis that empirically investigates meritocracy of discretionary promotions using both publicly and privately observable measures of merit, with a potential explanation for why there can be meritocracy. These results challenge: (a) the conventional view of bureaucracies being ossified establishments; and (b) the Weberian ideal of a bureaucracy that is best when stripped of all subjectivity (Weber (1922)). It appears that a case can be made to increase autonomy in bureaucracies rather than reducing it. Moreover, since not just public sector bureaucracies bring together the labor of multiple workers, the potential for using local information through discretion has broader implications even for private sector and non-governmental organizations. It is also the first to investigate the role of discretion of seniors in the allocation of competitive-preferred jobs to juniors, in a public sector bureaucracy and highlight a tension between meritocracy and efficiency.

The thesis contributes to a growing body of evidence on the value of discretion for performance in public sector bureaucracies. In Nigeria, Rasul & Rogger (2017) find that increasing bureaucrats' autonomy is positively associated with project completion rates. In Italy, Bandiera et al. (2009) find that more autonomous public bodies have less passive waste from regulatory burden and the same level of corruption. In India, Duflo et al. (2018) show that discretionary inspections by an environmental regulator cause three times more pollution abatement than would the same number of randomly-assigned inspections. This thesis contributes to this literature by studying the meritocratic effects of discretion in promotions and highlighting the mechanism through which meritocracy operates.

The thesis adds to the rapidly expanding literature on the organizational economics of the state. Dal Bó et al. (2013) and Ashraf et al. (2018) study recruitment of public sector workers. There have been many studies that focus on understanding the incentives of these workers (Iyer & Mani (2012); Banerjee et al. (2012); Ashraf et al. (2014); Bertrand et al. (2017); Khan et al. (2016); Khan et al. (2018); Xu (2018); Callen et al. (2013); Finan et al. (2015)). This thesis holds selection constant and studies the allocation of talent through discretion of seniors. The two papers that follow this line of inquiry and investigate promotions in large bureaucracies are Xu (2018) and Jia et al. (2015): Xu (2018) studies how discretion affected the promotion and incentives of governors in the British colonial administration from 1854-1966 and finds that discretion has a high cost to the organization. On the other hand, Jia et al. (2015) study the promotions of Chinese state officials and find that networks can help the organization promote the best performers. Results in this thesis complement

these two studies by first considering a different agent exercising discretion on promotions i.e. existing workplace seniors and then highlighting the incentives of the person exercising discretion as an important part of the relationship. The more closely aligned are the incentives of the person exercising discretion to those of the organization, the higher the chance of meritocratic allocations. Moreover, this thesis also sheds light on the use of private information under discretion and investigates lateral allocations as well as promotions.

The thesis is organized as follows: Chapter 2 describes the context and data. Chapters 3 asks whether promotions within this bureaucracy are meritocratic. It starts off with an analysis of promotions on average. This is then followed by analysis of whether seniors use their discretion to promote meritocratically. The last part of the chapter carries out a decadal analysis of cohorts to understand whether discretionary promotions have always been meritocratic. Chapter 4 investigates the mechanism behind meritocracy of discretionary promotions and concludes with a decadal analysis of the mechanism. This is to help understand reasons for the different trends in meritocratic promotions by seniors. Chapter 5 investigates whether seniors use not just public, but their private information meritocratically. Chapter 6 moves away from promotions and investigates discretionary lateral allocations of juniors. This starts off with a discussion of the data and presents key descriptives. The chapter then tests allocations on average. This is followed by an investigation of the performance of different types of juniors in heterogeneous job locations. The chapter concludes with a discussion of allocations by seniors and its implications. Chapter 7 concludes.

Chapter 2

Background and Data

2.1 Background

2.1.1 The Pakistan Administrative Services (PAS)

The focus of this study is on Pakistan Administrative Services (PAS) bureaucrats that work in Punjab, Pakistan. Figure 2.1 shows the map of Pakistan with Punjab highlighted in orange. Punjab is the largest province in Pakistan in terms of population. It has a total population that is nearly one-third of the population in the US (110 million people, 55% of total population in Pakistan).
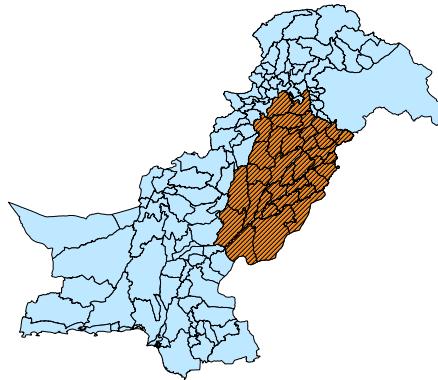
Figure 2.1: Map of Pakistan. The province of Punjab is marked in orange. PAS bureaucrats working in the province of Punjab are the focus of study.

The Pakistan Administrative Services (PAS), a successor of the erstwhile Indian Civil Service (ICS), is an elite group of federal civil servants. They run all key government departments at the federal and provincial level. The most senior civil service positions - the Secretary of Cabinet at the federal and provincial levels, the Chief Secretary of all the four provinces, heads of most provincial and federal government departments - are in general occupied by

PAS officers. PAS civil servants are responsible for designing health, education and taxation policy of the government as well as implementing various key projects of 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.

Pakistan Administrative Services (PAS) recruitment is through a competitive exam conducted by the Federal Public Service Commission (FPSC). PAS bureaucrats start their career in rank 17 and can get promoted all the way to rank 22.[1] Figure 2.2 presents the time-line of the initial career of a PAS new recruit. On recruitment, PAS civil servants undergo 18 months of academic training which is followed by 6 months of on-the-job training.[2] Training is centrally administered 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.

			District departments
			1
			2
			3
$month = 0$	$month = 18$	$month = 24$	4
			5
Recruitment & academy training	On-the-job training	Start of job as Assistant Commissioner (AC)	6
			7
			8
		Rule: assign to 1. vacancy; or 2. where incumbent spent $\geq$1 yr	
			36
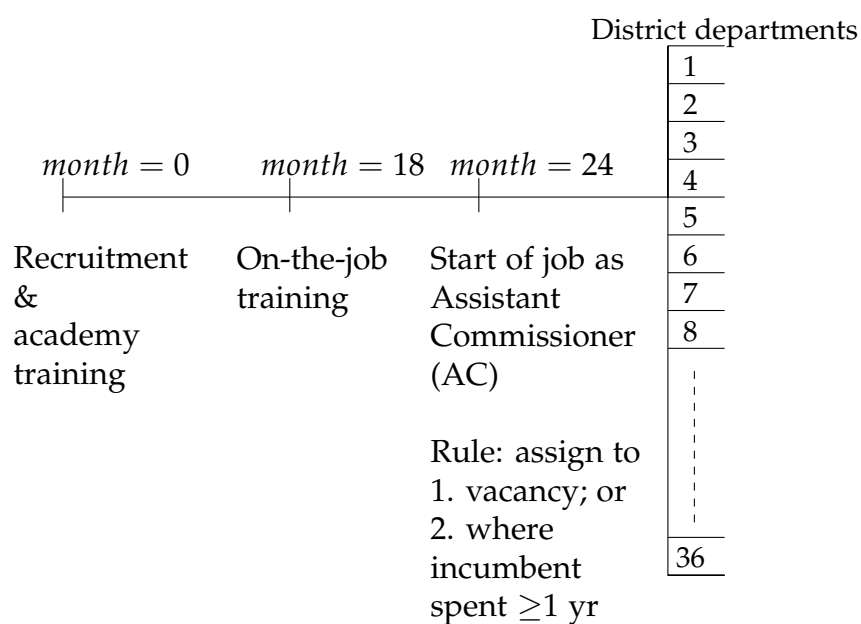
Figure 2.2: Timeline of the initial career of PAS new recruits

After 24 months of training, new recruits are allocated their first job. The job allocation process works in the following way: on recruitment, civil servants become part of a central pool of bureaucrats. On the other hand, there is a pool of jobs that are rank and department specific. The role of the human resource department is to match a bureaucrat to a job. Officially, the role of human resources is carried out by the chief executive

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[1]Throughout for the purpose of the analysis I normalize these ranks as 0-5.
[2]This has historically ranged from 18 weeks to 37 weeks.

26

of the province (Chief Minister (CM)) and senior civil servants in the Services and General Administration Department (S&GAD) and the Chief Minister's Secretariat. Although, the job allocation process in this setting is theoretically very centralized, in practice there are negotiations behind the scene so that bureaucrats do select into jobs. In general, new job creation is not easy and has to be ratified by multiple committees. The total number of jobs are determined by the government through pre-specified rules.

77% of PAS new recruits start their first job as Assistant Commissioners (AC), in one of the 36 district departments in Punjab, where they mainly collect taxes.[3] How the initial allocation of bureaucrats 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 1 year.[4] This is the policy that I exploit to get variation in the first set of seniors.

There are two kinds of promotions in this setting, official promotions and fast-track promotions. Official promotions are based on experience, training and subjective performance evaluation of the bureaucrats by their immediate bosses. Discretion can be exercised in this case through subjective performance evaluation by bosses, however, how these evaluations will be used in determining official promotions is determined by rules. On the other hand, fast-track promotions are when higher ranked jobs are allocated to junior civil servants, ahead of their stipulated time. These are at the discretion of the chief executive of the province and senior civil servants. The context is such that the higher the likelihood that he or she will have discretion over fast-track promotions of juniors.

2.2 Data

Cohorts of PAS bureaucrats are recruited together. However, not all of them start their on-the-job training together.[5] Since I classify seniors at the end of on-the-job training and at the start of the first job, I define cohorts as those

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[3]As per Inter-provincial Transfers of DMG/PSP Officers, Government of Pakistan, Cabinet Secretariat, Establishment Division, 10th April, 1988, (5/9/86-E.5) PAS civil servants are meant to work as an Assistant Commissioners (AC) at the very start of their career

[4]cf.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.

[5]There can be many reasons for this. One such reason is that some new recruits have retaken the competitive exam and so move to Pakistan Administrative Services from other civil service groups. These civil servants called 'repeaters' in civil service parlance have sometimes partially completed the civil service academic training and so start their on-the-job training sooner than the rest of the PAS bureaucrats that they are recruited with.

bureaucrats that start their training together. This is the definition of cohort used throughout the main analysis.[6]

Figure 2.3 shows the number of bureaucrats in each cohort, in the data, that started training together from 1962-2015. There are 77 cohorts and 646 bureaucrats that have any information on their cohort. The average number of bureaucrats per cohort in this larger sample is 8.

The analysis of discretionary promotions is restricted to cohorts that train between 1975-2012. Cohorts that start training in 1975 are the first ones on whom exam rank data becomes available. Having this data is important to test meritocracy of promotions. I restricted the cohorts to 2012 so that I can observe the career of the last cohorts for a few years. Between 1975-2012, the cohorts used in the analysis are 39, with an average size of 5 bureaucrats per cohort. These are also those cohorts that worked as Assistant Commissioners in their first job. Below, in the career charts data section, I will discuss why this is important.

Tax performance data is more limited owing to the standard of record keeping of the Central Revenue Agency. The analysis in chapter 5 is carried out for 91 PAS bureaucrats, across 29 cohorts. These are cohorts that started between 1985-2012. The average size of these cohorts is 3 bureaucrat per cohort.

The data for the study is based on a large-scale digitization effort. I combined data from five different sources to create a civil servant-month panel data-set. In the following sections in this chapter, four different data-sets that were digitized for the first time are described. In chapter 6, I describe the data on stated preferences of bureaucrats that are relevant for the analysis of discretionary lateral allocations.

Career charts data: For this study career charts of five different groups of civil servants were digitized for the first time i.e. Pakistan Administrative Services (PAS), Provincial Civil Services (PCS), Provincial Secretariat Services (PSS), Provincial Management Services (PMS), Ministerial Services. This resulted in an unbalanced panel of civil servant - month from 1950-2015 (see appendix figure B.1 for a copy of the career chart and figure C.1 and appendix table C.1 for details of number of bureaucrats per civil service group and time periods when they are observed).

The total number of bureaucrats in the data are 1982 of which 785 are PAS, 468 are directly recruited PCS, 308 are those PCS bureaucrats that have been recruited at a lower grade and have risen through the ranks to PCS (also known as 'promotees' or 'rankers' in civil services), 77 are PSS, 289 are directly recruited PMS, 9 PMS who have risen through the ranks but were recruited at

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[6]This is the definition on which I redefine exam rank, classify tax performance and on which all error terms are clustered and fixed effects are defined.
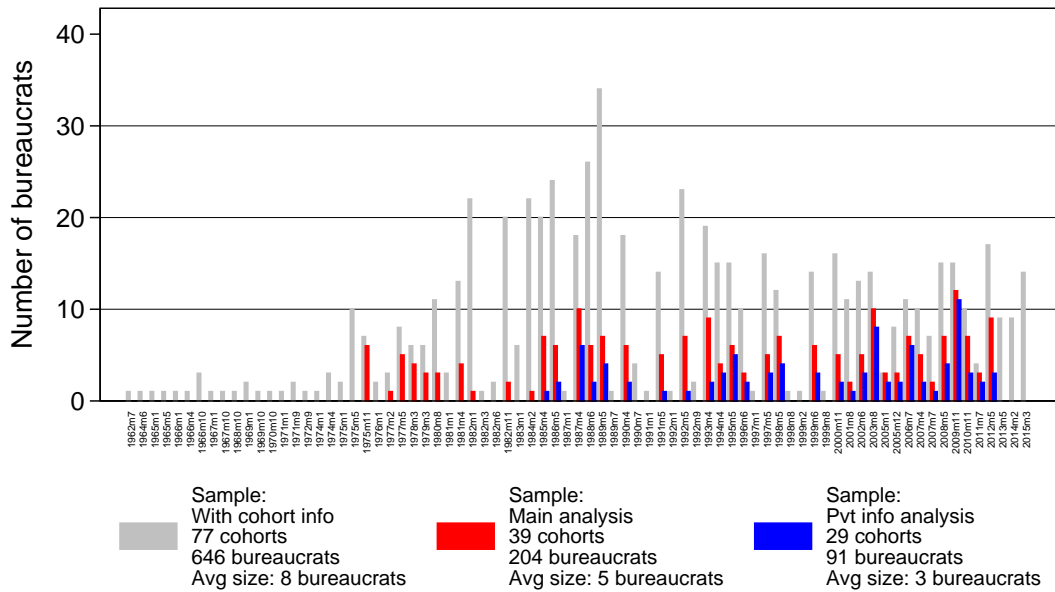
Figure 2.3: This figure shows the data-set on Pakistan Administrative Services (PAS) bureaucrats that was digitized and the data used in the analysis (see appendix C for details).

a lower rank and 27 are Ministerial Staff. For 19 of these bureaucrats, data on the group that they belong to is missing. The source of the career charts data is Services and General Administration Department (S&GAD).

In this thesis outcomes are only studied for the Pakistan Administrative Services (PAS) bureaucrats, however, other civil service groups are included when classifying seniors of these PAS bureaucrats. There are a couple of reasons to restrict attention to this group. First, as discussed, it is an important bureaucracy to study. For historical reasons and despite resentment from other groups (Sahi (2018)), PAS has been an elite cadre of civil services. Bureaucrats belonging to this group occupy key policy making and implementation positions in a variety of departments. PAS is much like the Indian Administrative Service (IAS) - with whom it shares its ancestry - which despite its limited size, has the power to impact regional GDP in India (Bertrand et al. (2017)).

Second, exam rank data, which is important for understanding the meritocracy of allocations, is only available for this group of civil servants. Third, only PAS bureaucrats have a rule governing the job that they are meant to do at the start of their career. On the other hand, there is no rule governing the allocation of the other groups of civil services at any point in

their careers.[7] This has important implications for the definition of potential seniors (see subsection 3.2.2 for details). The rule for PAS is that they have to be allocated Assistant Commissioner positions.[8] Out of 785 PAS officers, I have information on the first job of 414. 317 out of 414 PAS were allocated Assistant Commissioner position in their first job (77%).

Exam rank data: The exam rank data has been digitized for the first time from hard copy of the records of the Federal Public Service Commission (FPSC). While the career charts data is for PAS bureaucrats that work in Punjab, the exam rank data from FPSC data is on all PAS recruited, irrespective of where they work. The exam rank data has the name and the year that the bureaucrat took the recruitment exam for 1033 PAS bureaucrats that train between 1973-2015.

99 PAS bureaucrats in career charts data are armed forces inductees. They do not have exam rank data. I exclude them from the analysis.[9] Out of those left and those who had information on their cohorts, I was able to match the career charts and exam rank data of 482.[10] The overlap of exam rank and those with information on first Assistant Commissioner (AC) job, results in 204 PAS bureaucrats, across 39 cohorts between 1975-2012, that are the basis of this study. (see appendix table C.2 for details of the number of bureaucrats on whom data is available and those that were matched with career charts data and figure 2.3 for details of the larger data-set and the data on which the analysis of the paper is based).

Tax collection data: Tax collection data was acquired from the central revenue agency i.e. the Board of Revenue (BOR) and digitized for the first time. The tax considered is 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*, that work

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[7]The PSS and ministerial group can be allocated any position across the civil secretariat in the capital, while PCS and PMS bureaucrats can be allocated any position be it in the secretariat or otherwise across Punjab.

[8]Inter-provincial Transfers of DMG/PSP Officers, Government of Pakistan, Cabinet Secretariat, Establishment Division, 10th April, 1988, (5/9/86-E.5)

[9]There is a 10% quota for people from the armed services in civil services of Pakistan. Government policy is that these new recruits from the armed forces are arbitrarily awarded the same exam rank as the top person that enters the system through the competitive exam. They do not undertake the competitive exam and so exam rank data on them is not available. I therefore, exclude these bureaucrats from the analysis.

[10]It was not possible to match bureaucrats across the two data if the way the name was written differed across the two records eg. 'Muhammad Mehmood' vs. 'Mohamad Mahmood' and there was no cohort or other information to verify or if the recruitment exam cohort information is missing or if the person re-rook 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 civil servants and used various online forums (like http://www.cssforum.com.pk) to confirm cohort details, match the exam rank and career charts data and double check any missing information.

under the PAS Assistant Commissioners.[11] The BOR sets annual tax collection targets, based on farm size. Against these targets, Assistant Commissioners are responsible for the tax collection of the whole tehsil.

The tax collection data is an unbalanced, monthly panel of revenue circles from 1983-2013.[12] 940 revenue circles are observed in 137 different tehsils, of 36 different districts, across Punjab (see appendix figure C.2 for details of revenue circles observed across each tehsil. Appendix table C.3 describes details of the years for which each tehsil is observed and the total number of revenue circles per tehsil that are observed in the tax collection data).

To create a measure of tax performance of each junior officer from the revenue circle-month observations, I created tehsil-month averages of tax collected as a percentage of tax target. This tehsil-month panel of tax collected was then combined with the career charts data for those bureaucrats that worked as an Assistant Commissioner, in a tehsil, in a given month. This gives me a panel of tax performance of civil servants from 1983-2013.

There are 654 bureaucrats across civil service groups on whom I have tax performance data. Of these 241 are PAS. For 115 of these I have tax performance on their first job. However, only 91 PAS bureaucrats, across 29 cohorts also have exam rank data and are not military inductees. The analysis in chapter 5 is carried out on these bureaucrats between 1985-2012.

Incumbency board data: In order to classify the set of potential seniors of newly recruited PAS bureaucrats, we need to observe the vacancy position and tenure of all Assistant Commissioner positions across Punjab. This study, therefore, digitized for the first time, data from incumbency boards of Assistant Commissioner (AC) offices across Punjab. Figure B.6 shows an example of an incumbency board. Each incumbency board 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 Assistant Commissioner positions across Punjab was created. This data was combined with the career charts data on date of end of on-the-job training of PAS new recruits, to define the set of potential seniors. Appendix table C.4 describes details of the data that was digitized on incumbency boards. It shows the name of the tehsil and the total years when the position is observed. Incumbency boards are a tradition from colonial times. It is a status symbol for the civil servant and every new civil servant takes pride in ensuring his/her name is up on the board with the dates of their tenure. Therefore, the data is reliable.

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[11] A revenue circle is a collection of a few villages. Pakistan is divided into Provinces, district, tehsil and then union councils. Revenue circles are a smaller unit than union councils.

[12] Some revenue circles in Okara and Depalpur tehsil are observed since 1983 and others in Hazro, Attock observed since 2001. The attrition in the data is random and is a result of poor record keeping of the BOR (a glimpse of the record keeping of BOR can be seen in in appendix B, figure B.3 and online at: https://www.shanamanrana.com/research-in-the-field-a-snapshot).

Key variables and descriptive statistics

Power of seniors ($\overline{Power}$). Seniors are defined as everybody that a newly recruited PAS bureaucrat worked with, in the first month, of the first job. These set of first seniors remain fixed. The organization is such that the higher the senior, the more power they exercise over careers of juniors. Therefore, in each time period, power of seniors is defined as average official rank of first seniors. It is classified as:

$$Power\ of\ seniors\ (\overline{Power}) = \frac{\sum_{s=1}^{S} Official\ rank\ of\ seniors_s}{S} \qquad (2.1)$$

where official rank is the rank of the senior based on their official promotions and S is the number of first seniors that are still in Punjab in that time period.[13] For consistency and to keep the results comparable across OLS and reduced form, I create cohort-month level averages of power of seniors.[14]

The source for the variable is career charts data. These records allow a classification of who works with whom, when and where and official promotion of each bureaucrat. From there it is possible to build adjacency matrix of the first seniors of juniors and combine these with their official promotions to quantify power of seniors. An added advantage of using career charts to identify seniors is that I can objectively classify the set of first seniors. This helps overcome measurement error and subjectivity bias that is common in network surveys and that has been highlighted in the literature (Jackson (2013)). Figure 2.4 shows the variation in power of seniors across cohorts. The red dotted line is the mean which is 1.1.

Fast-track and official promotions of juniors. Fast-track promotions are quantified as a dummy that turns on 1 whenever actual rank of a junior bureaucrat is higher than their official rank.

$$Fast-track\ promotion = \mathbb{1}_{\{Actual\ rank\ -\ official\ rank\ of\ junior > 0\}} \qquad (2.2)$$

On the other hand, official promotions are quantified as a dummy that turns on one whenever the civil servant is officially promoted from one rank to the next.

$$Official\ promotion = \mathbb{1}_{\{Junior\ officially\ promoted\}} \qquad (2.3)$$

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[13]Official promotions move bureaucrats from rank 17-22. I normalize them from 0-5, 0 being the junior most rank and 5 being the most senior.

[14]While first seniors are defined at an individual junior bureaucrat level, exogenous variation in power of first senior comes from potential seniors, defined at a cohort level.
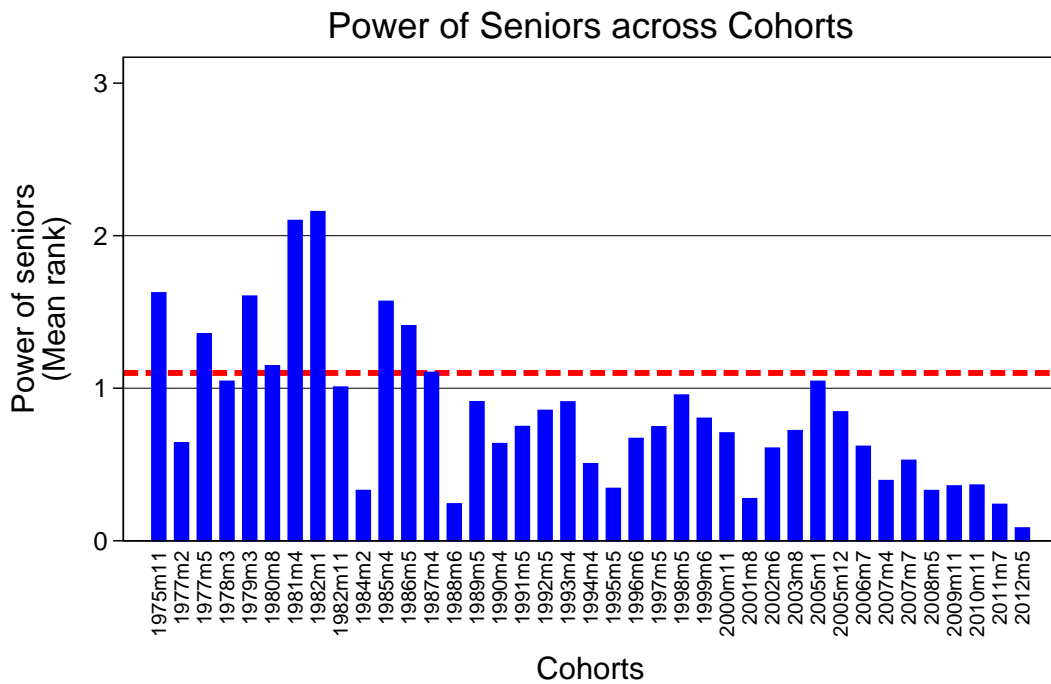
Figure 2.4: Variation in power of seniors across cohorts

The source of both these variables is the career charts of bureaucrats (see figure B.1). From there one can observe the date of official promotion of a bureaucrat. To classify fast-track promotions, information is used on the various jobs that bureaucrats are allocated. From the career charts data I can observe the job that civil servants are doing. To classify the rank of the job, notifications of job ranks by the Services and General Administration Department (S&GAD) are used. These were personally acquired from S&GAD. Rank of the job was manually assigned after going through the notifications. Whenever the actual rank of the job that the bureaucrat occupies is higher than his or her official rank, the bureaucrat is classified as being fast-track promoted.

Figures 2.5 and 2.6 plot the actual and official careers of a sample of cohorts from the 70s, 80s, 90s and 2000s. The red dotted line is the mean rank based on official promotion of a cohort. The blue dotted line is the mean rank based on fast-track promotions. Once a civil servant is officially promoted he or she can't be demoted. However, that is not the case for fast-track promotions. These are at the discretion of the senior civil servants and the chief executive of the province. Being fast-tracked does not confer a right and so fast-tracked bureaucrats can be demoted as well.

Table 2.1 shows that there is more variation in fast-track promotion than official promotion. The mean official promotion of a civil servant in a month is 1%, while the probability of fast-track promotion in a month is 27%. Across the 39 cohorts that are used in the study and the full sample of 77 cohorts, the

Table 2.1: Descriptive statistics

	Mean	Std Dev	Min	Max	person x month
Exam rank sample: 39 cohorts					
Power of seniors ($\overline{Power}$)	1.08	0.94	0	5	23202
Power of potential seniors ($\overline{Power}^p$)	2.08	0.94	0	4	23395
Career Progression					
Official promotions	0.01	0.11	0	1	23618
Fast-track promotions	0.27	0.44	0	1	20328
Teams					
Working in seniors' team	0.17	0.38	0	1	15486
Full sample: 77 cohorts					
Official promotions	0.01	0.11	0	1	96881
Fast-track promotions	0.27	0.44	0	1	81306
Teams					
Working in seniors' team	0.25	0.43	0	1	26971

Note: Power of seniors ($\overline{Power}$) is the average seniority of first seniors of newly recruited PAS bureaucrats that they work with in the first month of the first job. It is measured as the average official promotions, over time, of the set of seniors. Power of potential seniors ($\overline{Power}^p$) is the average rule-based seniority, over time, of the first set of potential seniors that junior PAS bureaucrats could have worked with in the first job. Official promotions are promotions that are based on experience, training and subjective performance evaluation of the bureaucrat by the immediate bosses. It is defined as a dummy that turns on one whenever the bureaucrat is officially promoted to the next rank, zero otherwise. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It 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. Working in seniors team is defined as a dummy that turns on one whenever the juniors are working in the team of their first seniors in the long run (after their first interaction at the first job).

mean values of official and fast-track promotion remains the same, suggesting that the sample used in the study is representative. Figure 2.7 shows the variation in fast-track promotion across different cohorts. The red dotted line is the mean, which is 0.27. An average PAS junior stays fast-tracked one-third of their total career.
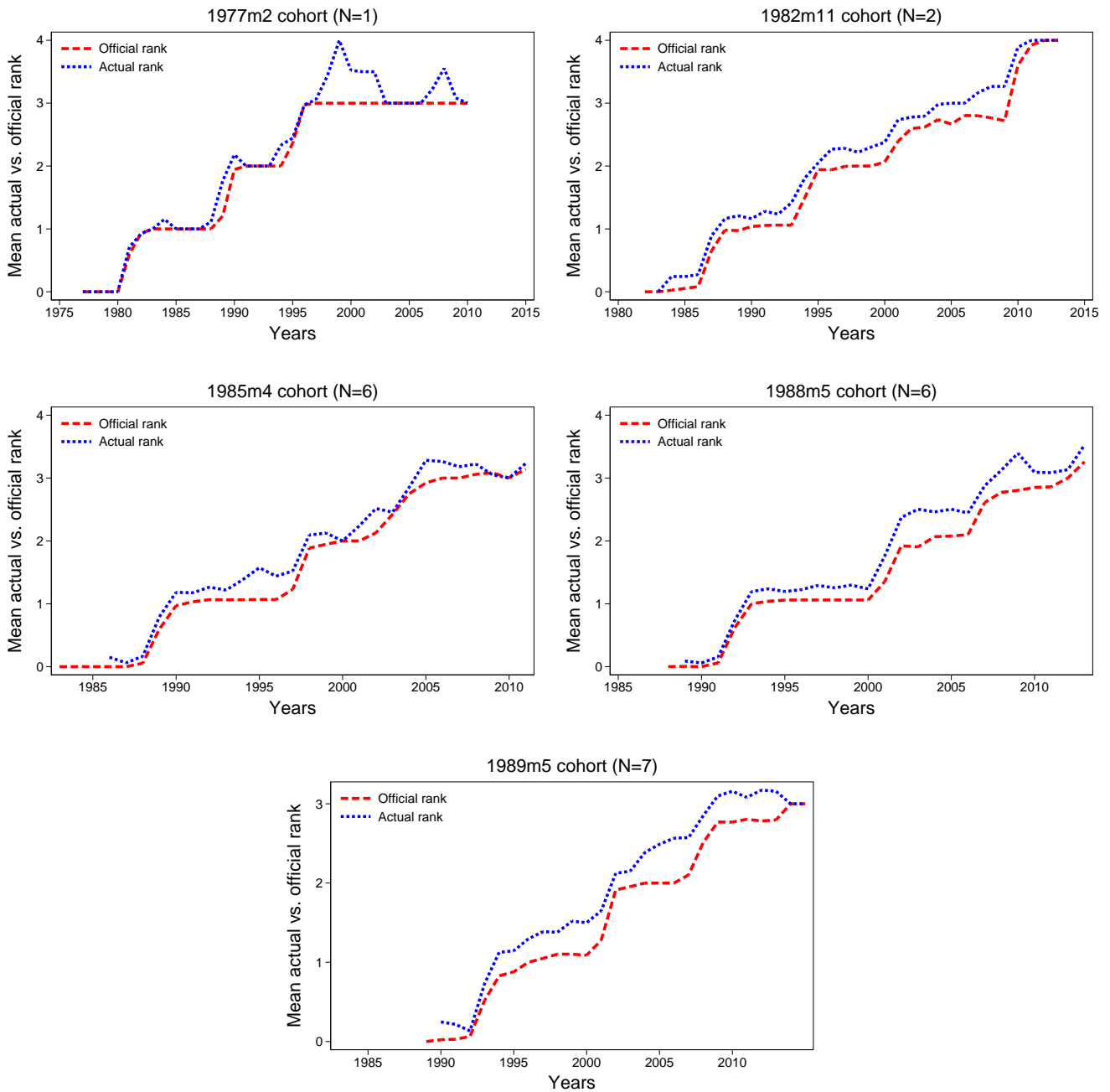
Figure 2.5: Actual vs. official rank: The blue line is the actual rank of a cohort while the red line is their official rank.

Junior working in team of first seniors (long-run, second job onward).
Seniors are determined in the first month of the first job. Once the seniors are determined, first job is excluded from the analysis and the long-run career of the juniors and seniors together is used for investigation in the study. Working in team of first seniors is classified as a dummy that turns on 1 whenever
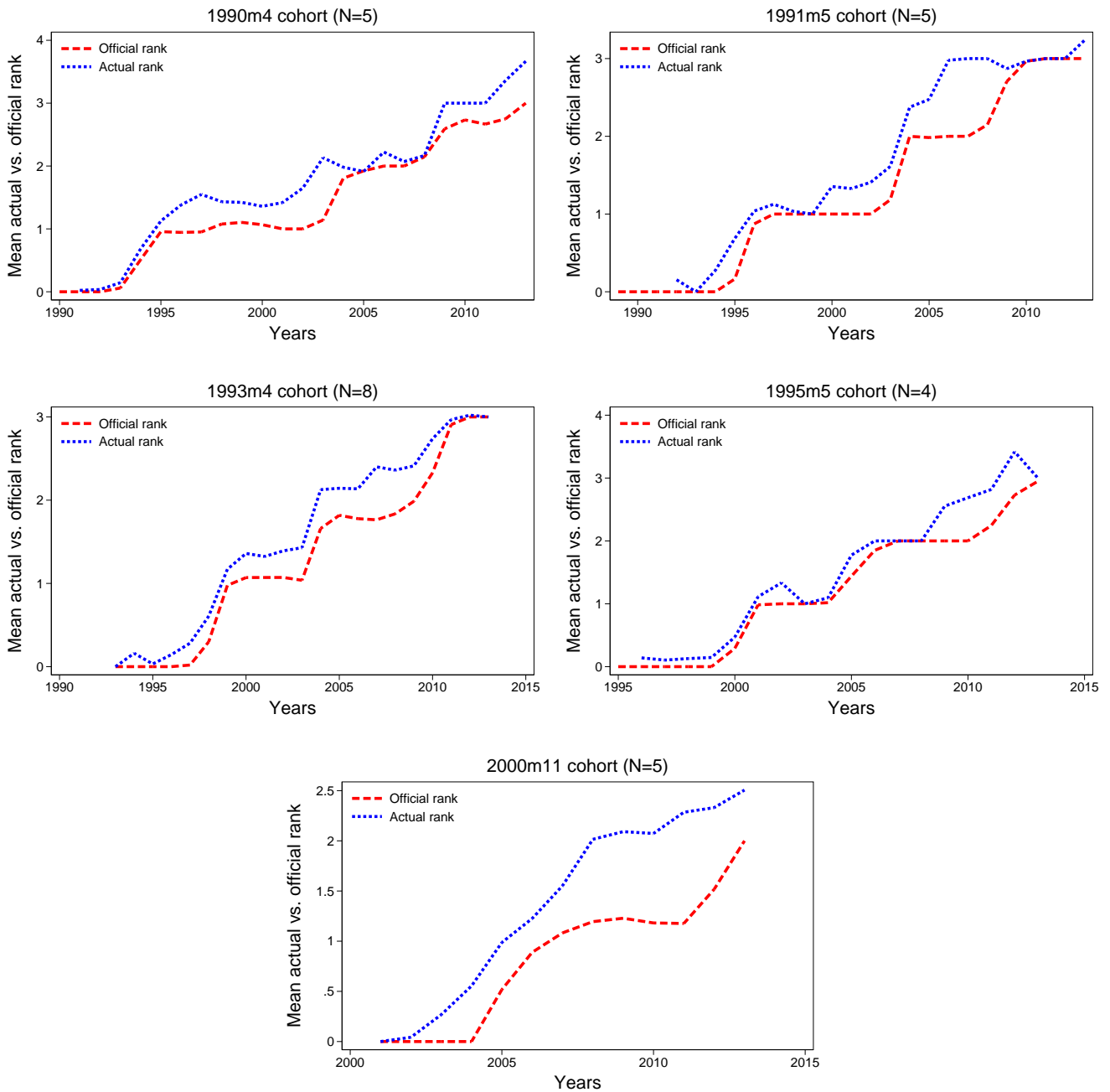
Figure 2.6: Actual vs. official rank: The blue line is the actual rank of a cohort while the red line is their official rank.

the juniors and their first seniors end up systematically working together in a given month, in their long-run careers.

$$Junior\ working\ in\ team\ of\ senior = \mathbb{1}_{\{Junior\ in\ team\ of\ senior\ (2^{nd}\ job\ on)\}} \qquad (2.4)$$

The source of this variable is career charts of bureaucrats from Services & General Administration Department (S&GAD) which allows to observe where each person worked and when. Table 2.1 shows that in the long run, in the
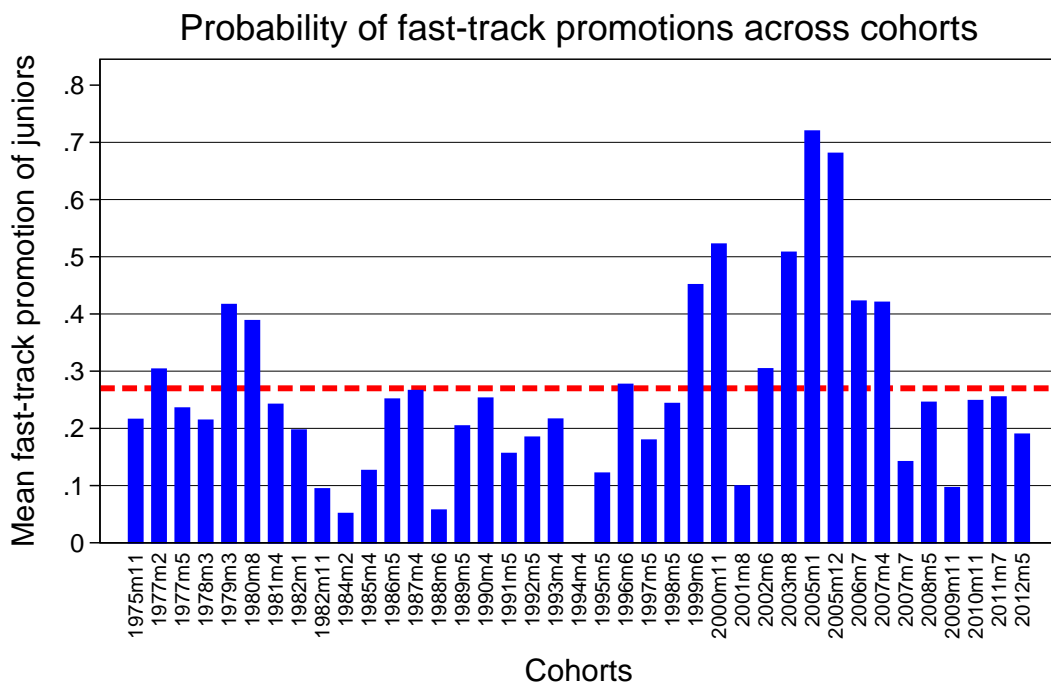
Figure 2.7: Fast-track promotion of juniors across cohorts. Red dotted line is the mean of fast-track promotions (0.27).

sample of 39 cohorts, the mean probability of a junior working in the team of any of their first seniors is 17%. On average nearly one-fifth of the junior's career is spent in the team of the seniors they met in the first job. This probability is 25% in the sample of 77 cohorts.

Publicly observable measure of merit of junior: Recruitment exam ranking.
The first measure of merit I use is ranking of juniors based on their recruitment exam. This ranking is published in the national newspapers. The source of this variable is Federal Public Service Commission. I define publicly observable measure of merit of the junior as:

$$Exam\ top\ (bottom)\ 10\% = \mathbb{1}_{\{Junior\ in\ top\ (bottom)\ 10\%\ of\ cohort\ in\ recruitment\ exam\}}$$

(2.5)

Exam top (bottom) 10% junior bureaucrats are quantified as a dummy that turns on 1 whenever a junior is in the top (bottom) 10% of a cohort in the recruitment exam. Appendix tables A.1 to A.4 show that results are robust to defining high-low merit as top-bottom 5%, 6%, 7%, all the way till top-bottom 14%. In a month there are 29% positions that are filled by fast-tracking junior bureaucrats. Since in this bureaucracy, the proportion of posts filled through fast-tracking juniors is small, one would expect that the effect

of senior's discretion can only materialize for a small proportion of juniors. This is what is seen. Appendix tables A.5 till A.5 show that, as expected, the effect just materializes for a small proportion of the exam distribution. Seniors exercise their discretion meritocratically and only push the very top juniors for promotions.

Recruitment exam ranking is a measure of merit that is positively correlated with measures of performance on the job. As discussed, the top 10% in recruitment exam collect 3% more taxes than the bottom 90% and are 10% more likely to be awarded 'outstanding' in subjective evaluations by their bosses.

Privately observable measure of merit of junior: Tax collection. To quantify a measure of merit that is privately observable to the seniors, tax performance of the new recruits in their first job as Assistant Commissioners is used. The source of this variable is the historical tax records of the Board of Revenue.

As described, the BOR sets annual tax collection targets based on official record of farm sizes and number of farmlands of the area (see table A.12 and A.13 where I test for this and find that that is indeed the case). In weekly meetings with other district officials i.e. first seniors, each new recruit working as an Assistant Commissioner (AC) reports back how much they collected against the annual target.

Since they work with the juniors, the first seniors are privy to their tax performance as they work together. However, once the tax performance has been discussed at the district department level, this is reported to the BOR through a letter. This letter has an aggregate tax collected by the district department and the tax performance of juniors, attached only as an annex. These are administratively handled at the BOR by the clerical staff. The clerks only use the district averages and share them with the officials at the BOR. The individual performance of the juniors never makes it to official decision making levels and never reaches the junior's individual personnel record files. There is neither knowledge of these records, nor a demand for them at the higher tiers. This was confirmed in multiple meetings with different officials in the Board of Revenue (BOR) and Services & General Administration Department (S&GAD). Tax performance is defined as:

$$Tax\ top\ 10\% = \mathbb{1}_{\{Junior\ in\ top\ 10\%\ of\ cohort\ in\ tax\ performance\}} \tag{2.6}$$

It is a dummy that turns on 1 whenever a new recruit is in the top 10% of the cohort in tax collection against the BOR target. I also report results using

top 20%, 30%, 40% and 50% to understand whether the effect varies across the tax collection distribution.

Chapter 3

Are promotions meritocratic?

3.1 Are promotions meritocratic on average?

As a simple first step, this study tests the heterogeneity of fast-track promotions based on exam and tax performance. I estimate the following OLS regression:

$$Fast-track_{ict} = \pi + \alpha \overline{A}_{ic} + \beta \underline{A}_{ic} + e_{ict} \tag{3.1}$$

where $\overline{A}_{ic} \in \{Exam\ top\ 10\%, Tax\ top\ 10\%\}$ of junior i in cohort c and $\underline{A}_{ic} \in \{Exam\ bottom\ 10\%, Tax\ bottom\ 10\%\}$ of junior i in cohort c. $Fast-track_{ict}$ is the probability that a junior i, in cohort c, in month-year t, is fast-track promoted. e_{ict} is the error term that is clustered at the cohort level.

Results are shown in Table 3.1. While results suggest meritocracy of promotions on average, the evidence is weak. Top 10% exam performer having a 4% higher probability of being fast-tracked and bottom 10% exam performers having a 6% lower probability, than mid 80% exam performers, respectively. However, these differential effects are not statistically significantly. An F-test of $\alpha = \beta$ has a p-value of 0.06, suggesting that the top and bottom end of the exam distribution, does enjoy a different career trajectory, on average.

The differential effects are more imprecise and also insignificant, in the case of tax performance. It is also not possible to reject similarity of the effect at the top and bottom end of the tax distribution. In the case of tax performance, the p-value of an F-test of $\alpha = \beta$ is 0.23.

Figure 3.1 plots the length of career that bureaucrats in the top 10%, mid 80% and bottom 10% remain fast-tracked, while figure 3.2 shows the per month share of juniors of different exam rank that are fast-tracked.

Table 3.1: Overall are fast-track promotions meritocratic?

	Dependent variable: Fast-track promotions	
	(1)	(2)
Exam Top 10% (α)	0.04	
	(0.04)	
Exam Bottom 10% (β)	-0.06	
	(0.05)	
Tax Top 10% (α)		0.07
		(0.09)
Tax Bottom 10% (β)		-0.03
		(0.07)
Constant	0.31***	0.33***
	(0.03)	(0.05)
Ho: $\alpha=\beta$ (p-value)	0.06	0.23
Controls	No	No
Cohort & time FE	No	No
Mean	0.30	0.35
person x mon	17864	5711
Cohorts	39	29

* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It is defined as a dummy that turns on one whenever the actual rank of the civil servant is higher than his or her official rank. Exam top (bottom) 10% is a dummy that turns on one for those bureaucrats that are in the top (bottom) 10% of their cohort in the recruitment exam. The omitted category is mid 80% exam performers. Tax performance is from the first Assistant Commissioner (AC) job of a newly recruited bureaucrat. Tax top (bottom) 10% is a dummy that turns on one when the civil servant is in the top (bottom) 10% of the cohort in tax collection. The omitted category is mid 80% tax collection.

In both these cases we can see that fast-track promotions appear to be meritocratic on average, with the high types enjoying more fast-track promotions than the low types. However, results from table 3.1 suggest these effects are significantly different only across the top 10% and bottom 10% exam performers. Figure 3.3 does a similar exercise but for tax performance. In this case it is not possible to reject similarity of the effect even across the top and bottom 10%.

Overall, it appears that there is very weak evidence of meritocratic fast-track promotions on average. However, underneath this weak average effect
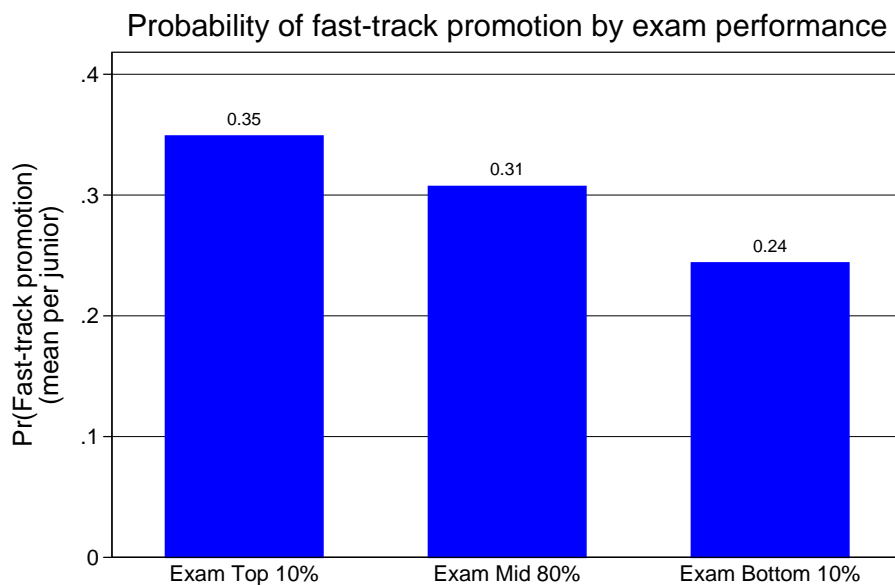
Figure 3.1: The figure shows the average length of career different exam performing juniors remain fast-tracked
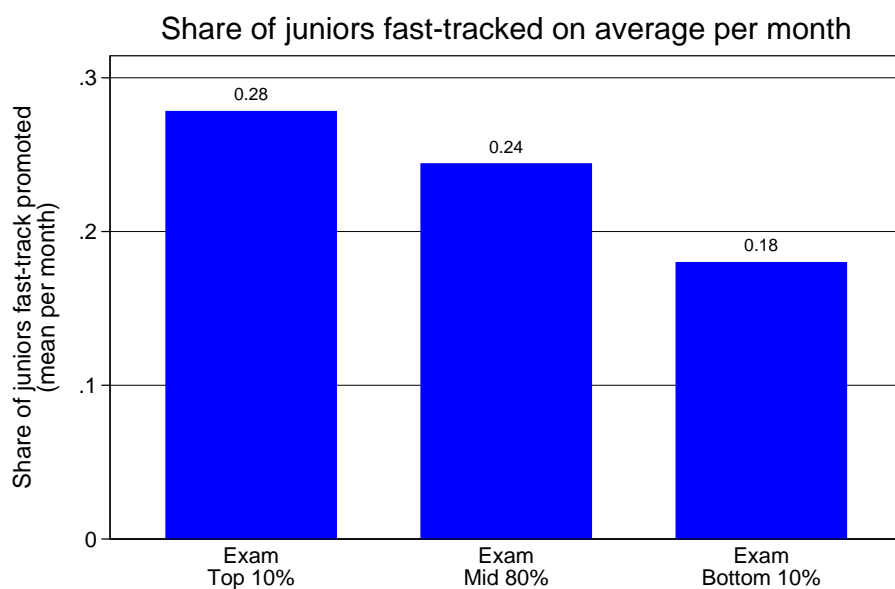
Figure 3.2: The figure shows the share of different exam performing juniors that are fast tracked per month

lies heterogeneity according to discretion of the seniors. I explore this further in the next subsection.

3.2 Are promotions meritocratic when seniors have discretion?

This part of the thesis explores whether fast-track promotions of junior workers are meritocratic when their first seniors have more discretion over their career. Table 3.2 presents results from a pooled difference-in-difference. For exposition, just for these results, power of seniors is classified as a dummy. Above (below) median power of seniors is a dummy that turns on 1 whenever the power of first seniors is above (below) median for a year. The cells contain the probability of fast-track promotions of junior bureaucrats, conditional on being in a particular group. P-values are in parenthesis. This table uses pooled data and can, therefore, highlight the overall net effect of allowing discretion to seniors, across all cohorts. This brings us closer to understanding the aggregate effects of discretion.
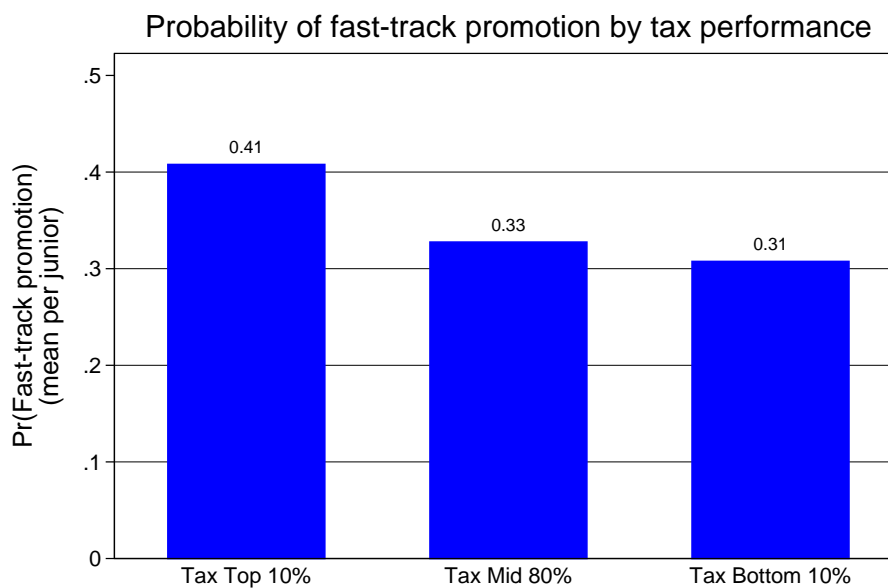
Figure 3.3: The figure shows the average length of career different tax performing juniors remain fast-tracked

First, for all exam ranks, seniors matter for fast-track promotion of juniors. The top 10% exam performers have a 20% higher chance of being fast-tracked when their seniors have above median power. This effect is 7% and 4% for the mid 80% and bottom 10% exam performers, respectively. Across columns, those juniors who are top 10% exam performers and who have seniors with more discretion, have 9% higher probability of being fast-tracked than

Table 3.2: Diff-in-diff: Are fast-track promotions meritocratic?

	Exam performance		Difference
	Top 10%	Mid 80%	
Power of seniors			
Above median power	0.38***	0.29***	0.09*
	(0.00)	(0.00)	(0.07)
Below median power	0.18***	0.22***	-0.04
	(0.00)	(0.00)	(0.32)
Difference	0.20***	0.07*	0.13**
	(0.00)	(0.05)	(0.04)
person × months			17319
cohorts			38

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

Note: P-value in parenthesis. The unit of observation is a civil servant-month. Each cell is the mean of fast-track promotions. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It is defined as a dummy that turns on one whenever the actual rank of the civil servant is higher than his or her official rank. Above (below) median power is classified as a dummy that turns on 1 whenever power of seniors ($\overline{Power}$) is above (below) the median power of a given year. It remains zero otherwise. Exam top 10% is a dummy that turns on one for those civil servants that are in the top 10% of their cohort in the recruitment exam. Mid 80% exam performers are defined accordingly as a dummy that turns on one for those juniors that are in the mid 80% of their cohort in the recruitment exam. Standard errors are clustered at the cohort level.

Table 3.3: Diff-in-diff: Are fast-track promotions meritocratic?

	Exam performance		Difference
	Bottom 10%	Mid 80%	
Power of seniors			
Above median power	0.22***	0.29***	-0.07
	(0.00)	(0.00)	(0.19)
Below median power	0.18***	0.22***	-0.04
	(0.00)	(0.00)	(0.31)
Difference	0.04	0.07*	-0.03
	(0.57)	(0.05)	(0.61)
person × months			17491
cohorts			38

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

Note: P-value in parenthesis. The unit of observation is a civil servant-month. Each cell is the mean of fast-track promotions. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It is defined as a dummy that turns on one whenever the actual rank of the civil servant is higher than his or her official rank. Above (below) median power is classified as a dummy that turns on 1 whenever power of seniors ($\overline{Power}$) is above (below) the median power of a given year. It remains zero otherwise. Exam top 10% is a dummy that turns on one for those civil servants that are in the top 10% of their cohort in the recruitment exam. Mid 80% exam performers are defined accordingly as a dummy that turns on one for those juniors that are in the mid 80% of their cohort in the recruitment exam. Standard errors are clustered at the cohort level.

mid 80%. On the other hand, promotions are not meritocratic when seniors have below median power. This results in an overall difference-in-difference of 13%.

Results suggest that on net, it is in fact discretion of seniors that results in meritocracy. Table 3.3 presents results from a similar pooled difference-in-difference but for the bottom 10% exam performers. While the average difference-in-difference is negative, it is not statistically significantly different from zero. Those bottom 10% exam performers, whose seniors have above median promotion power, have a 22% probability of fast-track promotions. This probability is 7% lower than the mid 80% exam performers. If we consider those whose first seniors have below median promotion power, then the difference is 4% lower for bottom 10% than the mid 80%. This results in a negative overall difference-in-difference of 3%.

While interesting, the results from the pooled diff-in-diff are not causal. There can be many cohort specific unobservables that can confound the effect. As a next step, instead of pooling the data, I include cohort and time fixed effects to control for any cohort and time specific unobserved heterogeneity. In this estimation, in a given time period, I compare cohorts that experienced more of a change in power of their seniors to those that experienced less or no change and test for heterogeneity of the effect based on exam ranking of the juniors. The estimation is as follows.

$$y_{ict} = \kappa_c + \kappa_t + \gamma Exam_{ic} + \pi \overline{Power}_{ct} + \phi \overline{Power}_{ct} \times Exam_{ic} + \mu X_{ict} + \epsilon_{ict} \quad (3.2)$$

where the outcome $y_{ict} \in \{Fast - track, Official\ promotion\}$ is the probability of fast-track promotion, official promotion respectively of junior i, of cohort c, in month-year t. Fast-track promotion 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. Official promotion is a dummy that turns on one whenever the bureaucrat is officially promoted to the next rank. $Exam_{ic} \in \{top\ 10\%, bottom\ 10\%\}$ are dummy variables that turn on 1 whenever a junior i, of cohort c, is in the top 10%, bottom 10% of their cohort in the recruitment exam, respectively. $\overline{Power}_{ct}$ is the mean power of the first set of seniors of a cohort c, in month-year t. It is measured through official rank of the seniors in the organization. This rank is based on official promotions of the

seniors, determined by their experience, training and subjective performance evaluation.

I control for time invariant, cohort specific, unobserved heterogeneity using cohort fixed effects κ_c. 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 creation of new jobs that affect all cohorts equally, are accounted for by κ_t.

Using a regression framework allows me to include controls as well. Any first-match specific effects that co-vary with power of seniors and creates differences in career trajectory of high and low type juniors, will be a confounder. To account for such differences, I control for a time trend of the first job. To increase precision, other controls included are experience of the junior, experience squared and a dummy for whether the job is in the field offices. Official rank of the junior is included in the estimation for fast-track promotions. Error terms are clustered at the cohort level as that is the level at which first seniors are allocated (Abadie et al. (2017)).

3.2.1 OLS results: Are promotions meritocratic when seniors have discretion?

Table 3.4 presents results from estimating equation 3.2. Columns (1)-(2) of table 3.4 show the effect on fast-track promotions of juniors, while column (3) shows the effect on official promotion. To help in the interpretation of level effects, power of seniors is demeaned by subtracting the average for each junior worker.

Column (1), is a pooled OLS with controls but without fixed effects, while the rest include both. Results show that power of seniors is on average positively associated with probability of fast-track promotion of junior workers. A one rank above average increase in the power of seniors is associated with a 9% increase in fast-track promotions of junior bureaucrats. The effect is statistically significant and precisely estimated. Like the pooled difference-in-difference in tables 3.2 and 3.3, this confirms that the higher the seniors rise in the organization, the more power they exercise over careers of juniors.

The average effect in column (1) masks heterogeneity of the effect according to merit of the junior bureaucrats. Results in column (2) show that promotions

of junior workers at the discretion of seniors is meritocratic. Moreover, when looking at variation at the cohort level, it is a zero-sum game. With an above average increase in the rank of the senior, the top 10% exam performing juniors have a 13% higher probability of being fast-tracked than the mid 80%, while this effect is negative for the rest of the distribution. The differential effect for the bottom 10% is not precisely estimated and it is not statistically significant. However, the p-value from an F-test of $\alpha = \beta$ is 0.11, suggesting that the effect at the top and bottom is nearly statistically significantly different from each other. The total effect of the power of seniors on fast-track promotions of top 10% juniors is economically significant as well. It is nearly the same as one-third the mean of fast-track promotions.

Table 3.4: OLS - Are discretionary promotions of juniors meritocratic?

| | Dependent variable: | | |
| | Fast-track promotions | | Official promotions |
	(1)	(2)	(3)
Power	0.09**	-0.04	0.01**
	(0.03)	(0.04)	(0.00)
Exam Top 10%		-0.01	-0.00
		(0.04)	(0.00)
Exam Bottom 10%		-0.06	-0.00
		(0.05)	(0.00)
$\overline{Power}$ × Exam Top 10% (α)		0.13*	0.00
		(0.07)	(0.00)
$\overline{Power}$ × Exam Bottom 10% (β)		-0.06	0.00
		(0.10)	(0.00)
Ho: $\alpha=\beta$ (p-value)		0.11	0.48
Controls	Yes	Yes	Yes
Cohort & time FE	No	Yes	Yes
Mean	0.32	0.31	0.01
person x mon	23885	17229	17768
cohorts	44	39	39

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Table 3.4, column (3) tests the effect of power of seniors on official promotions. For every one rank above average increase in the power of the first seniors, the mid 80% exam performers have a 1% higher probability of being officially promoted. The differential effect for the top and the bottom end of the exam distribution is a precisely estimated zero. Therefore, promotions where there is very little space for discretion, are in fact not meritocratic.

3.2.2 Identifying variation: Power of potential seniors

Controls and fixed effects still do not overcome the challenges of selection into teams. Nor does it help overcome the endogenous rise of the senior in the organizational hierarchy. This rise could easily be correlated with unobservables of the juniors. Therefore, it is hard to argue that the effects from table 3.4 are causal.

To overcome the first challenge, this study exploits initial allocation rules of the government. The Tenure/Transfer Policy of the government implies that new recruits can only be allocated their first job in a district department where there is a vacancy or where the incumbent Assistant Commissioner (AC) has worked at least a year.[1] This provides a set of potential seniors that each cohort of juniors could have been allocated, in the first month of their first job. The set of potential seniors are the bureaucrats in district departments, with potential open positions, at the time of first job of juniors. Potential seniors can be bureaucrats of any group of civil services (PAS, PCS, PMS, PSS or Ministerial staff). What further aids a causal identification is that end of training of the juniors is centrally decided by the Federal Government. New recruits cannot

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[1] cf.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.

choose the timing of the start of their entry-level job and hence cannot select into a set of potential seniors.

Figure 3.4 shows the average number of potential and actual seniors per junior, across 39 cohorts from 1975-2012. The mean number of seniors in the first job are 12. This suggests that juniors work in small group. Therefore, the possibility of close linkages with seniors and senior possessing local information on juniors is there. The average number of potential seniors is 27. Therefore, for each actual senior, a junior has approximately two potential seniors.

Departments with vacancies have people of varying power working in them. Figure 3.5 shows this cross-sectional variation in power of potential seniors across cohorts. The mean cross-sectional variation in power of potential seniors, represented by the red dotted line, is 2.1. Figure 3.6 shows the cross-sectional correlation between power of actual and potential seniors. Each black dot is the mean for a cohort. The axis are in units of ranks. We can see that across cohorts, the two measures of power are positively correlated.
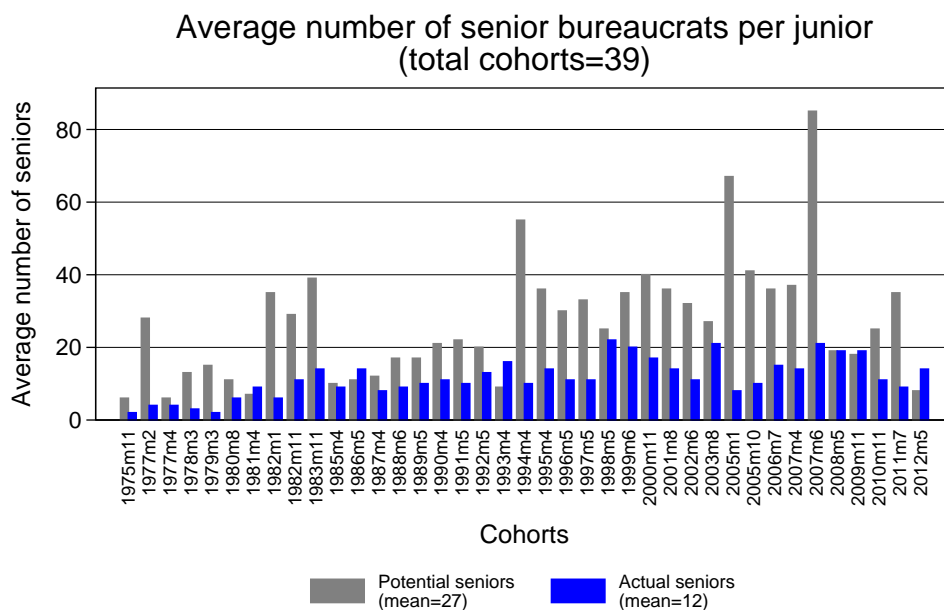
Figure 3.4: The figure shows the average number of senior bureaucrats per junior in the sample of cohorts on whom the main analysis is conducted

The second challenge to a causal identification stemmed from the fact that power, as defined by the official rank of the seniors, was a function of their subjective performance evaluation and that could be correlated with
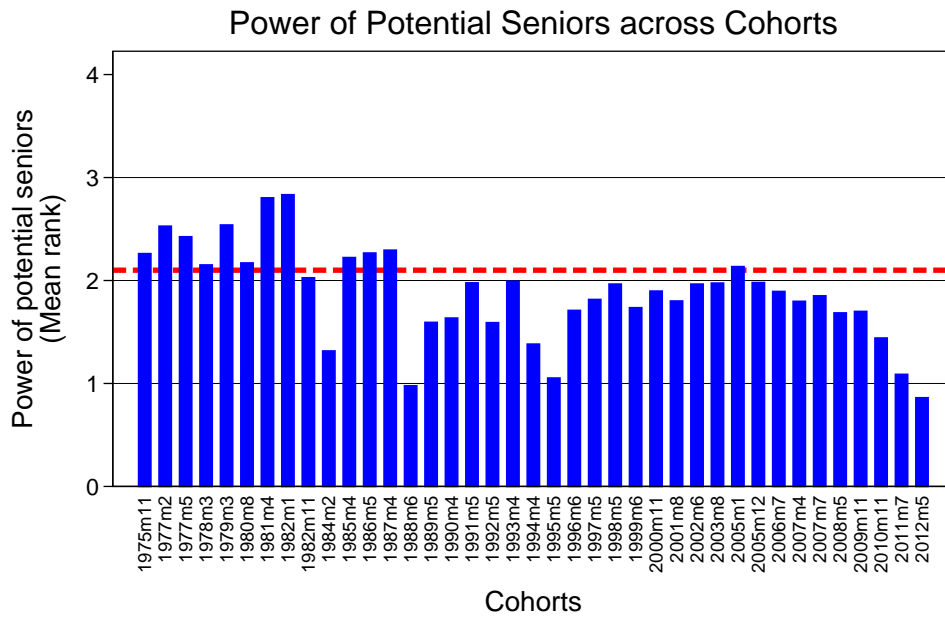
Figure 3.5: Variation in power of potential seniors across cohorts
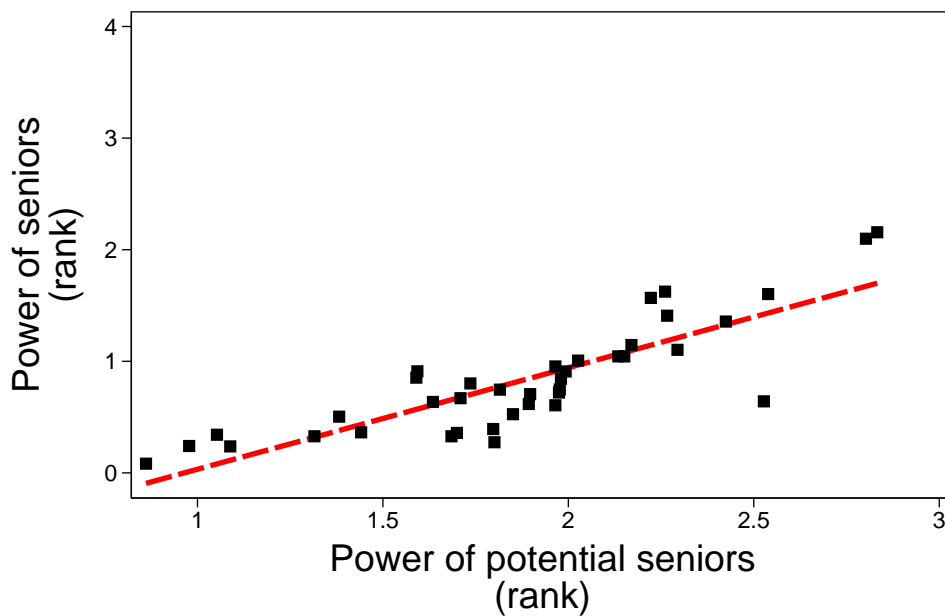
Figure 3.6: Cross sectional correlation between power of potential and actual seniors

the unobservables of the juniors. To overcome this challenge I use the government's Minimum Length of Service Rules, that are applicable on official promotions. This helps create a rule-based measure of power of potential seniors. The Minimum Length of Service Rules stipulate how the experience of a bureaucrat can translate into their official promotion. Bureaucrats are eligible

for one promotion after every 5, 12, 17 and 22 years of entry.[2] The career of a civil servant, according to this rule, is like a step function, shown in figure 3.7.
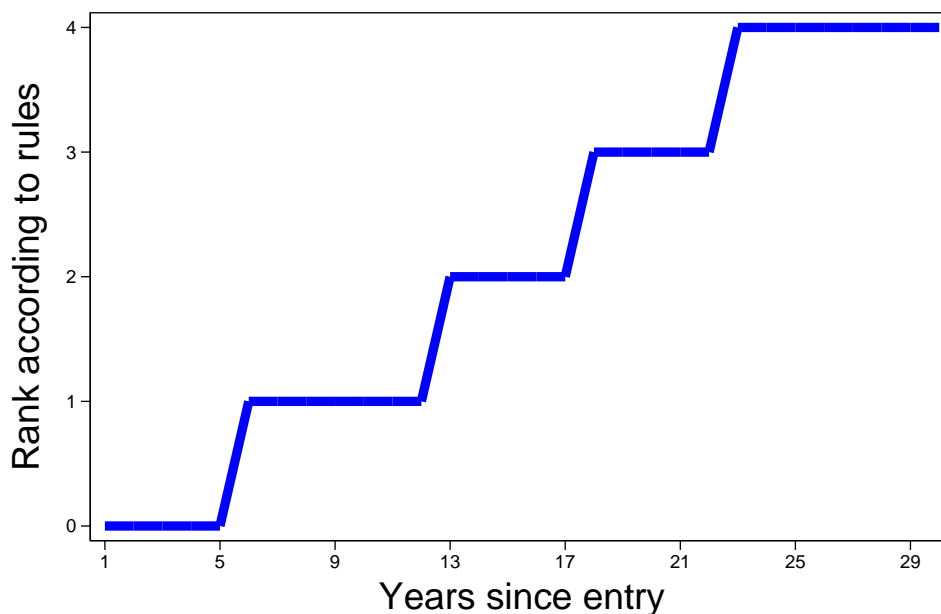
Figure 3.7: Rank of seniors according to Minimum Length of Service Rules. This rule is used to create predicted power of potential seniors.

Power of potential seniors: Combining both the initial allocation and the Minimum Length of Service Rules, this study is able to classify a cohort-month level variable: power of potential seniors. In a given time period, it is defined as the average, rule-based rank of potential seniors, that the cohorts of newly recruited juniors could have worked with, in the first month, of their first job. While power of seniors varies from ranks 0-5, power of potential seniors lies between 0-4. This is because these are the ranks on which the Minimum Length of Service Rules apply.

For each time period, the power of potential seniors is calculated as:

$$\textit{Power of potential seniors } (\overline{Power}^p) = \frac{\sum_{\tilde{s}=1}^{\tilde{S}} \textit{Rulebased rank of potential seniors}_{\tilde{s}}}{\tilde{S}}$$

(3.3)

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 in that time period. Figure 3.8 shows the time variation in mean

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

power of potential seniors, across years, for a sample of four cohorts from the 1970s, 80s, 90s and 2000s. The figure shows that power of seniors doesn't just go up but it can come down as well. This can be the case when, for instance, seniors retire. Table 2.1 presents descriptive statistics of the variable. The mean $\overline{Power}^p$ as measured in ranks of seniority is 2.1. When compared to the mean of actual seniors it appears that potential seniors are higher in rank and have more power to promote juniors.
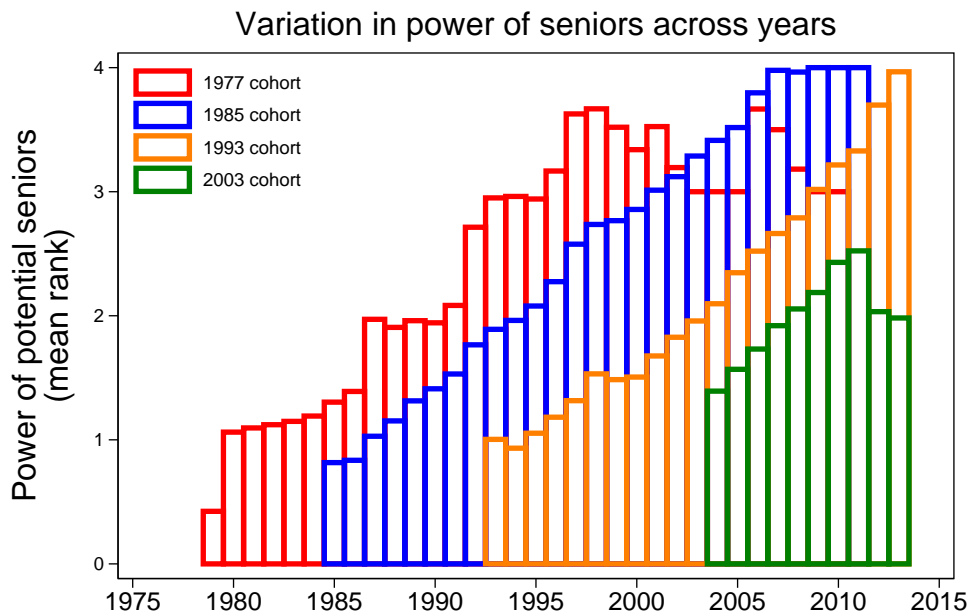
Figure 3.8: Time variation in power of potential seniors

Discussion on assumptions. The analysis rests on the assumption that vacancies and tenures of incumbent Assistant Commissioners are not systematically determined by unobservables of newly recruited cohorts. For instance, if a star cohort is about to finish training, it is possible that a position is vacated to make way for these new recruits. I test for this. Table A.9, A.10 show that there is no correlation between the date that training ends and vacant positions. It remains the case whether I define vacancies in large districts or whether I define the end of training as the day that training ends or as the month that training ends. This still leaves the concern that the quality of the potential places might be systematically different for different cohorts. Therefore, characteristics of the potential job match could be arguably correlated with power of potential seniors and fast-track promotions of juniors. Table A.11 shows that vacancy and tenure of AC positions are not predicted

by time-varying district characteristics. While it is hard to think of any first-job specific characteristics that could be correlated with rule-based power measures, I control for time trend of the first job.

3.2.3 Reduced form: Are promotions meritocratic when seniors have discretion?

In this subsection, a reduced form estimation with cohort and time fixed effects is implemented. In this estimation, in a given month-year, I compare cohorts that experienced more of a change in $\overline{Power}^p$ to those that experienced less or no change. I test for heterogeneity of the effect based on exam ranking of the juniors. The assumption is that there is nothing that is correlated with fast-track promotions and varied systematically between top and mid exam performers, in cohorts that experienced more of a change in $\overline{Power}^p$ and those that experienced less change. The reduced form estimation is as follows:

$$y_{ict} = \gamma_c + \gamma_t + \mu Exam_{ic} + \chi \overline{Power}^p_{ct} + \phi Exam_{ic} \times \overline{Power}^p_{ct} + \phi X_{ict} + \nu_{ict} \quad (3.4)$$

where all the variables are the same as in equation 3.2, except power of potential seniors ($\overline{Power}^p_{ct}$). It varies over cohort-month and is the average, rule-based rank of the first set of potential seniors that cohorts of junior PAS bureaucrats could have worked with, in their first job. Error terms are clustered at the cohort level as that is the level at which first seniors are allocated (Abadie et al. (2017)).

Table 3.5, columns (7)-(9) present reduced form results, while columns (1)-(3) report the OLS results for comparison. Conditional on the exclusion and monotonicity assumptions, I also present the IV results in columns (4)-(6). Columns (3), (6) and (9) study official promotions, while the rest investigate fast-track promotions. Table 3.6 reports the first stage estimates from the IV. Columns (1), (4) and (7) report results without fixed effects while all the other results include cohort and month-year fixed effects.

First stage results in table 3.6 suggest that there is no differential effect of power of potential seniors on power of actual seniors. I report the Angrist-Pischke (2008) F-statistic at the bottom of the table.[3] The F-statistic provides

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[3]For a single regressor AP F-statistic and Kleibergen-Paap Wald F-test are the same. I report AP F-statistic since it tests whether even one of the endogenous regressor is under or weakly identified.

Table 3.5: Second stage - Are discretionary promotions of juniors meritocratic?

	OLS			IV			Reduced Form		
	Fast-track promotions		Official promotions	Fast-track promotions		Official promotions	Fast-track promotions		Official promotions
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Power	0.09**	-0.04	0.01**	0.09*	-0.08	0.00			
	(0.03)	(0.04)	(0.00)	(0.05)	(0.09)	(0.01)			
Exam Top 10%		-0.01	-0.00		-0.02	-0.00		-0.02	-0.00
		(0.04)	(0.00)		(0.04)	(0.00)		(0.04)	(0.00)
Exam Bot 10%		-0.06	-0.00		-0.06	-0.00		-0.06	-0.00
		(0.05)	(0.00)		(0.05)	(0.00)		(0.04)	(0.00)
$\overline{Power} \times$ Exam Top 10% (α)		0.13*	0.00		0.14*	0.00			
		(0.07)	(0.00)		(0.08)	(0.00)			
$\overline{Power} \times$ Exam Bot 10% (β)		-0.06	0.00		-0.06	-0.00			
		(0.10)	(0.00)		(0.10)	(0.00)			
$\overline{Power}^p$							0.07*	-0.03	0.00
							(0.04)	(0.05)	(0.00)
$\overline{Power}^p \times$ Exam Top 10% (α)								0.09*	0.00
								(0.05)	(0.00)
$\overline{Power}^p \times$ Exam Bot 10% (β)								-0.04	-0.00
								(0.07)	(0.00)
Ho: $\alpha=\beta$ (p-value)		0.11	0.48		0.17	0.05		0.16	0.07
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cohort & time FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Mean	0.32	0.31	0.01	0.31	0.31	0.01	0.31	0.31	0.01
person x mon	23885	17229	17768	23714	17166	17699	23959	17411	17945
cohorts	44	39	39	43	39	39	43	39	39

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Power of potential seniors ($\overline{Power}^p$) is the average rule-based seniority, over time, of the first set of potential seniors that junior PAS bureaucrats could have worked with in the first job. Official promotions are promotions that are based on experience, training and subjective performance evaluation of the bureaucrat by the immediate bosses. It is defined as a dummy that turns on one whenever the bureaucrat is officially promoted to the next rank. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It 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. 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. The omitted category is mid 80% exam performers. Mean is mean value for the outcome variable in the estimation sample. Experience, experience squared of the new recruit, time trend of the first job, official rank of the junior and dummy for whether the job is in the field offices is included. Official rank of the junior is not included in columns (3), (6) and (9). Cohort & month-year FE included in all specifications, except column (1), (4) and (7). All specifications exclude first job.

Table 3.6: First stage - Are discretionary promotions of juniors meritocratic?

	Dependent variable: Power of seniors ($\overline{power}$)		
	(1)	(2)	(3)
$\overline{Power}^p$	0.70***	0.54***	0.52***
	(0.04)	(0.09)	(0.09)
$\overline{Power}^p \times$ Exam Top 10% (α)		-0.11	-0.13
		(0.10)	(0.09)
$\overline{Power}^p \times$ Exam Bottom 10% (β)		-0.03	-0.04
		(0.05)	(0.05)
Exam Top 10%		-0.02	-0.04
		(0.04)	(0.04)
Exam Bottom 10%		0.07**	0.07**
		(0.03)	(0.03)
AP F Statistic-I	372	54	53
AP F Statistic-II		139	182
AP F Statistic-III		414	351
Controls	Yes	Yes	Yes
Cohort & time FE	No	Yes	Yes
person x mon	23714	17166	17699
cohorts	43	39	39

* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Power of potential seniors ($\overline{Power}^p$) is the average rule-based seniority, over time, of the first set of potential seniors that junior PAS bureaucrats could have worked with in the first job. Official promotions are promotions that are based on experience, training and subjective performance evaluation of the bureaucrat by the immediate bosses. It is defined as a dummy that turns on one whenever the bureaucrat is officially promoted to the next rank. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It 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. 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. The omitted category is mid 80% exam performers. Angrist & Pischke (2009) f-stat is reported for each endogenous variable at the bottom. Experience, experience squared of the new recruit, time trend of the first job, official rank of the junior and dummy for whether the job is in the field offices is included. Official rank of the junior is not included in columns (3). Cohort & month-year FE included in all specifications, except column (1). All specifications exclude first job.

some evidence that power of potential seniors is relevant in predicting power of actual seniors.

There are three main takeaways from these set of results. First, as seniors rise in the organization, they exercise more discretion over careers of juniors. The average effect of power of seniors on fast-track promotions of juniors is positive and significant in all specifications. Second, like the pooled difference-in-difference results, discretionary promotions by seniors are meritocratic. Reduced form results in column (8) show that with a one rank above average

increase in $\overline{Power}_{ct}^{p}$, the top 10% exam performers are 9% more likely to be fast-tracked than the mid 80%. The total effect for the top 10% exam performers is one-fifth of the mean of fast-track promotions, suggesting that the effects are not just statistically but also economically significant.

The differential effect on the bottom 10% is negative but not significant. In column (8), the total effect for bottom 10% is negative and of a similar magnitude as the top. An F-test of $\alpha = \beta$ has a p-value of 0.11 and 0.16 in columns (2) and (8) respectively. The third takeaway from the table is with respect to the results on official promotions. A surprising aspect here is that the effect of power of senior materializes only for discretionary promotions of juniors. Those promotions that are constrained by rules are, in fact, not affected by the discretion of seniors. In the reduced form and IV estimations, all the effects are a precisely estimated zero. This suggests that in this bureaucracy, rules are followed.
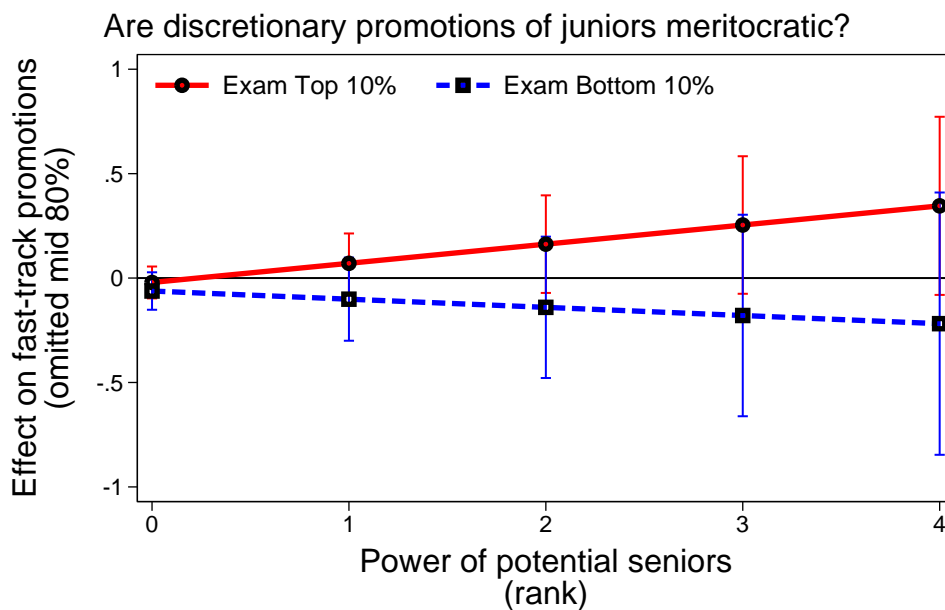
Figure 3.9: The figure plots the predicted probability of fast-track promotions from the reduced form model in column (8) of table 3.5. Each dot is the predicted probability and the bars are 90% confidence intervals. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It 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. Power of potential seniors ($\overline{Power}^{p}$) is the average rule-based rank, over time, 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. The omitted category is mid 80% exam performers.

Figure 3.10: The figure plots the predicted probability of official promotions from the reduced form model in column (9) of table 3.5. Each dot is the predicted probability and the bars are 90% confidence intervals. Official promotions are promotions that are based on experience, training and subjective performance evaluation of the bureaucrat by the immediate bosses. Power of potential seniors ($\overline{Power}^p$) is the average rule-based rank, over time, 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. The omitted category is mid 80% exam performers.

Figure 3.9 plots the probability of fast-track promotions from the reduced form model in column (8) of table 3.5. On the y-axis is the effect on probability of fast-track promotions of juniors and on the x-axis is power of potential seniors. As discussed power of potential seniors is measured in ranks between 0-4. Each dot is the predicted probability from the model in column (8) of table 3.5 and the bars are 90% confidence intervals. Pictorially, figure 3.9 presents the same idea. Fast-track promotions by seniors are meritocratic.

Figure 3.10 plots the probability of official promotions from the reduced form model in column (9) of table 3.5 and shows that there is no effect of power of potential seniors on the probability of official promotions of juniors.

3.3 A decadal cohort analysis: Have promotions by seniors always been meritocratic?

I further investigate heterogeneity of the effect across different cohorts from 1980-2010. For uniformity in creating bins of cohorts, I restrict attention to 3 decades of cohorts. Table 3.7 reports reduced form results while table 3.8 reports OLS and IV estimates.

The first key takeaway from these results is that seniors did not always exercise their discretion meritocratically. With an increase in power of seniors the bottom 10% exam performers were favored in the 1980s, while the mid 80% and top 10% were not. This trend reversed starting from the 1990s cohorts and continued for cohorts between 2001-2010. In subsection 4.2, I investigate the mechanism behind these trends.

For cohorts that were recruited in the 1980s, column (1) of table 3.7 shows that with an above average increase in $\overline{Power}^p$, the bottom 10% exam performers have a 22% higher probability of being fast-tracked than the mid 80%. The effect on mid 80% is negative 9%, while the differential effect for the top 10% is negative 1%. The effects on mid 80% and top 10% are not significant. This trend holds across all specifications. At the bottom of the table 3.7, in column (1), I test whether $\alpha = \beta$. The p-value is zero, suggesting that the effect on the top and the bottom is statistically different from each other.

Interestingly this trend changes for cohorts that start their training in the 1990s. In column (1) of table 3.7, the total effect for the bottom 10% from the 1990-2000s is a negative 24%, which is three-fourth of the mean of fast-track promotions. While the total effect for top 10% is a positive 32% which is nearly the same as the mean of fast-track promotions. In column (1), an F-test of $\mu = \pi$ rejects the null with a p-value of zero across all specifications. The trend of meritocratic promotion at the discretion of the senior continues for the 2001-2010 cohorts as well, albeit with less difference between the top 10% and mid 80% than for the 1990s cohorts.

Table 3.7: Reduced form - Are discretionary promotions of juniors meritocratic?

	Fast-track promotions	Official promotions
	(1)	(2)
Cohorts of 1981-1990		
$\overline{Power^p}$	-0.09	-0.00
	(0.07)	(0.00)
$\overline{Power^p}$ × Exam Top 10% (α)	-0.01	-0.00
	(0.06)	(0.01)
$\overline{Power^p}$ × Exam Bottom 10% (β)	0.22***	0.00
	(0.07)	(0.00)
Cohorts of 1991-2000		
$\overline{Power^p}$ × cohort90s	0.04	-0.00
	(0.07)	(0.00)
$\overline{Power^p}$ × Exam Top 10% × cohort90s (μ)	0.38**	0.02***
	(0.15)	(0.01)
$\overline{Power^p}$ × Exam Bottom 10% × cohort90s (π)	-0.41***	-0.01**
	(0.10)	(0.00)
Cohorts of 2001-2010		
$\overline{Power^p}$ × cohort2000s	0.55***	0.01
	(0.13)	(0.01)
$\overline{Power^p}$ × Exam Top 10% × cohort2000s (θ)	0.05	0.01
	(0.26)	(0.01)
$\overline{Power^p}$ × Exam Bottom 10% × cohort2000s (η)	-0.69**	-0.01
	(0.26)	(0.02)
Ho: $\alpha=\beta$ (p-value)	0.00	0.77
Ho: $\mu=\pi$ (p-value)	0.00	0.00
Ho: $\theta=\eta$ (p-value)	0.01	0.47
Controls	Yes	Yes
Cohort & time FE	Yes	Yes
Mean	0.31	0.01
person x mon	12567	15096
cohorts	31	31

* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Power of potential seniors ($\overline{Power}^p$) is the average rule-based rank, over time, of potential seniors that junior PAS bureaucrats could have worked with in the first job. Official promotions are promotions that are based on experience, training and subjective performance evaluation of the bureaucrat by the immediate bosses. It is defined as a dummy that turns on one whenever the bureaucrat is officially promoted to the next rank. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It 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. 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. The omitted category is mid 80% exam performers. Mean is mean value for the outcome variable in the estimation sample. Cohort & month-year FE, experience, experience squared of the junior, time trend of the first job, official rank of the junior and dummy for whether the job is in the field offices is included. Official rank of the junior is not included in columns (2). All specifications exclude first job.

Table 3.8: Second stage - Are discretionary promotions of juniors meritocratic?

	OLS		IV	
	Fast-track promotions	Official promotions	Fast-track promotions	Official promotions
	(1)	(2)	(3)	(4)
Cohorts of 1981-1990				
$\overline{Power}$	-0.19*	0.01*	-0.08	-0.00
	(0.09)	(0.00)	(0.10)	(0.00)
$\overline{Power}$ × Exam Top 10% (α)	-0.08	0.01	-0.05	-0.00
	(0.07)	(0.01)	(0.07)	(0.01)
$\overline{Power}$ × Exam Bottom 10% (β)	0.24***	0.00	0.25***	0.00
	(0.06)	(0.00)	(0.08)	(0.00)
Cohorts of 1991-2000				
$\overline{Power}$ × cohort90s	0.02	-0.00	0.07	-0.00
	(0.08)	(0.00)	(0.10)	(0.00)
$\overline{Power}$ × Exam Top 10% × cohort90s (μ)	0.35	0.00	0.55***	0.02
	(0.24)	(0.01)	(0.13)	(0.01)
$\overline{Power}$ × Exam Bottom 10% × cohort90s (π)	-0.46***	-0.01	-0.53***	-0.01*
	(0.10)	(0.01)	(0.11)	(0.00)
Cohorts of 2001-2010				
$\overline{Power}$ × cohort2000s	0.20	0.02***	0.80***	0.01
	(0.12)	(0.01)	(0.24)	(0.02)
$\overline{Power}$ × Exam Top 10% × cohort2000s (θ)	0.00	-0.00	0.01	0.01
	(0.36)	(0.02)	(0.43)	(0.03)
$\overline{Power}$ × Exam Bottom 10% × cohort2000s (η)	-0.43*	-0.00	-1.12**	-0.02
	(0.24)	(0.01)	(0.42)	(0.04)
Ho: $\alpha=\beta$ (p-value)	0.00	0.50	0.01	0.83
Ho: $\mu=\pi$ (p-value)	0.00	0.31	0.00	0.04
Ho: $\theta=\eta$ (p-value)	0.25	0.97	0.04	0.52
Controls	Yes	Yes	Yes	Yes
Cohort & time FE	Yes	Yes	Yes	Yes
Mean	0.31	0.01	0.31	0.01
person x mon	12525	15051	12525	15049
cohorts	31	31	31	31

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Power of seniors ($\overline{Power}$) is the average rank of seniors of newly recruited PAS bureaucrats that work with them in the first job. It is measured as the average official promotions, over time, of the set of seniors. Official promotions are promotions that are based on experience, training and subjective performance evaluation of the bureaucrat by the immediate bosses. It is defined as a dummy that turns on one whenever the bureaucrat is officially promoted to the next rank. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It 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. 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. The omitted category is mid 80% exam performers. Mean is mean value for the outcome variable in the estimation sample. Experience, experience squared of the new recruit, time trend of the first job, official rank of the junior and dummy for whether the job is in the field offices is included. Official rank of the junior is not included in columns (2) and (4). Cohort & month-year FE included in all specifications. All specifications exclude first job.

Results in this chapter suggest that promotions at the discretion of seniors have not always been meritocratic. This begs the question of why we see meritocracy of discretionary promotions when we do. The next chapter takes up this line of inquiry and suggests two potential mechanism for why discretion can result in meritocratic promotions, i.e. direct self interest of the senior through a discretion in the choice of their team and reputation concerns of seniors on referrals of juniors.

Chapter 4

Why are discretionary promotions meritocratic?

This chapter investigates potential reasons for why promotions are meritocratic. When considering delegation of decisions, Holmstrom (1978), Holmstrom et al. (1982) argue that questions of whether objectives of the person exercising discretion are aligned with those of the organization, are important. Prendergast & Topel (1993) and Prendergast & Topel (1996) provide conditions under which discretion can result in the use of local information rather than patronage: ge.

> Favoritism is accentuated when the supervisor is not responsible
> for the performance of the subordinate. A means of aligning
> the supervisor's incentives with those of the organization is to tie
> rewards to promotion and to make the supervisor responsible for
> the output of the job to which his subordinates are promoted...the
> firm can reduce favoritism by requiring that supervisors maintain
> responsibility for their promoted subordinates. (Prendergast &
> Topel (1993) p.360)

This study follows this line of reasoning and empirically tests for whether seniors promote meritocratically in their own self interest. Two mechanisms are tested. First, whether seniors promote meritocratically because seniors don't just have discretion in promotions of junior workers, but they also have additional discretion over the choice of their team members. Since the type of people promoted in the senior's team have a direct affect on their own

performance, the chances that a bottom performer is pulled into their team and promoted are low. One can expect this to be reverse for the top performers.[1]

Second, a complementary reason behind meritocracy is also investigated. If with increased power of seniors, only high exam performing juniors move across other teams and get fast-track promotions there, then that is consistent with the idea that: first, there are referrals by seniors; and second, reputation of the senior matters to him or her.

Using a multinomial logit framework, this study is able to test not just the existence but also the relative strength of these competing mechanisms. A multinomial logit also allows for a well defined reference category and can help exploit the richness of the data more than a linear specification would.

For j=1, 2 and 3, the estimation of interest is as follows:

$$ln\frac{P(w_{ict} = j)}{P(w_{ict} = J)} = \rho_{cj} + \rho_{tj} + \theta_j Exam_{ic} + \kappa_j \overline{Power}_{ct} + \alpha_j \overline{Power}_{ct} \times Exam\ top\ 10_{ic}$$

$$+ \beta_j \overline{Power}_{ct} \times Exam\ bottom\ 10_{ic} + \lambda_j X_{ict} \quad (4.1)$$

where

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

- j=2 if junior starts working in other teams & gets fast-track promoted

- j=3 if junior starts working in any senior's team & gets fast-track promoted

$\overline{Power}$ is the power of seniors. It is defined as the average official rank of first seniors that juniors work with in their first job. In the reduced form estimation, $\overline{Power}$ is replaced with power of potential seniors ($\overline{Power}^p$). Power of potential seniors is the average, rule-based rank of the potential seniors that juniors could have worked with, in their first job. Exam top 10%, bottom 10% are dummy variables that turn on 1 whenever a junior i, of cohort c, is in the top (bottom) 10% of their cohort in the recruitment exam. Cohort and month-year FE, experience of the junior, experience squared, time trend of the first job, official rank of the junior and dummy for whether the job is in the field offices

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[1] This analysis rests on the premise that seniors care about their own performance. In a way this test also sheds light on how this particular Pakistani bureaucracy works.

is included. All specifications exclude first job. Error terms are clustered at the cohort level as that is the level at which seniors are allocated (Abadie et al. (2017)).

Probability of working in senior's team by exam performance
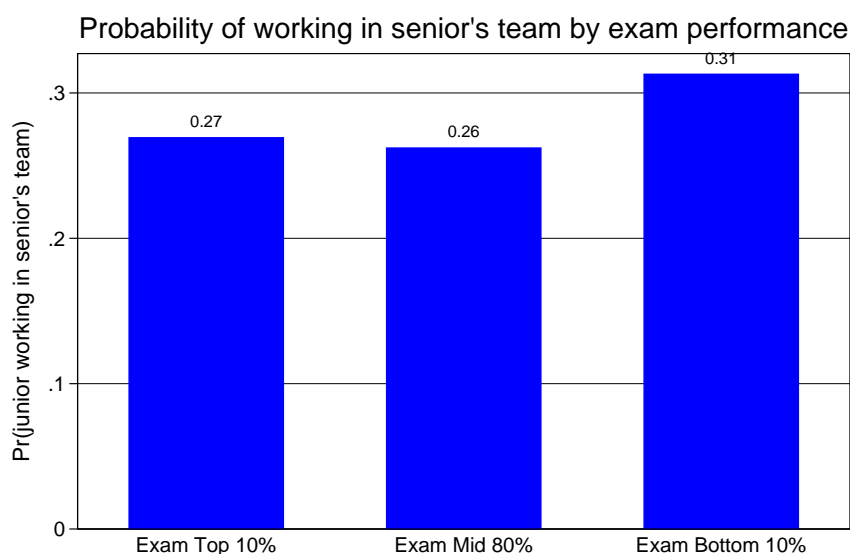
Figure 4.1: The figure shows average time spent by different exam performing juniors in the team of the first seniors. I exclude the first job where junior workers meet their first seniors and see what is the probability that in the rest of the long run career of the first seniors and junior workers systematically work together

Fast-track promotion in senior's team by exam performance
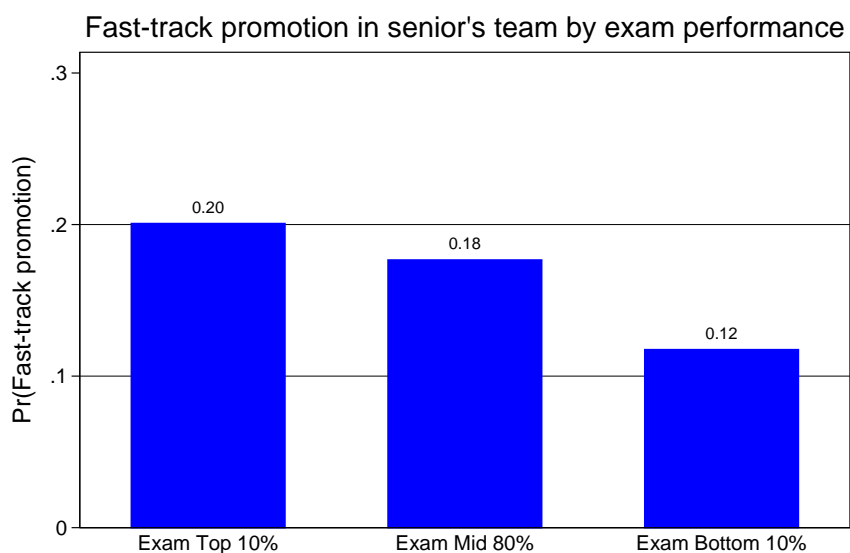
Figure 4.2: The figure shows the average length of time different exam performing juniors remain fast-tracked in the team of the first seniors.

Figure 4.1 presents descriptive evidence on the long-run probability of juniors working in the team of their first seniors, split by exam performance.
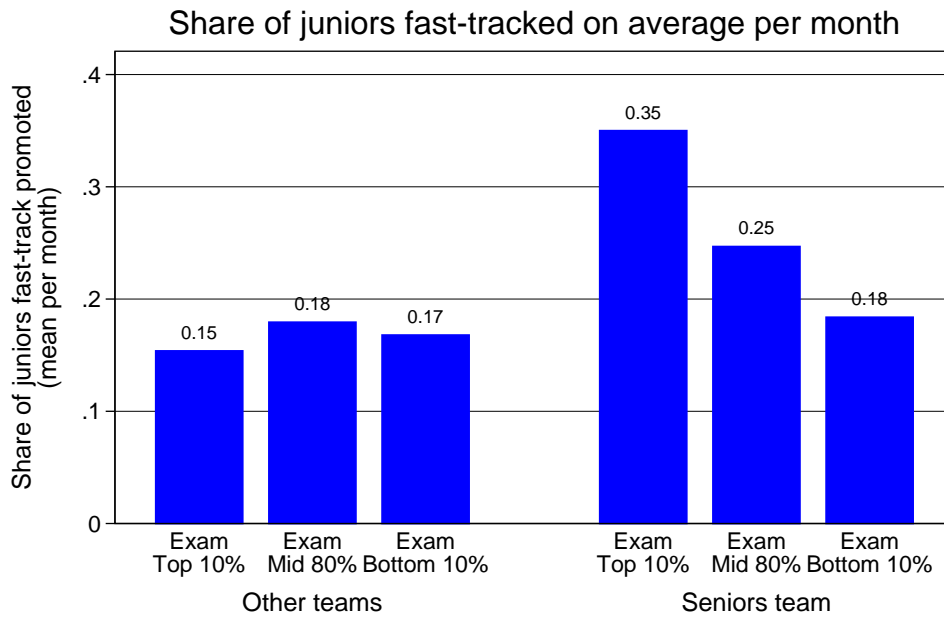
Figure 4.3: This figure shows the average share of different exam performing juniors that are fast-tracked per month in the team of the first senior versus other teams. This probability is reported for the long run career of juniors after excluding their first job, where juniors meet their first seniors.

Data suggests that in the long-run, the top 10% have a 27% probability of working in the team of their first seniors. One-third of their career in the bureaucracy is spent in the team of those seniors they met in the first job. The percentage is similar for the mid 80% exam performers, while it is higher for bottom 10%. On average, bottom 10% exam performers systematically end up in the team of their first seniors, more than the rest of the juniors.

Figure 4.2 presents descriptive evidence on fast-track promotions within the team of seniors. The figure suggests that promotions in the senior's team are meritocratic. While bottom 10% exam performers might end up systematically more in the team of their first seniors, when it comes to fast-track promotions, it is the high types that are more likely to get promoted. If we take an average top 10% exam performer, data suggests that they will spend 20% of their career fast-tracked in the team of the seniors. The percentage is 18% for the mid 80% and 12% for the bottom 10% exam performers.

Figure 4.3 presents similar evidence according to the share of juniors that are fast-tracked in a given month. The share of juniors fast-tracked are split both by exam performance and by the types of teams. In any given month, we can see that promotions are meritocratic in the team of seniors. On the other hand, promotions in other teams is more or less similar across exam performance. Below results using multinomial logit estimation are presented.

Table 4.1: Multinomial logit: Why are discretionary promotions meritocratic?

	Base category: not fast-track promoted					
	Start work in other teams & Promoted	Start work in senior's team & Promoted	Start work in other teams & Promoted	Start work in senior's team & Promoted	Start work in other teams & Promoted	Start work in senior's team & Promoted
			IV-control function		Reduced form	
	(1)	(2)	(3)	(4)	(5)	(6)
$\overline{Power}$	-0.37 [0.27]	-0.20 [0.71]	-0.32 [0.64]	-0.32 [0.74]		
Exam Top 10%	-0.51 [0.14]	0.00 [1.00]	-0.55* [0.09]	-0.00 [1.00]	-0.49 [0.16]	-0.02 [0.97]
Exam Bottom 10%	-0.46 [0.18]	-0.55 [0.41]	-0.56* [0.08]	-0.59 [0.39]	-0.52* [0.07]	-0.57 [0.40]
$\overline{Power} \times$ Exam Top 10% (α)	0.07 [0.90]	0.61 [0.11]	0.44 [0.50]	1.22** [0.03]		
$\overline{Power} \times$ Exam Bottom 10% (β)	-0.33 [0.71]	-1.50 [0.19]	-0.07 [0.95]	-2.39* [0.06]		
$\overline{Power}^{p}$					-0.11 [0.77]	-0.19 [0.70]
$\overline{Power}^{p} \times$ Exam Top 10% (α)					0.40 [0.42]	0.95*** [0.00]
$\overline{Power}^{p} \times$ Exam Bottom 10% (β)					-0.08 [0.91]	-1.47* [0.09]
$\alpha=\beta$ (p-value)	0.71	0.03	0.69	0.00	0.59	0.00
Other teams (α)=Seniors team (α) (p-value)	0.26		0.16		0.16	
Other teams (β)=Seniors team (β) (p-value)	0.20		0.04		0.07	
Controls	Yes		Yes		Yes	
Cohort & time FE	Yes		Yes		Yes	
person x mon	16736		16697		16885	
cohorts	39		39		39	

+ $p<0.12$, * $p<0.1$, ** $p<0.05$, *** $p<0.01$. Bootstrapped p-values in parentheses.

Note: 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. I define working in the senior's teams and promoted is a dummy that turns on one whenever the juniors is working in the team of their first seniors. These two variables are used to create the different categories for multinomial logit. Power of seniors ($\overline{Power}$) is the average official rank, over time, of the first set of seniors. Power of potential seniors ($\overline{Power}^{p}$) is the average rule-based rank, over time, 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. The omitted category is mid 80% exam performers. Cohort & month-year FE, experience, experience squared of the new recruit, time trend of the first job, official rank of the junior and dummy for whether the job is in the field offices is included. All specifications exclude first job.

4.1 Results: Why are discretionary promotions meritocratic?

Table 4.1 presents the main results on why discretionary promotions are meritocratic. The base category in the analysis is the probability of the junior not being fast-tracked. The first two columns of table 4.1 report results for a simple multinomial logit without accounting for any potential endogeneity of $\overline{Power}$. While columns (3)-(4) report multinomial IV results using a control function approach. This is implemented following standard techniques suggested by Petrin & Train (2010) and Imbens & Wooldridge (2007). Columns (5)-(6) present the reduced form results. Score bootstrap p-values, as suggested by Kline & Santos (2012) and implemented through Roodman et al. (2019)'s program in Stata, are reported in parenthesis. The coefficients reported are log relative risk ratios, relative to the base category.

While the first column in all specifications sheds light on whether there are referrals and whether seniors care about their reputation on referrals of juniors; the second column investigates whether seniors promote meritocratically in their direct self interest, i.e. they have discretion in the choice of their teams and fast-track promotions in it.

Reduced form results in column (6) of table 4.1 show that a one rank above average increase in the power of potential senior results in nearly one time higher log of relative risk ratio for the top 10% exam performers to start working in the seniors team and be fast-track promoted there (relative to the base category). The effect is statistically significant and precisely estimated. The bootstrapped p-value is zero. The effect is similar when using a control function. In column (2) the p-value of the effect is 0.11, suggesting that the effect is also nearly significant using a simple multinomial logit.

While the differential effect for the top is positive, it is large and negative for the bottom 10% exam performers. In the reduced form results in column (6), a one rank above average increase in the power of seniors leads to nearly 1.5 times lower log of relative risk ratio for the bottom 10% exam performers to start working in the seniors team and be fast-tracked there (relative to the base category). This effect is larger when using a control function approach. Effects reported in column (2) are similar but less precise (the p-value is 0.19). At the bottom of the table, an F-test of $\alpha = \beta$, within the team of the senior, rejects the null in all specifications.

Results show that there is also a complementary effect that operates through reputation concerns of seniors on referrals. However, it is not as strong as the effect for the seniors own team. In column (5) of table 4.1, reduced form results show that a one rank above average increase in the power of seniors results in nearly 0.4 times higher log of relative risk ratio for the top 10% exam performers to move teams and be fast-tracked (relative to the base category). This effect is half of the effect that we find for the senior's own team in column (6). However, we cannot statistically significantly reject that the effect on the senior's own team and other teams, for the top 10% exam performing juniors is the same. The p-value is low (0.16).

Relative to the base category, with an increase in power of seniors, referrals of bottom 10% exam performing juniors to other teams is negative but the magnitude is low and the effect is not statistically significant. This is in contrast to the large negative effect we find when we consider discretion of the senior to create their own team. An F-test of the interaction effect for bottom 10% exam performers moving to senior's own team versus other teams rejects the null for both the reduced form and IV-control function specifications.

Results are in line with what Prendergast & Topel (1993) argue. Since a low type in the team can negatively impact the senior's own performance, therefore, seniors with discretion ensure that a bottom 10% performer does not start work in their team and get fast-tracked there. This is the reverse for top 10% exam performers. Moreover, there are referrals by seniors to other teams and given their meritocratic nature, reputation does matter to the senior. However, compared to the effect on their own team, these do not appear to be of first order importance.

Taken together, these results suggest that incentives of the person exercising discretion is key for meritocracy of discretionary promotions. If institutions are such that these incentives are aligned with that of the organization then the chance of meritocracy is high.

4.2   A move to meritocracy: What can we learn from the decadal analysis of cohorts?

Chapter 3.3 shows how fast-track promotions by seniors varied over different decades of cohorts of juniors. Results showed that discretionary promotions were not meritocratic for the 1980s cohorts while this trend reversed in the

1990s. In this chapter, I investigate the reasons behind these trends in meritocracy. The key motivation behind the analysis is: first, to understand the decadal trends in discretion in team formation as well as reputation concerns of seniors on referrals; and second, to investigate whether (and which) of the two competing mechanisms can help shed light on the move to meritocracy of promotions starting from the 1990s cohorts.

Multinomial logit regression results are reported in table 4.2 and 4.3. Estimation is similar as in equation 4.1 with an added layer of heterogeneity by decades of cohorts of juniors. As in chapter 3.3, the analysis is restricted to 3 decades of cohorts from 1980-2010. Table 4.2 columns (1)-(2) present results using $\overline{Power}$ while columns (3)-(4) report results using an IV-control function approach. Table 4.3 reports reduced form results. The base category is not fast-track promoted. Columns (1) and (3) in table 4.2 and column (1) in table 4.3, show the effect of power of seniors on moves of juniors across other teams and promotions there, while columns (2) and (4) in table 4.2 and column (2) in table 4.3, report results for moves to and promotions in senior's own team.

There are two main takeaways. First, when it comes to the senior's own team, the senior persistently pushes out a bottom 10% exam performing junior and does not promote them. On the other hand, the senior brings into their team and promotes a top 10% exam performer. This effect persists even for the 1980s cohorts, that did not experience meritocratic discretionary promotions on average. However, the effects are not significant across all specifications. It appears that self-interest of the senior remains an important determinant of meritocracy of promotions.

Second, a change in moves to and promotion in other teams, mimics the trend of meritocratic discretionary promotions starting in the 1990s, shown in chapter 3.3. For the 1980s cohorts, relative to the base category, with an increase in power of the seniors, the log of relative risk ratio is higher for bottom 10% exam performers to move teams and be fast-track promoted. The effect is large and precisely estimated with a p-value of zero across all specifications. On the other hand, top 10% exam performers are less likely to move teams and be fast-tracked. The positive differential effect for the bottom 10% exam performers is much larger than the negative effect for the top 10%. An F-test at the bottom of the table testing $\alpha = \beta$ has a p-value of zero across all specifications. This suggests that referrals by seniors in the 1980s were not meritocratic. However, this trend reversed in the 1990s and 2000s.

Moreover, in nearly all specifications for these decades, I can reject that the effect of power of seniors on the top and bottom end of the exam distribution ($\mu = \pi$, $\theta = \eta$), is the same. This suggests that starting in the 1990s reputation concerns of the senior referring a junior to other teams became important; so that referrals of low type reduced, while those of high type increased.

Overall, results of the decadal analysis in this chapter are consistent with the idea that it was a change in reputation concerns of seniors on referrals that might be a driver of the move towards meritocracy in the 1990s. It would be important to investigate this further and understand what triggered this change. One potential explanation behind this shift can be a change from a military dictatorship to democratically elected governments in the 1990s. It is possible that democratic governments allowed more discretion to senior bureaucrats and the environment triggered salience of reputation concerns on referrals by seniors. It is possible that such a change persisted through the decades, even when Pakistan reverted back to dictatorship in 1999. Future research should investigate these aspects further.

Table 4.2: Multinomial logit: Why are discretionary promotions meritocratic?

	Base category: not fast-track promoted			
	Start work in other teams & Promoted	Start work in senior's team & Promoted	Start work in other teams & Promoted	Start work in senior's team & Promoted
			IV-control function	
	(1)	(2)	(3)	(4)
Cohorts of 1981-1990				
$\overline{Power}$	-0.03 [0.93]	0.83 [0.25]	-0.04 [0.94]	-1.17 [0.36]
$\overline{Power}$ × Exam Top 10% (α)	-0.85* [0.05]	0.76 [0.26]	-0.97* [0.08]	1.42* [0.06]
$\overline{Power}$ × Exam Bottom 10% (β)	2.67*** [0.00]	-1.06 [0.34]	3.95*** [0.00]	-1.28 [0.28]
Cohorts of 1991-2000				
$\overline{Power}$ × cohort90s	-0.70 [0.12]	-1.80 [0.17]	-0.59 [0.49]	0.65 [0.68]
$\overline{Power}$ × Exam Top 10% × cohort90s (μ)	1.55 [0.44]	0.52 [0.36]	2.16 [0.21]	1.95* [0.09]
$\overline{Power}$ × Exam Bottom 10% × cohort90s (π)	-5.07*** [0.00]	-3.90* [0.08]	-6.42*** [0.00]	-5.28** [0.02]
Cohorts of 2001-2010				
$\overline{Power}$ × cohort2000s	1.07 [0.12]	-0.32 [0.81]	3.13* [0.05]	7.58** [0.02]
$\overline{Power}$ × Exam Top 10% × cohort2000s (θ)	-0.30 [0.81]	-0.64 [0.53]	1.10 [0.75]	-0.96 [0.67]
$\overline{Power}$ × Exam Bottom 10% × cohort2000s (η)	-4.87** [0.01]	1.52 [0.31]	-9.28*** [0.00]	-3.85 [0.44]
$\alpha=\beta$ (p-value)	0.00	0.14	0.00	0.04
Other teams (α)=Seniors team (α) (p-value)	0.06		0.03	
Other teams (β)=Seniors team (β) (p-value)	0.01		0.00	
$\mu=\pi$ (p-value)	0.00	0.04	0.00	0.00
$\theta=\eta$ (p-value)	0.08	0.17	0.01	0.46
Other teams (θ)=Seniors team (θ) (p-value)	0.76		0.48	
Other teams (η)=Seniors team (η) (p-value)	0.01		0.47	
Controls	Yes		Yes	
Cohort & time FE	Yes		Yes	
person x mon	12405		12404	
cohorts	31		31	

+ p<0.12, * p<0.1, ** p<0.05, *** p<0.01. Bootstrapped p-values in parentheses.

Note: 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. I define working in the senior's (other) teams and promoted is a dummy that turns on one whenever the juniors is (not) working in the team of their first seniors. These two variables are used to create the different categories for multinomial logit. Power of seniors ($\overline{Power}$) is the average official rank, over time, of the first set of seniors. 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. The omitted category is mid 80% exam performers. Cohort & month-year FE and controls included. All specifications exclude first job.

Table 4.3: Multinomial logit: Why are discretionary promotions meritocratic?

	Base category: not fast-track promoted	
	Start work in other teams & Promoted	Start work in senior's team & Promoted
	Reduced form	
	(1)	(2)
Cohorts of 1981-1990		
$\overline{Power}^p$	-0.09 [0.80]	-0.15 [0.80]
$\overline{Power}^p \times$ Exam Top 10% (α)	-0.75** [0.03]	0.48 [0.30]
$\overline{Power}^p \times$ Exam Bottom 10% (β)	2.97*** [0.00]	-0.85 [0.31]
Cohorts of 1991-2000		
$\overline{Power}^p \times$ cohort90s	-0.67 [0.13]	-0.53 [0.59]
$\overline{Power}^p \times$ Exam Top 10% $\times$ cohort90s (μ)	1.37 [0.38]	1.30* [0.07]
$\overline{Power}^p \times$ Exam Bottom 10% $\times$ cohort90s (π)	-4.81*** [0.00]	-3.03* [0.05]
Cohorts of 2001-2010		
$\overline{Power}^p \times$ cohort2000s	1.82* [0.05]	3.00* [0.08]
$\overline{Power}^p \times$ Exam Top 10% $\times$ cohort2000s (θ)	0.69 [0.71]	0.24 [0.86]
$\overline{Power}^p \times$ Exam Bottom 10% $\times$ cohort2000s (η)	-5.81** [0.01]	-0.42 [0.82]
$\alpha=\beta$ (p-value)	0.00	0.13
Other teams (α)=Seniors team (α) (p-value)	0.03	
Other teams (β)=Seniors team (β) (p-value)	0.00	
$\mu=\pi$ (p-value)	0.00	0.00
$\theta=\eta$ (p-value)	0.02	0.75
Other teams (θ)=Seniors team (θ) (p-value)	0.75	
Other teams (η)=Seniors team (η) (p-value)	0.06	
Controls	Yes	
Cohort & time FE	Yes	
person x mon	12430	
cohorts	31	

+ p<0.12, * p<0.1, ** p<0.05, *** p<0.01. Bootstrapped p-values in parentheses.

Note: 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. I define Working in the senior's (other) teams and promoted is a dummy that turns on one whenever the juniors is (not) working in the team of their first seniors. These two variables are used to create the different categories for multinomial logit. Power of potential seniors ($\overline{Power}^p$) is the average rule-based rank, over time, 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. The omitted category is mid 80% exam performers. Cohort & month-year FE and controls included. All specifications exclude first job.

Chapter 5

Do seniors use their private information to promote meritocratically?

The analysis in the previous chapters tested for meritocracy of discretionary promotions using observable measures of merit. However, the true value of allowing discretion to seniors to promote, is to allow them to use their private information on juniors in promotion decisions. Testing whether seniors use their private information meritocratically allows an insight into the true cost of imposing rigid rules that take away subjectivity.

Before I proceed to the estimation and results, some institutional features are worth mentioning. First, in this setting, seniors never enjoy complete discretion on careers of juniors. Fast-track promotion decisions are made by more than one senior civil servant, under the final authority of the chief executive of the province. While rest of the decision makers only observe the career charts of the junior bureaucrats and their exam ranking, it is just the first seniors that also observe tax performance of juniors. Therefore, the use of this private information by the seniors is not cost-less. Any effects operate in a constrained environment and can be thought of as the lower bound on the true effects of allowing complete discretion.

Figure 5.1 shows the probability of different exam performing juniors to be top 10% tax collectors. The figure shows that being a good exam performer differentially predicts better tax collection, however, the correlation is not one-for-one. A top 10% exam performer has a 33% probability of being a top 10% tax collector. The probability for the mid 80% and bottom 10% exam performers is 20% and 14% respectively. This suggests that exam performance

does not perfectly predict performance on the job. Therefore, using seniors to exercise their discretion can be valuable for the organization.
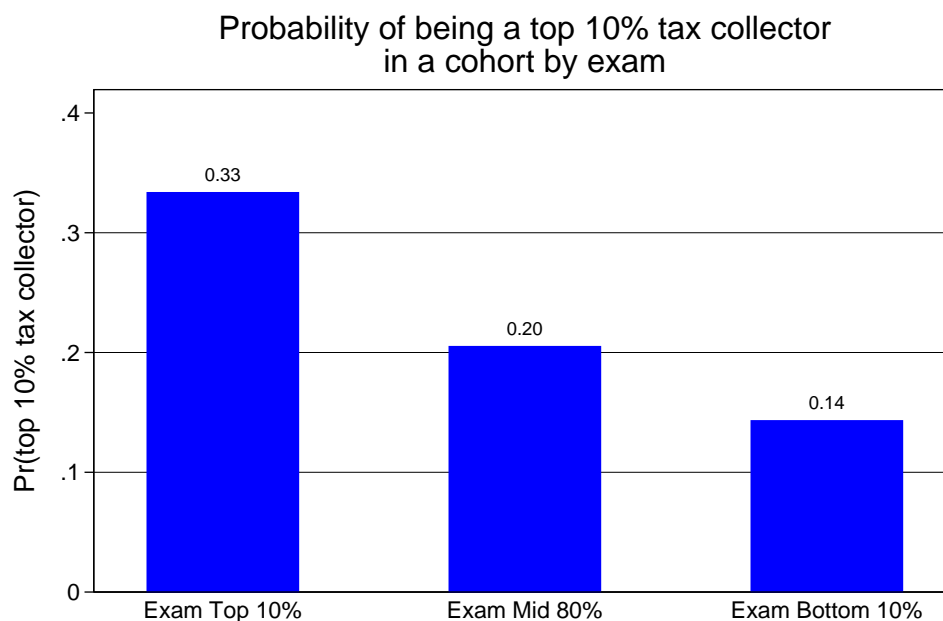
Figure 5.1: Probability of different exam performing juniors in a cohort to be top 10% tax collectors.

Results in table 3.1 and figure 3.3 in chapter 3, suggest that the probability of fast-track promotion of different tax performing juniors is meritocratic on average, although the differential effects are not significant. In this chapter, I investigate whether the public and privately observed measures of merit are complements with discretion. It is important to test this complementarity as only then can we see whether information is generated for the organization through discretion. If we find that juniors with the same observable levels of exam performance, have a different long run career trajectory based on the private information of the seniors, then it suggests that seniors bring in extra local information in decision making. This will help shed light on the true value of discretion. This test is also in line with the institutional features described above.

Descriptive evidence on fast-track promotions of top 10% exam performers, by their tax performance and power of seniors is presented in figure 5.2. A similar exercise is carried out for the bottom 10% exam performers in figure 5.3. It can be seen that for any level of tax performance and power of seniors, the top 10% exam performers have a higher probability of being fast-tracked

than the bottom 10% exam performers. However, those with powerful seniors have a higher probability of fast-track promotions when they are also star tax collectors. This is the case for both top and bottom 10% exam performers. But this effect reverses when seniors have less power. Both these figures suggests that seniors use their private information meritocratically, implying that there is value from allowing discretion. I explore this further using a regression framework below.
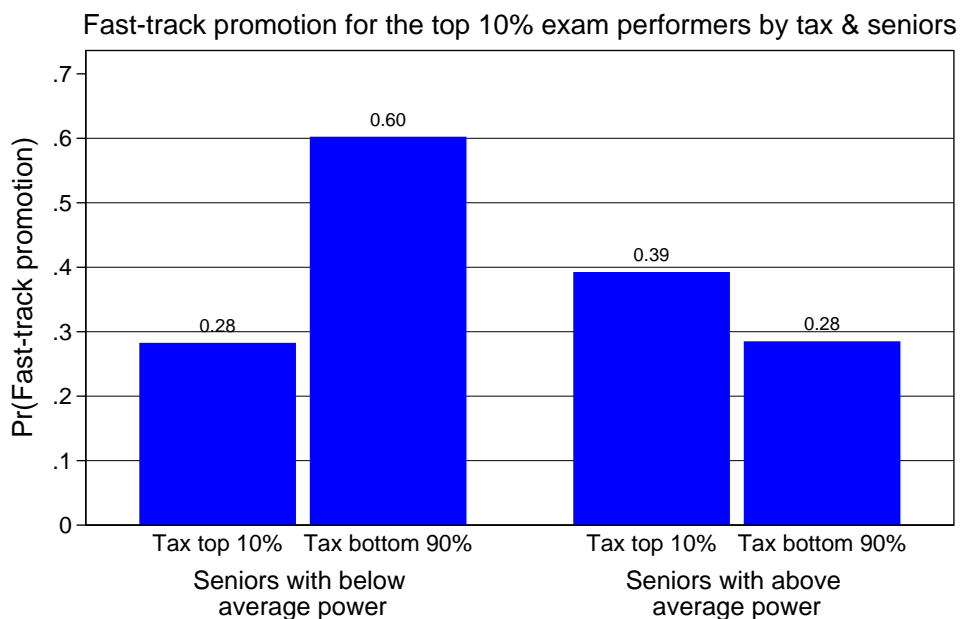
Figure 5.2: The figure plots the probability of fast-track promotion of top 10% exam performers by their tax performance and the power of their seniors

The following specification is implemented:

$$Fast-track_{ict} = \beta \, \overline{Power}_{ct} \times Exam_{ic} + \theta \, \overline{Power}_{ct} \times Exam_{ic} \times \overline{Tax}_{ic} + \delta W_{ict} + u_{ict}$$

(5.1)

where:

$$W_{ict} = \kappa_c + \kappa_t + \gamma Exam_{ic} + \eta \overline{Tax}_{ic} + \alpha \overline{Power}_{ct} + \phi \overline{Power}_{ct} \times \overline{Tax}_{ic} + \mu X_{ict}$$

$Fast-track_{ict}$ is the probability of fast-track promotion of junior i, of cohort c, in month-year t. Fast-track promotion is defined as a dummy that turns on 1 whenever the actual rank of the junior bureaucrat is higher than his or her official rank. $Exam_{ic} \in \{top\ 10\%, mid\ 80\%\}$ are dummy variables that turn on

Fast-track promotion for the bottom 10% exam performers by tax & seniors
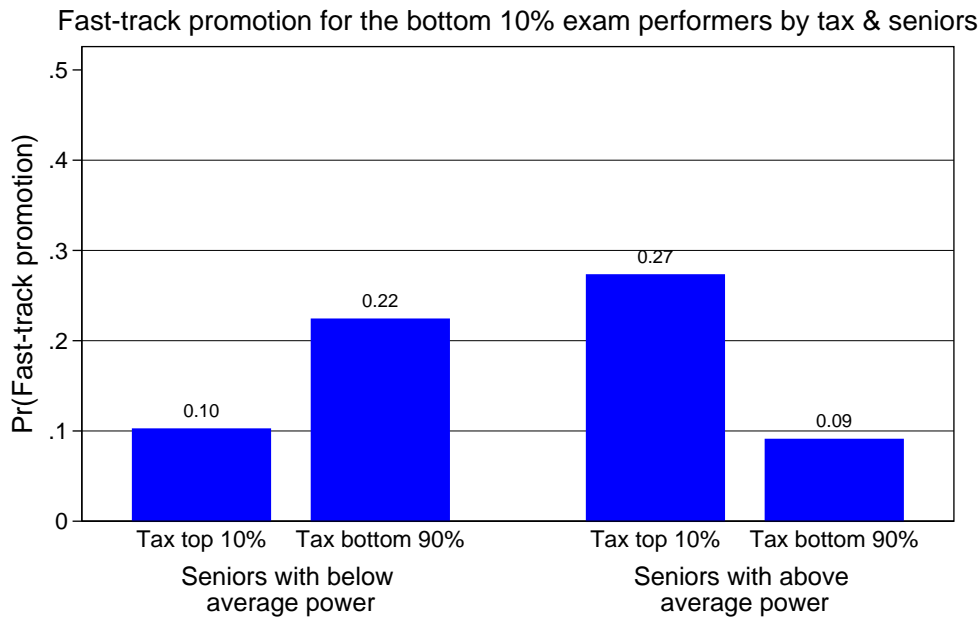
Figure 5.3: The figure plots the probability of fast-track promotion of bottom 10% exam performers by their tax performance and the power of their seniors

1 whenever a junior i, of cohort c, is in the top 10%, mid 80% of their cohort in the recruitment exam respectively. $\overline{Tax}_{ic}$ is a dummy that turns on 1 whenever the new recruit i, of cohort c, is in the top 10% of their cohort in tax collection. I also show results for other classifications of top tax collectors as 20%, 30%, 40% and 50%.

Cohort and month-year FE, experience of the new recruit, time trend of the first job and official rank of the junior is included. I exclude the first job from the analysis where juniors get their first seniors. $\overline{Power}_{ct}$ is the power of seniors. It is measured as the average official rank of the first set of seniors. I use power of potential seniors ($\overline{Power}_{ct}^{p}$) to induce a source of variation in power of seniors. Error terms are clustered at the cohort level as that is the level at which first seniors are allocated (Abadie et al. (2017)).

If we find that $\beta \neq \theta$ for different exam and tax categories, with $\beta < \theta$, then that would suggest that seniors exercise discretion using their private information meritocratically.

5.1 Results: Do seniors use their private information meritocratically?

Table 5.1 presents the OLS results, while table 5.2 and 5.3 show the reduced form and IV results respectively. The first stage of the IV is in table 5.4.

Columns (1)-(5) use different definitions of $\overline{Tax}$. In column (1), in all tables, I report results defining $\overline{Tax} = Top$ 10% tax collectors in their cohort. This definition of $\overline{Tax}$ is replaced with top 20, top 30, top 40 and top 50% tax collectors as we move across columns, respectively. In all specifications, across columns (1)-(5), the omitted category is bottom 10% exam and bottom 90%, 80%, 70%, 60% and 50% tax performers, respectively.

Results in all tables suggest that seniors use their private information meritocratically and differentiate between juniors with the same observable measures of merit. Consider juniors that are top 10% exam performers. For the organization they are star bureaucrats. However, seniors know that not all of them are star tax collectors. Results in table 5.2 show that those juniors that are star exam performers, but not star tax collectors, have half the probability of being fast-tracked by seniors, as compared to those who are star performers on both dimensions. The effects are economically significant as well. Results are similar across OLS, IV and reduced form specifications, however, an F-test testing whether $\alpha = \beta$, has a p-value below 0.1 only in the IV and reduced form specifications.

The interesting thing is that this effect of discretion operates at the bottom end of the exam distribution as well. Consider those juniors that are bottom 10% exam performers. These are those that are observationally low types. However, only the senior observes that not all of them are lemons. Results in table 5.2 show that those bottom 10% exam performers who are star tax collectors (top 10% tax) have a 2 times higher probability of being fast-tracked than those who are bottom in both dimensions. These hidden gems are fast-tracked at nearly the same rate as the mid 80% exam performers. An F-test of $\mu = \theta$ rejects equality of the effect in all specifications. The effect is meritocratic and $\theta < \mu$. Results are similar across specifications.

There appears to be no effect of the private information of the first seniors for the mid 80% exam performers. At the bottom of the table, p-value of the F-test for $\pi = \gamma$ fails to reject the null in all specifications. One way to interpret this is to go back to the institutional environment in which seniors are exercising their discretion. Seniors don't enjoy complete discretion over promotions and the use of their private information is not cost-less. Since others do not get to observe tax performance, convincing other senior civil servants for promotions of mid might not be worth the pain. There are only a few positions open for promotions. Therefore, seniors use their private information to differentiate within the top 10% exam performers. This is done

Table 5.1: OLS - Do seniors use pvt. info meritocratically?

	Dependent variable: Fast-track promotions (second job onwards)				
	$\overline{Tax}$=Top 10%	$\overline{Tax}$=Top 20%	$\overline{Tax}$=Top 30%	$\overline{Tax}$=Top 40%	$\overline{Tax}$=Top 50%
	(1)	(2)	(3)	(4)	(5)
$\overline{Power}$ × Exam Top10% × $\overline{Tax}$ (α)	0.85***	0.66	0.69	0.44	0.61
	(0.18)	(0.39)	(0.43)	(0.34)	(0.41)
$\overline{Power}$ × Exam Top10% (β)	0.50*	0.32	0.36	0.49	0.59*
	(0.24)	(0.31)	(0.34)	(0.34)	(0.32)
$\overline{Power}$ × Exam Mid80% × $\overline{Tax}$ (π)	0.33***	0.14	0.19	0.23	0.35
	(0.11)	(0.40)	(0.42)	(0.41)	(0.37)
$\overline{Power}$ × Exam Mid80% (γ)	0.39***	0.19	0.22	0.21	0.37
	(0.11)	(0.38)	(0.40)	(0.41)	(0.37)
$\overline{Power}$ × Exam Bot10% × $\overline{Tax}$ (μ)	0.40***	-0.04	0.01	0.03	0.18
	(0.14)	(0.42)	(0.45)	(0.45)	(0.41)
$\overline{Power}$ (θ)	-0.38**	-0.16	-0.19	-0.19	-0.36
	(0.14)	(0.41)	(0.43)	(0.42)	(0.38)
Exam Top10%	0.08	0.09	0.09	0.09	0.08
	(0.11)	(0.11)	(0.11)	(0.10)	(0.11)
Exam Mid80%	0.13	0.14*	0.14*	0.14*	0.13
	(0.08)	(0.07)	(0.07)	(0.07)	(0.09)
$\overline{Tax}$	0.01	0.02	0.05	0.07	-0.01
	(0.06)	(0.06)	(0.05)	(0.07)	(0.05)
Ho: $\alpha=\beta$ (p-value)	0.23	0.23	0.27	0.83	0.93
Ho: $\gamma=\pi$ (p-value)	0.49	0.55	0.74	0.87	0.76
Ho: $\mu=\theta$ (p-value)	0.01	0.89	0.82	0.80	0.49
Controls	Yes	Yes	Yes	Yes	Yes
Cohort & time FE	Yes	Yes	Yes	Yes	Yes
Mean	0.35	0.35	0.35	0.35	0.35
person x mon	5668	5668	5668	5668	5668
Cohorts	29	29	29	29	29

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Power of seniors ($\overline{Power}$) is the average official rank of seniors of newly recruited PAS bureaucrats that work with them in the first job. Fast-track promotions are promotions at the discretion of the senior bureaucrats and the chief executive of the province. It 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. $\overline{Tax}$ is a dummy that turns on one when the civil servant is in the top 10, 20, 30, 40 or 50% of the cohort in tax collection. 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. The omitted category is mid 80% exam performers. Mean is mean value for the outcome variable in the estimation sample. Cohort & month-year FE, experience of the new recruit, time trend of the first job and official rank of the junior is included. All specifications exclude first job.

Table 5.2: Reduced form - Do seniors use pvt. info meritocratically?

	Dependent variable: Fast-track promotions (second job onwards)				
	Tax=Top 10%	Tax=Top 20%	Tax=Top 30%	Tax=Top 40%	Tax=Top 50%
	(1)	(2)	(3)	(4)	(5)
$\overline{Power^p} \times$ Exam Top10%$\times \overline{Tax}$ (α)	0.97***	0.99**	0.91**	0.97**	0.72*
	(0.20)	(0.38)	(0.42)	(0.40)	(0.37)
$\overline{Power^p} \times$ Exam Top10% (β)	0.50***	0.52	0.69*	0.65*	0.91***
	(0.14)	(0.36)	(0.37)	(0.35)	(0.32)
$\overline{Power^p} \times$ Exam Mid80% $\times \overline{Tax}$ (π)	0.23**	0.26	0.39	0.44	0.51
	(0.09)	(0.39)	(0.41)	(0.38)	(0.36)
$\overline{Power^p} \times$ Exam Mid80% (γ)	0.30***	0.32	0.43	0.42	0.56
	(0.07)	(0.39)	(0.40)	(0.39)	(0.36)
$\overline{Power^p} \times$ Exam Bot10% $\times \overline{Tax}$ (μ)	0.26**	0.07	0.20	0.22	0.33
	(0.12)	(0.39)	(0.40)	(0.39)	(0.36)
$\overline{Power^p}$ (θ)	-0.23**	-0.25	-0.36	-0.36	-0.50
	(0.11)	(0.37)	(0.39)	(0.38)	(0.35)
Exam Top10%	0.09	0.09	0.09	0.08	0.09
	(0.10)	(0.10)	(0.10)	(0.09)	(0.09)
Exam Mid80%	0.13	0.13*	0.14*	0.14*	0.13
	(0.08)	(0.07)	(0.07)	(0.07)	(0.09)
$\overline{Tax}$	0.02	0.02	0.05	0.07	-0.01
	(0.06)	(0.06)	(0.05)	(0.07)	(0.06)
Ho: $\alpha=\beta$ (p-value)	0.05	0.06	0.44	0.22	0.36
Ho: $\gamma=\pi$ (p-value)	0.37	0.43	0.62	0.89	0.44
Ho: $\mu=\theta$ (p-value)	0.02	0.68	0.49	0.45	0.25
Controls	Yes	Yes	Yes	Yes	Yes
Cohort & time FE	Yes	Yes	Yes	Yes	Yes
Mean	0.35	0.35	0.35	0.35	0.35
person x mon	5701	5701	5701	5701	5701
Cohorts	29	29	29	29	29

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Power of potential seniors ($\overline{Power^p}$) is the average rule-based rank, over time, of potential seniors that junior PAS bureaucrats could have worked with in the first job. Fast-track promotions are promotions at the discretion of the senior bureaucrats and the chief executive of the province. It 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. $\overline{Tax}$ is a dummy that turns on one when the civil servant is in the top 10, 20, 30, 40 or 50% of the cohort in tax collection. 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. The omitted category is mid 80% exam performers. Mean is mean value for the outcome variable in the estimation sample. Cohort & month-year FE, experience of the new recruit, time trend of the first job and official rank of the junior is included. All specifications exclude first job.

Table 5.3: Second stage - Do seniors use pvt. info meritocratically?

	Dependent variable: Fast-track promotions (second job onwards)				
	$\overline{Tax}$=Top 10%	$\overline{Tax}$=Top 20%	$\overline{Tax}$=Top 30%	$\overline{Tax}$=Top 40%	$\overline{Tax}$=Top 50%
	(1)	(2)	(3)	(4)	(5)
$\overline{Power} \times$ Exam Top10% $\times \overline{Tax}$ (α)	1.33***	1.34***	1.42***	1.49***	1.52**
	(0.13)	(0.41)	(0.43)	(0.45)	(0.74)
$\overline{Power} \times$ Exam Top10% (β)	0.70***	0.70	0.87*	0.82*	1.09**
	(0.15)	(0.43)	(0.45)	(0.43)	(0.40)
$\overline{Power} \times$ Exam Mid80% $\times \overline{Tax}$(π)	0.35***	0.35	0.50	0.55	0.63
	(0.08)	(0.48)	(0.49)	(0.46)	(0.44)
$\overline{Power} \times$ Exam Mid80% (γ)	0.43***	0.42	0.54	0.53	0.69
	(0.11)	(0.48)	(0.48)	(0.47)	(0.43)
$\overline{Power} \times$ Exam Bot10% $\times \overline{Tax}$ (μ)	0.35*	0.09	0.25	0.29	0.39
	(0.19)	(0.50)	(0.50)	(0.49)	(0.46)
$\overline{Power}$ (θ)	-0.34	-0.33	-0.45	-0.44	-0.62
	(0.23)	(0.46)	(0.47)	(0.45)	(0.43)
Exam Top10%	0.08	0.08	0.08	0.05	0.07
	(0.10)	(0.10)	(0.10)	(0.10)	(0.11)
Exam Mid80%	0.13	0.13*	0.14*	0.14*	0.13
	(0.08)	(0.08)	(0.08)	(0.08)	(0.09)
$\overline{Tax}$	0.03	0.03	0.05	0.07	-0.01
	(0.05)	(0.05)	(0.05)	(0.06)	(0.06)
Ho: $\alpha=\beta$ (p-value)	0.00	0.00	0.00	0.00	0.52
Ho: $\gamma=\pi$ (p-value)	0.36	0.42	0.63	0.85	0.47
Ho: $\mu=\theta$ (p-value)	0.10	0.66	0.47	0.43	0.25
Control	Yes	Yes	Yes	Yes	Yes
Cohort & time FE	Yes	Yes	Yes	Yes	Yes
Mean	0.35	0.35	0.35	0.35	0.35
person x mon	5668	5668	5668	5668	5668
Cohorts	29	29	29	29	29

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Power of seniors ($\overline{Power}$) is the average official rank of seniors of newly recruited PAS bureaucrats that work with them in the first job. Fast-track promotions are promotions at the discretion of the senior bureaucrats and the chief executive of the province. It 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. $\overline{Tax}$ is a dummy that turns on one when the civil servant is in the top 10, 20, 30, 40 or 50% of the cohort in tax collection. 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. The omitted category is mid 80% exam performers. Mean is mean value for the outcome variable in the estimation sample. Cohort & month-year FE, experience of the new recruit, time trend of the first job and official rank of the junior is included. All specifications exclude first job.

Table 5.4: First stage - Do seniors use pvt. info meritocratically?

	Dependent variable:				
	Promotion power of seniors ($\overline{Power}$)				
	$\overline{Tax}$=Top 10%	$\overline{Tax}$=Top 20%	$\overline{Tax}$=Top 30%	$\overline{Tax}$=Top 40%	$\overline{Tax}$=Top 50%
	(1)	(2)	(3)	(4)	(5)
$\overline{Power^p} \times$ Exam Top10% $\times \overline{Tax}$ (α)	0.73***	0.72***	0.54*	0.57**	0.21
	(0.21)	(0.22)	(0.28)	(0.22)	(0.23)
$\overline{Power^p} \times$ Exam Top10% (β)	-0.00	-0.00	-0.01	-0.02	-0.00
	(0.00)	(0.01)	(0.02)	(0.03)	(0.01)
$\overline{Power^p} \times$ Exam Mid80% $\times \overline{Tax}$ (π)	0.00	-0.00	-0.01	-0.00	-0.00
	(0.00)	(0.01)	(0.02)	(0.03)	(0.01)
$\overline{Power^p} \times$ Exam Mid80% (γ)	0.00	0.00	-0.00	0.00	0.00
	(0.00)	(0.01)	(0.02)	(0.03)	(0.01)
$\overline{Power^p} \times$ Exam Bot10% $\times \overline{Tax}$ (μ)	0.01	-0.00	-0.01	-0.01	-0.00
	(0.01)	(0.01)	(0.02)	(0.03)	(0.01)
$\overline{Power^p}$ (θ)	-0.01*	-0.01	-0.01	-0.02	-0.00
	(0.01)	(0.01)	(0.02)	(0.03)	(0.01)
Exam Top10%	0.00	0.00	0.01	0.02	0.01*
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
Exam Mid80%	-0.00	-0.00	-0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)
$\overline{Tax}$	-0.00	-0.00	-0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
AP F Statistic-I	3379	1825	680	277	22
AP F Statistic-II	1658	450	3708	25790	1578
AP F Statistic-III	631	385	255	262	323
AP F Statistic-IV	655	266	301	432	266
AP F Statistic-V	5870	2999	3980	3496	3441
AP F Statistic-VI	47	624	511	371	407
Controls	Yes	Yes	Yes	Yes	Yes
Cohort & time FE	Yes	Yes	Yes	Yes	Yes
person x mon	5668	5668	5668	5668	5668
Cohorts	29	29	29	29	29

* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Power of potential seniors ($\overline{Power^p}$) is the average rule-based rank, over time, of potential seniors that junior PAS bureaucrats could have worked with in the first job. Power of seniors ($\overline{Power}$) is the average official rank of seniors of newly recruited PAS bureaucrats that work with them in the first job. Fast-track promotions are promotions at the discretion of the senior bureaucrats and the chief executive of the province. It 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. $\overline{Tax}$ is a dummy that turns on one when the civil servant is in the top 10, 20, 30, 40 or 50% of the cohort in tax collection. 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. The omitted category is mid 80% exam performers. Cohort & month-year FE, experience of the new recruit, time trend of the first job and official rank of the junior is included. All specifications exclude first job. Angrist & Pischke (2009) f-stat is reported for each endogenous variable at the bottom.

together with keeping the lemons from promotions and giving the hidden gems a chance. Results can be thought of as a lower bound for when there is complete discretion allowed to seniors over promotion decisions.

What is more significant is that bottom 10% are only given a chance if they are star tax collectors and are in the top 10% of tax collection. Even if they are in top 20% of tax collectors, bottom 10% exam performers are not differentiated based on their tax performance. This again is suggestive of the fact that the use of private information is costly in this setting. Convincing others about the star quality of someone with poor observable performance, is worthwhile if the person is a complete gem. However, if they don't outshine it might not be worthwhile for the seniors to expend their energy in fast-tracking them.[1]

Using reduced form results in column (1) of table 5.2, figure 5.4 plots predicted probability of fast-track promotion of juniors, with 90% confidence interval. Predicted probabilities for star exam-tax performers (red line) as well as those that are star exam performers, but not star tax collectors (blue dotted line) are plotted. The x axis is power of potential seniors measured in ranks from 0-4. The omitted category are the lemons i.e. those juniors that are bottom 10% exam performers and bottom 90% tax collectors. Figure 5.4 presents what we already saw in table 5.2. Top 10% exam performers that are not star tax collectors are not fast-tracked as much as star performers on both dimensions. The effects are large and statistically significantly different from each other. Figure 5.5 shows a similar relation but for the bottom 10% exam performers. This figure shows that seniors exercise their discretion to reduce fast-track promotions for the lemons, while at the same time keeping the hidden gems (bottom 10% exam performers, who are top 10% tax collectors), from having a poor career trajectory.

Taken together these results suggest that there is value from allowing discretion in bureaucracies. Seniors are not just able to decipher hidden lemons from the stars, but also hidden gems from the bottom of the distribution.

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[1]In line with the fact that the effect does not materialize for most of the exam distribution, we should not expect the tax performance to matter on its own. Appendix tables A.15 and A.14 show that that is the case. While above average power of seniors coupled with high exam performance continues to be a predictor of fast-track promotions, the heterogeneous effect by tax performance does not. These average effects, however, mask the heterogeneity of effect, discussed in this section.
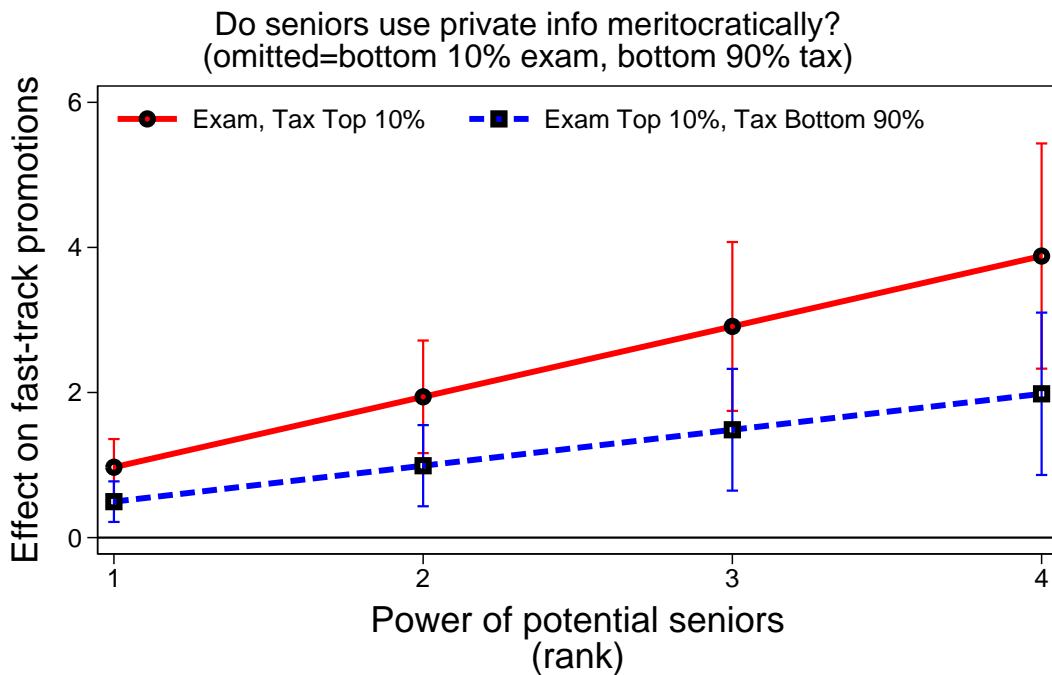
Figure 5.4: The figure plots predicted probability from the reduced form model in column (1) of table 5.2. Each dot is the predicted probability and the bars are 90% confidence intervals. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It 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. Power of potential seniors ($\overline{Power}^p$) is measured as the average rule-based rank of potential seniors that the newly recruited PAS civil servants could have worked with in their first job. Exam top 10% is a dummy that turns on one for those civil servants that were the top 10% of their cohort in the recruitment exam. Tax top 10% is a dummy that turns on one when the civil servant is in the top 10% of the cohort in tax collection. Tax performance by junior bureaucrats at their first job is the private information of the first set of seniors. It is not observed by others in the organization.
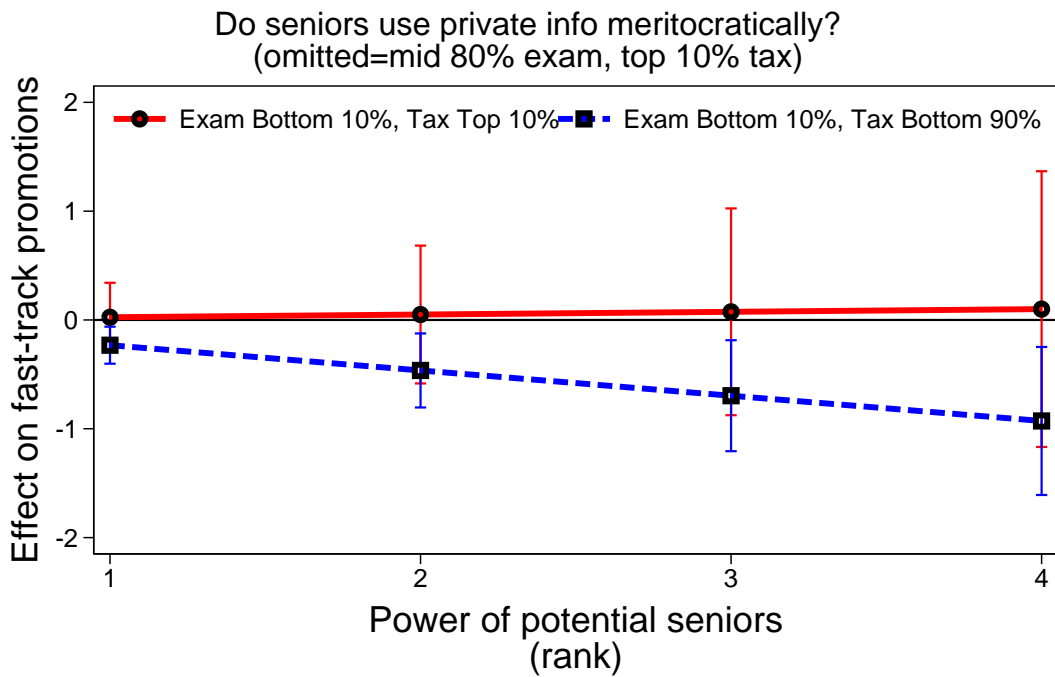
Figure 5.5: The figure plots predicted probability from the reduced form model in column (1) of table 5.2. Each dot is the predicted probability and the bars are 90% confidence intervals. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It 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. Power of potential seniors ($\overline{Power}^p$) is measured as the average rule-based rank of potential seniors that the newly recruited PAS civil servants could have worked with in their first job. Exam bottom 10% is a dummy that turns on one for those civil servants that were the bottom 10% of their cohort in the recruitment exam. Tax top 10% is a dummy that turns on one when the civil servant is in the top 10% of the cohort in tax collection. Tax performance by junior bureaucrats at their first job is the private information of the first set of seniors. It is not observed by others in the organization.

Chapter 6

Do seniors improve lateral allocations?

The thesis aims to investigate discretionary allocations in a bureaucracy. Till now the focus has been on promotions. This chapter investigates discretionary lateral allocations by seniors. Allocations of workers across heterogeneous jobs can generate substantial efficiency gains (Walter (2018)), incentivize performance (Khan et al. (2018)) and have implications for human capital investments (Iyer & Mani (2012)). This can be done at little or no additional costs and can be a significant lever for budget constraint governments in developing countries. Despite its importance, we know surprisingly little about how lateral allocations happen in bureaucracies. Moreover, there is little or no evidence on how discretion is exercised in this respect. Are lateral job allocations to juniors by their seniors meritocratic? Are they efficient? What sort of trade-off, if any, exists between meritocracy and efficiency of allocations. The last part of the thesis investigates these themes.

The analysis is restricted to Assistant Commissioner (AC) jobs. These are the jobs that juniors perform right at the start of their career. These are similar in all respect with heterogeneity stemming from location differences. These are also the jobs for which preference data of different locations is available and has been digitized for the study.

6.1 Data

Data for this paper of the thesis has been digitized for the first time from official records of Pakistan Administrative Services Training Campus as well as Services & General Administration Department (S& GAD) of the government.

Job location preference data: At the start of their careers, newly recruited bureaucrats are asked to list their preferred job location from first to fourth most preferred. There are 36 different district departments. These stated preferences are for job locations that they would like to train in as Assistant Commissioners. I use this preference data for training locations to characterize preferences for actual Assistant Commissioner (AC) jobs. This is done on the assumption that location preferences for training is the same as preferences for the job. After interviews with new cohorts of PAS bureaucrats, this assumption appears to be a very weak one. Almost all juniors wish to train in a location where they would like to work in as Assistant Commissioners later on.
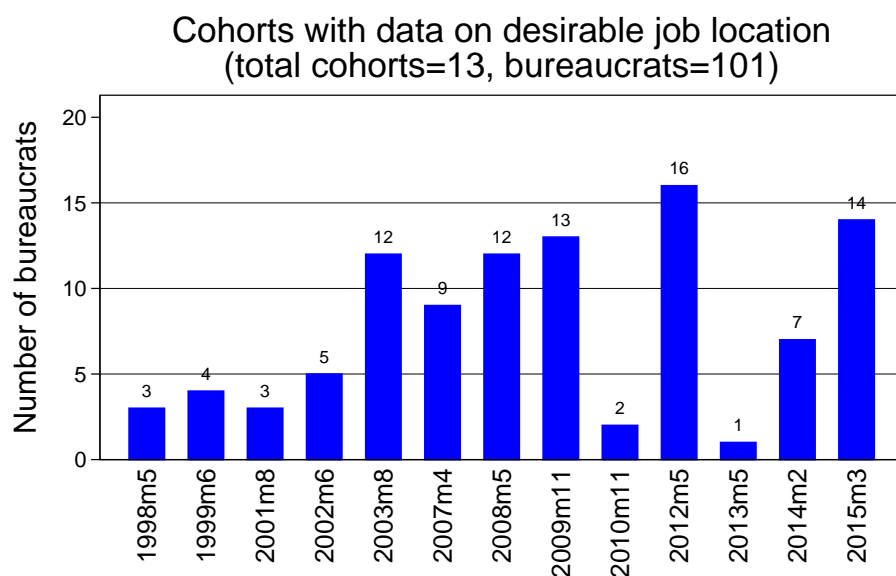
Figure 6.1: The figure shows the number of bureaucrats and cohorts for which job location preference data is available. For consistency the study is restricted to 2012 cohort. The source of the data is administrative records of PAS training campus and Services & General Administration Department (S&GAD).

Figure 6.1 describes the number of bureaucrats and cohorts for which location preference data is available. The source of this data is the administrative records of Pakistan Administrative Services (PAS) training institute and Services and General Administration Department (S&GAD). Preference data is available for 13 cohorts and 101 PAS bureaucrats, that start between 1998-2015. However, for consistency and to be able to observe careers for a few years, I restrict attention to cohorts that train between 1998-2012. Figure 6.2 describes the number of bureaucrats with data on first to fourth preference of job
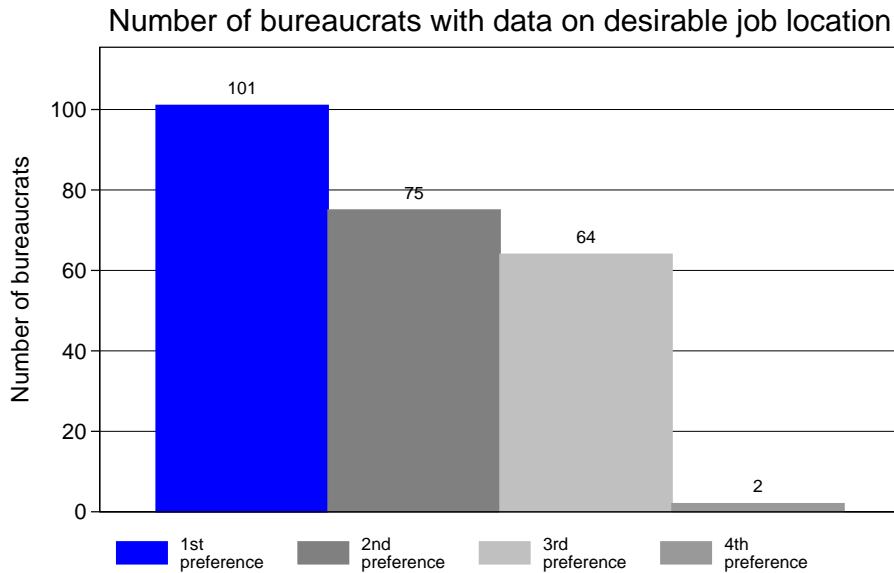
Figure 6.2: The figure shows the number of bureaucrats with data on their various preferences for job locations. The source of the data is administrative records from PAS training campus and Services & General Administration Department (S&GAD).

location. The figure shows that data on first preference is more comprehensive than other preferences.

6.1.1 Key variables and descriptive statistics

Preferred job location: Preferred job location is a dummy that turns on 1 whenever a junior is working in any of his or her preferred locations as an Assistant Commissioner (tax collector).

$$Preferred\ job\ location = \mathbb{1}_{\{Junior\ is\ working\ in\ a\ preferred\ job\ location\}} \quad (6.1)$$

Competitive job location: To understand the interaction of aggregate versus individual preferences for a job location, this study categorizes an index of competitiveness of job locations (districts). It is defined as follows:

$$Index\ of\ job\ location\ competitiveness = \frac{Total\ demand\ for\ a\ location}{Maximum\ demand\ for\ any\ location} \quad (6.2)$$

A location has demand if any bureaucrat has ever stated that location to be in one of their first four preferred job locations. The variable lies between zero and 1, with 1 being most competitive and zero least.

Figure 6.3 shows the competitiveness of 36 possible job locations (districts) of Punjab. The provincial capital, Lahore, is the most competitive and has the highest demand from bureaucrats. Lahore is followed by other big cities like Rawalpindi, Gujranwala, Sheikhupura and Faisalabad.
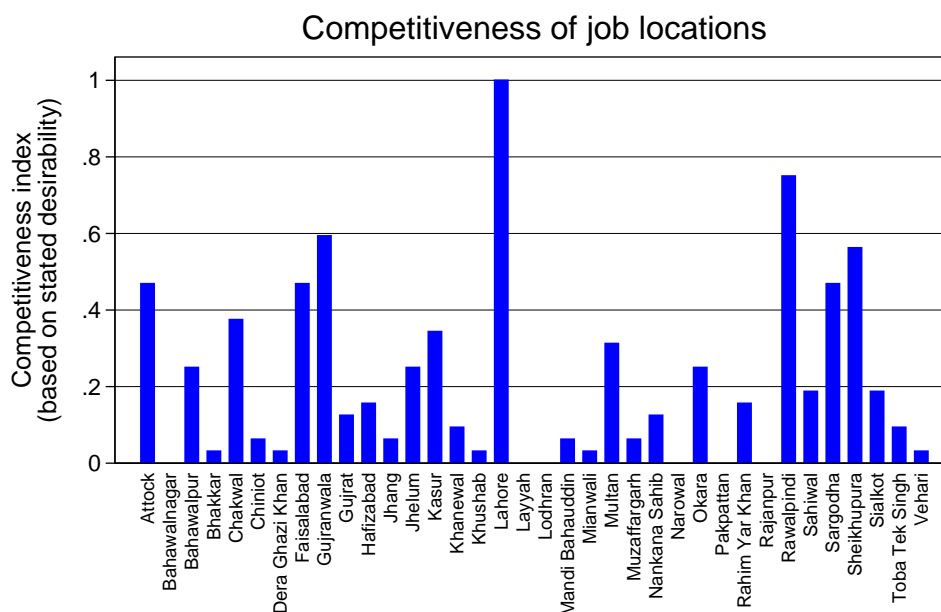
Figure 6.3: Competitiveness of a location is defined as demand for the job location as a proportion of maximum demand for any location. The source of the data is administrative records from PAS training campus and Services & General Administration Department (S&GAD).

Figure 6.4 presents evidence on correlates of competitiveness of job locations. The figure plots regression coefficients and 90% confidence intervals of a regression of index of competitiveness on the location's characteristics. The source of data on location characteristics is Development Statistics from Pakistan Bureau of Statistics. As expected from figure 6.3, locations that have high demand from bureaucrats are more likely to be urban. They are more likely to have a smaller tax target for Assistant Commissioners (tax collectors). They are more likely to be higher on education and health indicators, have more high type roads, factories, tv sets and police stations. Therefore, the demand for a location correlates well with it's development profile.
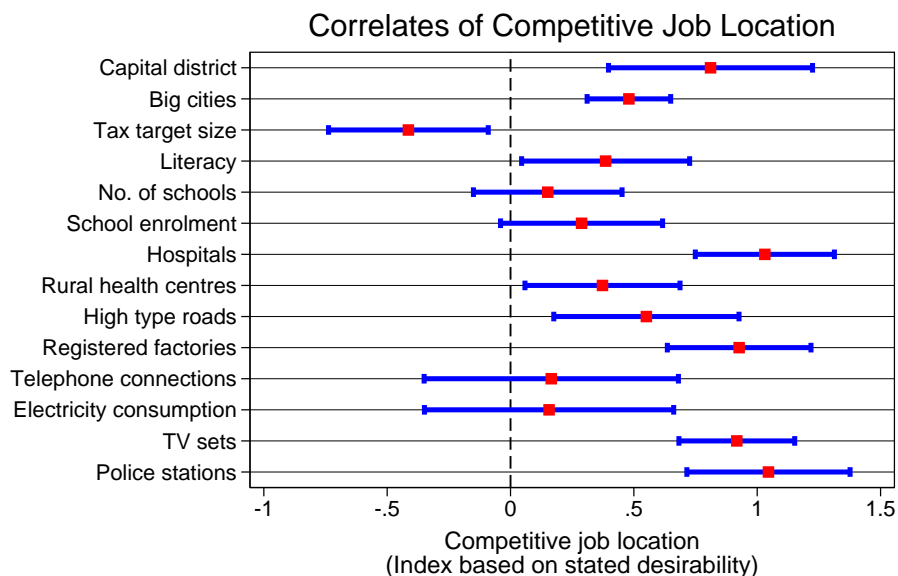
Figure 6.4: This figure plots regression coefficients and their 90% confidence intervals of a regression of competitive job location index on various location specific characteristics. Competitiveness index is defined as demand for the job location as a proportion of maximum demand for any location. The source of the data is administrative records of PAS training campus and S&GAD. The source of data on location characteristics is Development Statistics from Pakistan Bureau of Statistics.
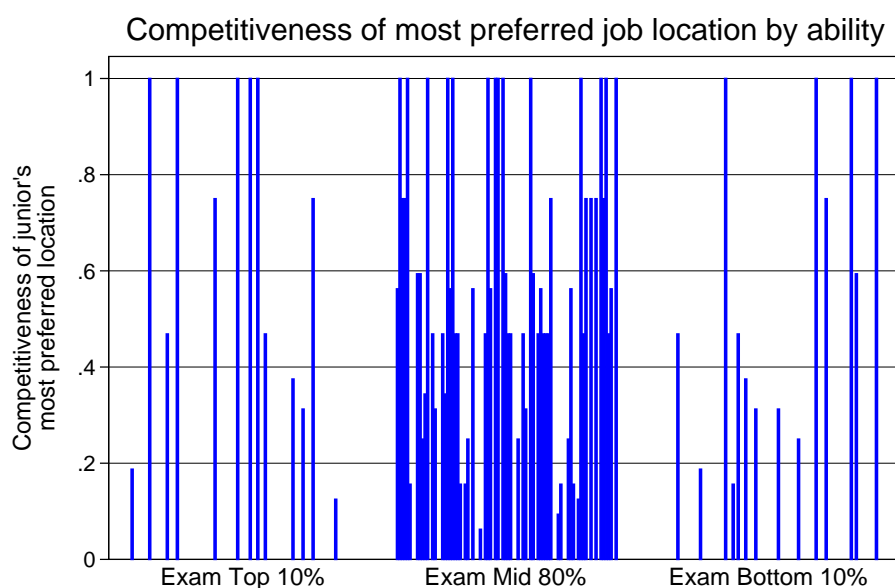
Figure 6.5: The figure shows heterogeneity of preferences. It plots competitiveness index of junior's most preferred location by exam performance of juniors.

Figure 6.5 plots the competitiveness index of juniors' most preferred job location. This is shown by exam rank. It shows that not all places that are competitive on average are also individually preferred by bureaucrats. There is heterogeneity of individual preferences and this is what I exploit in the study.

The figure further suggests that ability is a not a huge predictor of whether a competitive location is also one that is preferred.

The variable used for analysis in the study is competitive job location. It is specific to the junior bureaucrat and it is defined as:

$$Competitive\ job\ location = Index\ of\ competitiveness\ of\ junior's\ job\ location$$

(6.3)

It is a continuous variable that varies between zero and one. Zero being the least competitive and one meaning the junior is working in a location which is very highly demanded and competitive.

6.2 What type of juniors get competitive vs. preferred jobs on average?

The starting point of the analysis is an investigation into how job allocations are carried out on average. This gives us an insight into the system overall and provides a contrast for job allocations through discretion of seniors.

Figure 6.6 plots the probability of working in a competitive job location and figure 6.7 plots the probability of working in a preferred job location. Both figures are split by by exam performance. We see that the top 10% have a higher probability of working in a competitive position than mid 80% exam performers, while bottom 10% have the lowest chance of working in a competitive position. However, when it comes to preferred job locations, there is a edge of bottom 10% exam performers. The probability that bottom 10% exam performers will work in their preferred location is 57% as opposed to 41% and 28% for the top 10% and mid 80% exam performers, respectively.

This is further investigated using the following OLS estimation:

$$y_{ict} = \pi + \alpha Exam\ Top\ 10_{ic} + \beta Exam\ Bottom\ 10_{ic} + e_{ict} \qquad (6.4)$$

where $y_{ict} \in \{Competitive\ job\ location;\ preferred\ job\ location\}$ i.e. the competitiveness index of the job location of junior i, in cohort c, in month-year

93
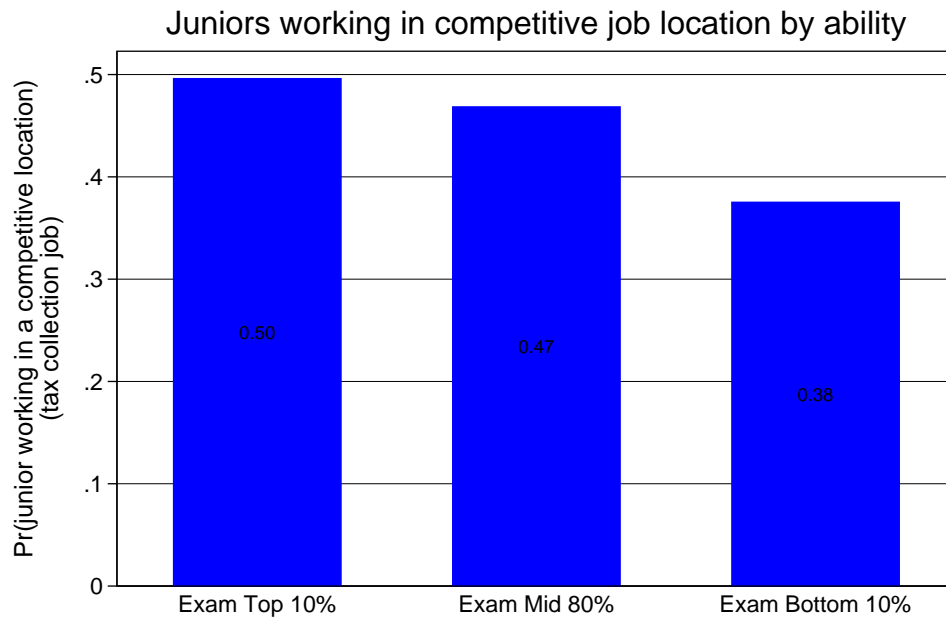
Figure 6.6: The figure shows the probability of a junior working in a competitive location in a tax collection job, by exam performance. Exam top 10%, mid 80% and bottom 10% are dummy variables that turn on one for those juniors that are in the top 10%, mid 80% or bottom 10% of their cohort in the recruitment exam, respectively. In this figure, competitive location is defined as a dummy that turns on 1 if demand for the location is in the top 25% of total demand for any location.

t; and the probability of junior working in a preferred job location. Attention is just restricted to Assistant Commissioner (tax collectot) jobs. Exam top 10%, bottom 10% are dummy variables that turn on 1 for those juniors that are in the top 10%, bottom 10% of their cohort in the recruitment exam, respectively. e_{ict} is the error term that is clustered at the cohort level.

Results: What type of juniors get competitive vs. preferred jobs on average?

Table 6.1 reports results. Column (1) reports results for competitiveness index of job location the junior works in, while column (2) shows results of whether the junior works in his or her preferred location. As location preference data is reported for a small number of cohorts, I report p-values, using bootstrap-t procedure, suggested by Cameron, Gelbach and Miller (2008).[1] For consistency this is also done for competitive job locations where the number of cohorts is 41.

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[1]I implement this using the boottest command in STATA (Roodman et al. (2019)).
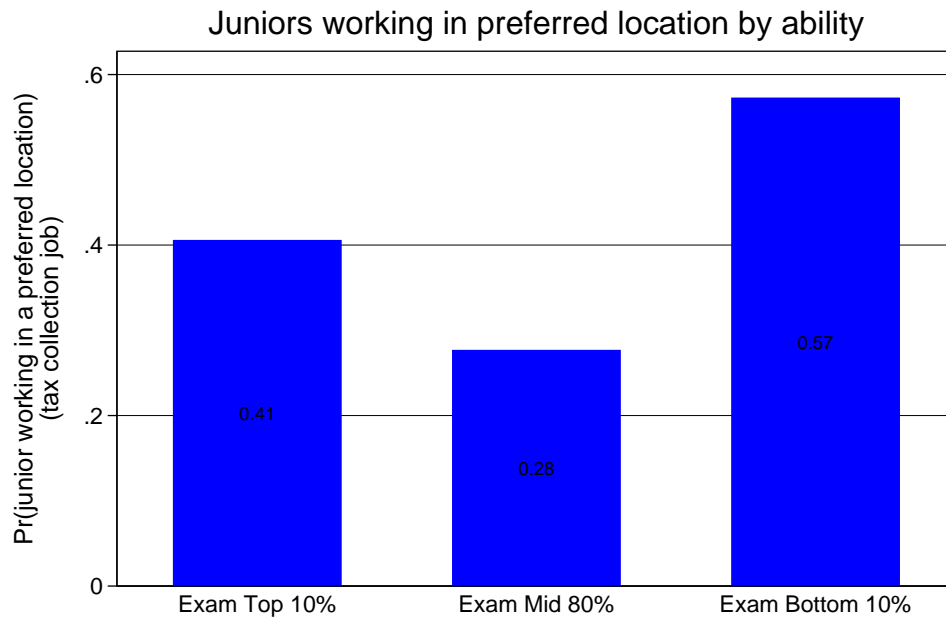
Figure 6.7: The figure shows the probability of a junior working in a preferred location, by exam performance. Exam top 10%, mid 80% and bottom 10% are dummy variables that turn on one for those juniors that are in the top 10%, mid 80% or bottom 10% of their cohort in the recruitment exam, respectively. Preferred location is a dummy that turns on 1 whenever a junior is working as an Assistant Commissioner (tax collector), in a job location that he or she prefers. The source of the data is administrative records of PAS training campus and S&GAD.

Exam top (bottom) 10% have a higher (lower) chance of working in a competitive location but the differential effect is not statistically significantly different from zero. The p-value of an F-test of $\alpha = \beta$ is 0.29. In table 6.1, column (2), we see that the bottom 10% exam performers have a much higher probability than mid or the top 10%, of working in a job location that is preferred by them. The probability that a bottom 10% exam performer will work in their preferred job location is 30% more than the mid 80%. However, the p-value of an F-test of $\alpha = \beta$ is 0.40. The differential effect on top 10% is positive but not significant.

These results suggest that when allocating competitive positions, the organization weakly differentiates on the basis of ability. However, when allocating preferred locations, the bottom 10% exam performers are accommodated. If meritocratic allocations are defined as the high type being allocated their preferred position instead of the low type, these results are in keeping with the general image of bureaucracies as nepotistic and inefficient.

I investigate this further by looking at the probability of juniors working in the following categories of locations: non-competitive & not-preferred,

Table 6.1: Allocations on average

	Competitive job location	Preferred job location
	(tax collection jobs)	
	(1)	(2)
Exam Top 10% (α)	0.06	0.13
	[0.26]	[0.58]
Exam Bottom 10% (β)	-0.02	0.30***
	[0.69]	[0.00]
Constant	0.33***	0.28***
	[0.00]	[0.00]
Ho: $\alpha=\beta$ (p-value)	0.29	0.40
Controls	No	No
Cohort & time FE	No	No
Mean	0.34	0.35
person x mon	7874	1404
Cohorts	41	10

* p<0.1, ** p<0.05, *** p<0.01. Cameron Gelbach & Miller (2008) cluster bootstrap-t p-values in parentheses.
Note: The unit of observation is a civil servant-month. Exam top 10%, bottom 10% are dummy variables that turn on one for those juniors that are in the top 10%, bottom 10% of their cohort in the recruitment exam respectively. At the end of training PAS bureaucrats are asked to list their preferred job location from first to fourth most preferred. A location is preferred if it has ever been categorized as a preferred one by a bureaucrat. Preferred location is a dummy that turns on 1 whenever a junior is working as a tax collector, in a job location that he or she prefers. Competitive job location is the index of competitiveness of junior's job location as an Assistant Commissioner (AC).

non-competitive & preferred, competitive & not-preferred and competitive & preferred. I keep attention restricted to Assistant Commissioner (AC) jobs where the juniors mainly collect taxes.

Figure 6.8 shows the probability of junior working in a competitive/preferred locations by exam performance. All ability groups are nearly equally likely to be working in positions that are neither competitive nor preferred. As compared to the other types, bottom 10% exam performers are more likely to work in their preferred locations for which there is no high demand. The probability of working in a non-competitive but preferred position is 31%, while the probability of working in a competitive & not-preferred job location is just 4%.

On the other hand, the organization allocates more competitive and preferred positions to top 10% exam performers than other types. 36% of such
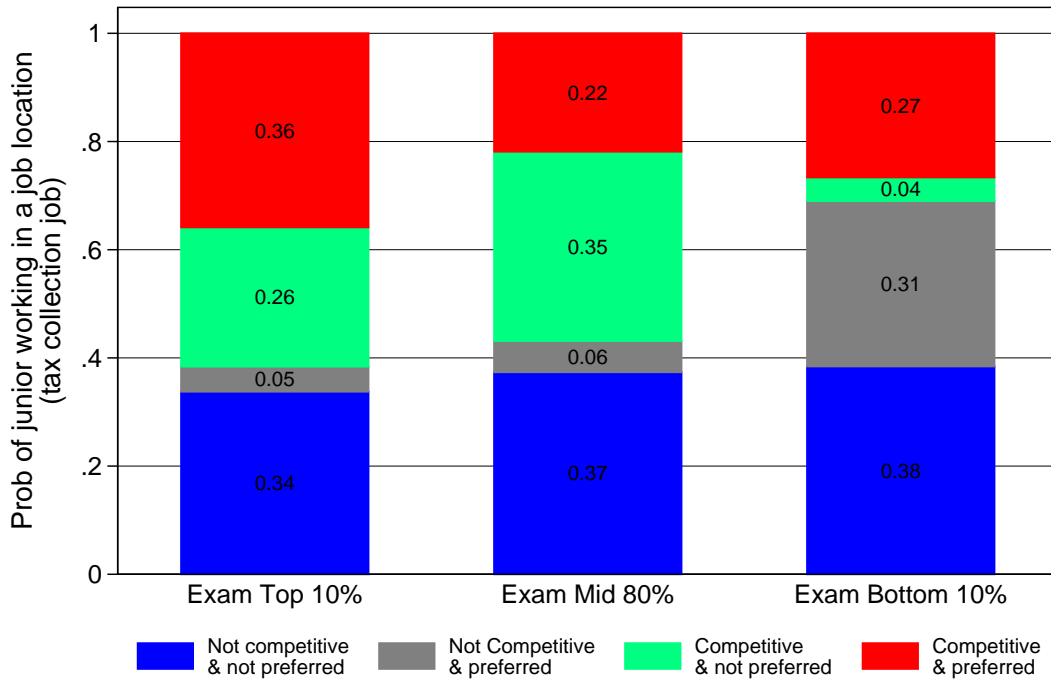
Figure 6.8: The figure shows the probability of a junior working in a competitive/preferred location in a tax collection job, by exam performance. Exam top 10%, mid 80% and bottom 10% are dummy variables that turn on one for those juniors that are in the top 10%, mid 80% or bottom 10% of their cohort in the recruitment exam respectively. Preferred location is a dummy that turns on 1 whenever a junior is working as a tax collector, in a job location that he or she prefers. Competitive location is defined as a dummy that turns on 1 if demand for the location is in the top 25% of total demand for any location. The source of the data is administrative records of PAS training campus and S&GAD.

jobs are allocated to top 10% juniors, as opposed to 22% and 27% to mid 80% and bottom 10% exam performers, respectively.

To understand whether these differences are meaningful, a multinomial logit regression is implemented as follows:

$$ln\frac{P(C_{ict} = j)}{P(C_{ict} = J)} = \gamma_j + \alpha_j Exam\ top\ 10_{ic} + \beta_j Exam\ bottom\ 10_{ic} \qquad (6.5)$$

where

• j=1 if junior i, in cohort c and month-year t starts work in a non-competitive & not preferred job location (base category)

• j=2 if a junior starts work in a non-competitive & preferred job location

• j=3 if a junior starts work in a competitive & not preferred job location

as an Assistant Commissioner (tax collector). For this estimation, I characterized working in a competitive job location as a dummy that turns on

1 if demand for the job location of the junior is in the top 25% of demand for any location. Preferred job location is characterized as a dummy that turns on 1, whenever a junior is working in a job location that he or she prefers. Exam top 10%, bottom 10% are dummy variables that turn on 1 for those juniors that are in the top 10%, bottom 10% of their cohort in the recruitment exam, respectively. Error is clustered at the cohort level. As before, owing to the small number of cohorts with preference data, Cameron, Gelbach and Miller (2008) bootstrap-t p-values are reported in parenthesis. These are implemented using the boottest command in STATA (Roodman et al. (2019)).

Table 6.2 reports results. As suggested by the previous figures, the organization appears to favor the bottom 10% exam performers, by allocating them their preferred locations. As compared to the mid 80% exam performers, the log of relative risk ratio is 1.6 times higher for bottom 10% exam performers, to be allocated a non-competitive but preferred position, relative to the base. The effect reverses for the mid 80% and top 10% exam performers. This suggests that, relative to other types, bottom 10% exam performers are allocated positions they prefer when there is less aggregate preference for the location. Considering locations that are competitive & not-preferred, relative to the mid 80%, the log of relative risk ratio is 2 times lower for the bottom 10% exam performers to be allocated such positions, as compared to the base.

A test of similarity of the effect for non-competitive & preferred job versus competitive & not-preferred location for bottom 10% exam performers has a p-value of 0.01. This suggests that the low types are allocated locations of their preference. Relative to the base, the log of relative risk ratio is also 0.17 times higher for bottom 10% to get a competitive & preferred location. However, the p-value is 0.78.

These results suggest that the organization panders to the bottom 10% when allocating job locations. If meritocracy is defined as the allocation of preferred jobs or important jobs by ability, it appears that the organization does not allocate jobs meritocratically. The bottom 10% exam performers are given their preferred job locations while the mid and top performers are less likely to be allocated such positions.

In the next chapter, performance implications of such a system of allocations is explored. I look at tax performance of different exam performing juniors in competitive/preferred jobs. These are simple correlations and not causal effects. The aim is to shed light on whether there is a trade-off between meritocratic and efficient allocations.

Table 6.2: Multinomial logit: Allocations on average

	Base category: not in competitive or preferred location (tax collection jobs)		
	working in non-competitive & preferred job	working in competitive & not preferred job	working in competitive & preferred job
Exam Top 10% (α)	-0.12 [0.90]	-0.21 [0.76]	0.60 [0.56]
Exam Bottom 10% (β)	1.64* [0.08]	-2.11* [0.08]	0.17 [0.78]
Constant	-1.87** [0.01]	-0.06 [0.84]	-0.53 [0.24]
$\alpha=\beta$ (p-value)	0.32	0.18	0.60
Controls	No		
Cohort & time FE	No		
person x mon	1403		
Cohorts	10		

* p<0.1, ** p<0.05, *** p<0.01. Cameron Gelbach & Miller (2008) cluster bootstrap-t p-values in parentheses.

Note: The unit of observation is a civil servant-month. Exam top 10%, bottom 10% are dummy variables that turn on one for those juniors that are in the top 10%, bottom 10% of their cohort in the recruitment exam respectively. At the end of training PAS bureaucrats are asked to list their preferred job location from first to fourth most preferred. A location is preferred if it has ever been categorized as a preferred one by a bureaucrat. Preferred location is a dummy that turns on 1 whenever a junior is working as a tax collector, in a job location that he or she prefers. Competitive location is defined as a dummy that turns on 1 if demand for the location is in the top 25% of total demand for any location.

6.3 What is the tax performance of different types of juniors in competitive vs. preferred jobs?

Tax data described in section 2.2 of chapter 2, is used to investigate the performance of juniors in competitive/preferred jobs. Tax performance measure used in this subsection is :

$$Tax\ performance = \frac{Tax\ collected\ in\ a\ month}{Annual\ tax\ target} \qquad (6.6)$$

The following OLS regression is implemented:

$$Tax_{ict} = \pi + \mu\ Exam_{ic} + \phi\ Preferred_{ict} +$$

$$\rho\ Competitive_{ict} + \eta\ Preferred_{ict} \times Competitive_{ict}$$

$$\nu\ Preferred_{ict} \times Exam_{ic} + \chi\ Competitive_{ict} \times Exam_{ic}$$

$$+\ \tau\ Preferred_{ict} \times Competitive_{ict} \times Exam_{ic} + \epsilon_{ict} \quad (6.7)$$

where Tax_{ict} is the tax performance of junior i, in cohort c, month-year t. $Exam_{ic}$ are dummy variables that turn on 1 for those juniors that are in the top 10%, bottom 10% of their cohort in the recruitment exam, respectively. Preferred job location is a dummy that turns on 1 whenever a junior is working in a job location that he or she prefers. Competitiveness of job location is the competitiveness index of the job location that the junior is working in. Error term is clustered at the cohort level. As before, owing to the small number of cohorts, Cameron, Gelbach and Miller (2008) bootstrap-t p-values are reported in parenthesis. This is implemented using the boottest command in STATA (Roodman et al. (2019)).

Results: What is the tax performance of different types of juniors in competitive vs. preferred jobs?

Table 6.3 reports results. Column (1) shows results without interacting with exam. Juniors that work in locations that are preferred and for which there is competition, have a 6% higher tax performance, than those that work in non-competitive & not-preferred locations. However, the p-value is 0.41 and the effect is not statistically significant. On average, relative to the base, juniors that work in competitive & not preferred locations and non-competitive & preferred locations, have a lower tax collection, but the effect is not statistically significant.

Table 6.3, column (2) presents a more interesting picture. For all types of juniors, performance is positive in locations that are preferred and for which there is competition. The competition from other bureaucrats keeps these juniors performing well, since a poor performer is very likely to be replaced by another competing junior. This is in keeping with what has been shown by Khan et al. (2018).

Table 6.3: What is the performance of juniors in competitive, preferred locations?

	Dependent variable: Tax performance (%)	
	(1)	(2)
Exam Mid 80%		
Competitive job	-0.52 [0.85]	0.28 [0.86]
Preferred job	-2.76 [0.42]	-4.01* [0.08]
Competitive job × Preferred job	6.05 [0.41]	13.32* [0.05]
Exam Top 10%		
Competitive job × Exam Top 10% (θ)		-5.81* [0.31]
Preferred job × Exam Top 10% (α)		-11.87 [0.56]
Preferred job × Competitive job × Exam Top 10% (β)		2.05 [0.83]
Exam Bottom 10%		
Competitive job × Exam Bottom 10% (λ)		-47.73* [0.06]
Preferred job × Exam Bottom 10% (ϕ)		11.55+ [0.11]
Preferred job × Competitive job × Exam Bottom 10% (κ)		19.70 [0.67]
Ho: $\alpha=\beta$ (p-value)		0.63
Ho: $\phi=\kappa$ (p-value)		0.88
Ho: $\theta=\beta$ (p-value)		0.41
Ho: $\lambda=\kappa$ (p-value)		0.28
Ho: $\alpha=\phi$ (p-value)		0.27
Ho: $\theta=\lambda$ (p-value)		0.09
Ho: $\beta=\kappa$ (p-value)		0.59
Controls	Yes	Yes
Cohort & time FE	Yes	Yes
Mean	8.16	7.92
person x mon	476	441
Cohorts	10	9

+ $p<0.12$,* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Cameron, Gelbach and Miller (2008) cluster bootstrap-t procedure p-values in parentheses (999 replications).

Note: The unit of observation is a civil servant-month. Exam top 10%, bottom 10% are dummy variables that turn on one for those juniors that are in the top 10%, bottom 10% of their cohort in the recruitment exam respectively. At the end of training PAS bureaucrats are asked to list their preferred job location from first to fourth most preferred. A location is preferred if it has ever been categorized as a preferred one by a bureaucrat. Preferred location is a dummy that turns on 1 whenever a junior is working as a tax collector, in a job location that he or she prefers. Competitive location is the index of competitiveness of a location that the junior works in. Tax performance is tax collected in a month as a percentage of annual tax target set by the central revenue agency i.e. Board of Revenue (BOR).

In locations that are preferred but not high in demand, mid 80% collect 4% less taxes than locations that are neither preferred, nor competitive. The differential effect for top 10% exam performers is 12% more negative than mid 80, but it is not statistically significant. The p-value is 0.56. On the other hand, relative to the base category, allocating a non-competitive & preferred location is associated with nearly 12% more tax collection by the bottom 10% exam performers. The effect is nearly significant with a p-value of 0.11. The mean of tax performance is 7.92% and so this is an economically significant difference in performance. At the bottom of the table, a test of $\alpha = \phi$ has a p-value of 0.27. This suggests that low type juniors are more likely to perform better in non-competitive positions if their preferences are accommodated, implying that ability and preferences are substitutes.

Next I consider the performance effect of working in competitive job location that is not preferred by juniors. Allocating a bottom exam performing junior to a competitive location, which they don't prefer, leads to a much larger reduction in their tax collection (48%) than mid 80%. On the other hand, the negative differential effect is much smaller for top 10% exam performers (6%). Both the effects are marginally significant and a test of $\theta = \lambda$ has a p-value of 0.09. This suggests that everyone performs poorly when allocated a non-preferred, but competitive location. However, the fall in performance of bottom 10% exam performers is much higher than that of mid 80% or top 10% exam performers. Therefore, if anyone has to be moved out of such locations, it should be the bottom 10%. This descriptive evidence, together with those in section 6.2, suggests that non-meritocratic allocations might not be as bad for performance. And these are exactly the kind of allocation we see on average in table 6.2.

In the next subsection, I consider the allocations of juniors across competitive vs. preferred jobs at the discretion of seniors. This will shed light on whether and by how much a discretionary system is meritocratic and the resulting tension between meritocratic and efficient allocations.

6.4 What type of juniors are allocated competitive vs. preferred jobs by seniors?

A system can be considered meritocratic if juniors with higher ability are accommodated when it comes to allocating preferred job locations. One can

also think of the system being meritocratic if positions that are competitive and sought after are also allocated by ability. While a meritocratic system is lauded in general, results from table 6.3 suggest that meritocratic allocations might not be the best way.

In order to understand the system under discretion, in this subsection I ask what type of juniors are allocated competitive versus preferred jobs by seniors. Attention is again restricted to tax collection jobs. The following multinomial logit estimation is implemented:

$$ln\frac{P(C_{ict} = j)}{P(C_{ict} = J)} = \mu_{cj} + \mu_{tj} + \gamma_j Exam_{ic} + \pi_j \overline{Power}_{ct} + \alpha_j \overline{Power}_{ct} \times Exam\ top\ 10_{ic}$$

$$+ \beta_j \overline{Power}_{ct} \times Exam\ bottom\ 10_{ic} + \theta_j X_{ict} \quad (6.8)$$

where

- j=1 if junior i, in cohort c and month-year t starts work in a non-competitive & not preferred job location (base category)

- j=2 if junior i, in cohort c and month-year t starts work in a non-competitive & preferred job location

- j=3 if junior i, in cohort c and month-year t starts work in a competitive & not preferred job location

as an Assistant Commissioner (tax collector). Working in a competitive job location is a dummy that turns on 1 if demand for the job location of the junior is in the top 25% of demand for any location. Preferred job location is characterized as a dummy that turns on 1, whenever a junior is working in a job location that he or she prefers. Exam top 10%, bottom 10% are dummy variables that turn on 1 for those juniors that are in the top 10%, bottom 10% of their cohort in the recruitment exam, respectively. Power of seniors ($\overline{Power}$) is the average official rank of seniors of newly recruited PAS bureaucrats that they work with in their first job. I report reduced form results using power of potential seniors ($\overline{Power}^p$). This is defined as the average rule-based rank of potential seniors that junior bureaucrats could have worked with in their first job. Error is clustered at the cohort level. As before, owing to the small number of cohorts with preference data, Cameron, Gelbach and Miller (2008) bootstrap-t p-values are reported in parenthesis. These are implemented using the boottest command in STATA (Roodman et al. (2019)).

Results: What type of juniors are allocated competitive vs. preferred jobs by seniors?

Table 6.4 presents reduced form results, while table 6.5 reports IV results, using a control function approach. The control function was implemented following standard techniques suggested by Petrin & Train (2010) and Imbens & Wooldridge (2007). Table 6.6 reports results using $\overline{Power}$ that does not account for any potential endogeneity of power of seniors.

It appears that, unlike the allocations seen in tables 6.1 and 6.2, seniors accommodate top 10%, rather than bottom 10% exam performers. In table 6.4, relative to the base category, with an above average increase in the power of potential seniors, the log of relative risk ratio is 9 times lower for top 10% exam performers to be allocated a job location which is competitive & not-preferred by them. On the other hand, with an increase in power of potential seniors, the log of relative risk ratio is 2 times higher for top 10% exam performers to be allocated a location that is both competitive and preferred by them (relative to the base). However, this effect is not significant and the p-value is 0.58. A test of these two interaction effects for the top 10% exam performers has a p-value of 0.05, suggesting that the the preferences of the top exam performers are kept in view for competitive locations.

The IV effects in table 6.5 are much larger. Relative to the base category, with a one rank above average increase in the power of seniors, the log of relative risk ratio is 56 times lower for the top 10% exam performers to work in competitive jobs that they don't prefer. The effect is significant and also statistically different from the positive effect on working in competitive and preferred positions. An F-test of the interaction effects for top 10% exam performers, across columns (3) and (4) has a p-value of 0.02.

Moreover, results in column (3) of table 6.5 suggest that relative to the base category, with an above average increase in the power of seniors, the log of relative risk ratio is 19 times lower for bottom 10% exam performers to work in a competitive and preferred position. A test of $\alpha = \beta$ at the bottom of the table has a p-value of 0.03, suggesting that this negative effect is different from the positive effect for the top 10% exam performers. The effect is not significant in reduced form.

Table 6.4: Multinomial logit: Do seniors improve allocations?

	Base category: not in competitive or preferred location (tax collection jobs)		
	working in non-competitive & preferred job	working in competitive & not preferred job	working in competitive & preferred job
	Reduced form		
$\overline{Power}^p$	-10.69 [0.42]	-5.33 [0.85]	5.32 [0.52]
Exam Top 10%	-0.49 [0.76]	-0.22 [0.79]	0.07 [0.93]
Exam Bottom 10%	1.00 [0.44]	-2.44 [0.16]	0.09 [0.93]
$\overline{Power}^p$ × Exam Top 10% (α)	-1.39 [0.65]	-9.43** [0.03]	2.34 [0.58]
$\overline{Power}^p$ × Exam Bottom 10% (β)	0.36 [0.80]	1.00 [0.84]	-9.34 [0.42]
Ho: $\alpha=\beta$ (p-value)	0.69	0.15	0.20
Controls	Yes		
Cohort & time FE	Yes		
person x mon	1232		
Cohorts	10		

* p<0.1, ** p<0.05, *** p<0.01. Cameron Gelbach & Miller (2008) cluster bootstrap-t p-values in parentheses. *Note:* The unit of observation is a civil servant-month. Exam top 10%, bottom 10% are dummy variables that turn on one for those juniors that are in the top 10%, bottom 10% of their cohort in the recruitment exam respectively. At the end of training PAS bureaucrats are asked to list their preferred job location from first to fourth most preferred. A location is preferred if it has ever been categorized as a preferred one by a bureaucrat. Preferred location is a dummy that turns on 1 whenever a junior is working as a tax collector, in a job location that he or she prefers. Competitive location is defined as a dummy that turns on 1 if demand for the location is in the top 25% of total demand for any location. Power of potential seniors ($\overline{Power}^p$) is the average rule-based rank of potential seniors that junior bureaucrats could have worked with in their first job.

Table 6.5: Multinomial logit: Do seniors improve allocations?

	Base category: not in competitive or preferred location (tax collection jobs)		
	working in non-competitive & preferred job	working in competitive & not preferred job	working in competitive & preferred job
	IV-control function		
$\overline{Power}$	-26.31 [0.34]	6.62 [0.70]	11.36 [0.64]
Exam Top 10%	-0.62 [0.71]	-0.31 [0.68]	0.09 [0.92]
Exam Bottom 10%	1.07 [0.44]	-2.83 [0.12]	0.18 [0.84]
$\overline{Power}$ × Exam Top 10% (α)	-16.93 [0.25]	-55.59* [0.09]	15.08 [0.38]
$\overline{Power}$ × Exam Bottom 10% (β)	5.21 [0.71]	20.52 [0.38]	-18.60* [0.09]
Ho: $\alpha=\beta$ (p-value)	0.15	0.01	0.03
Controls	Yes		
Cohort & time FE	Yes		
person x mon	1232		
Cohorts	10		

* p<0.1, ** p<0.05, *** p<0.01. Cameron Gelbach & Miller (2008) cluster bootstrap-t p-values in parentheses.
Note: The unit of observation is a civil servant-month. Exam top 10%, bottom 10% are dummy variables that turn on one for those juniors that are in the top 10%, bottom 10% of their cohort in the recruitment exam respectively. At the end of training PAS bureaucrats are asked to list their preferred job location from first to fourth most preferred. A location is preferred if it has ever been categorized as a preferred one by a bureaucrat. Preferred location is a dummy that turns on 1 whenever a junior is working as a tax collector, in a job location that he or she prefers. Competitive location is defined as a dummy that turns on 1 if demand for the location is in the top 25% of total demand for any location. Power of seniors ($\overline{Power}$) is the average official rank, over time, of seniors that newly recruited PAS bureaucrats worked with in their first job.

Table 6.6: Multinomial logit: Do seniors improve allocations?

| | Base category: not in competitive or preferred location (tax collection jobs) | | |
	working in non-competitive & preferred job	working in competitive & not preferred job	working in competitive & preferred job
$\overline{Power}$	-6.87	15.78	0.69
	[0.78]	[0.33]	[0.93]
Exam Top 10%	-0.57	-0.19	0.21
	[0.77]	[0.90]	[0.77]
Exam Bottom 10%	1.36	-2.68*	0.21
	[0.35]	[0.07]	[0.76]
$\overline{Power} \times$ Exam Top 10% (α)	4.12	-12.32	-4.34
	[0.83]	[0.14]	[0.38]
$\overline{Power} \times$ Exam Bottom 10% (β)	-2.82	18.34	-9.85
	[0.56]	[0.71]	[0.47]
Ho: $\alpha=\beta$ (p-value)	0.64	0.23	0.51
Controls	Yes		
Cohort & time FE	Yes		
person x mon	1232		
Cohorts	10		

* p<0.1, ** p<0.05, *** p<0.01. Cameron Gelbach & Miller (2008) cluster bootstrap-t p-values in parentheses.
Note: The unit of observation is a civil servant-month. Exam top 10%, bottom 10% are dummy variables that turn on one for those juniors that are in the top 10%, bottom 10% of their cohort in the recruitment exam respectively. At the end of training PAS bureaucrats are asked to list their preferred job location from first to fourth most preferred. A location is preferred if it has ever been categorized as a preferred one by a bureaucrat. Preferred location is a dummy that turns on 1 whenever a junior is working as a tax collector, in a job location that he or she prefers. Competitive location is defined as a dummy that turns on 1 if demand for the location is in the top 25% of total demand for any location. Power of seniors ($\overline{Power}$) is the average official rank, over time, of seniors that newly recruited PAS bureaucrats worked with in their first job.

In column (1) of table 6.5, results show that when it comes to allocating non-competitive jobs that are preferred, the log of relative risk ratio is 17 times lower for the top 10% exam performers to be allocated such a job (relative to the base). But the effect is not significant and the p-value is 0.25. The effect reverses for the bottom 10%. Relative to the base, with a one rank above average increase in power of seniors, the log of relative risk ratio is 5 times higher for the bottom 10% to be allocated a job that is non-competitive & preferred. However, the p-value is 0.71 and the effect is not significant. A test of the interaction effects for the bottom 10% across columns (2) and (4)

has a p-value of zero, suggesting that while bottom 10% can be catered to for jobs that are not competitive, this is not the case for competitive jobs. Reduced form results in table 6.4 are similar.

On the whole, the organization carries out non-meritocratic allocations. On the other hand discretionary allocations by seniors are meritocratic. It is not obvious that this is the best way to allocate heterogeneous jobs laterally. Results in table 6.3, show that there is a tension between meritocracy and efficiency. Public sector bureaucracies, with job security for workers, might do better by considering the preferences of the low types in lateral allocations.

Chapter 7

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 & Zagha (2005) p.7)

State institutions and the bureaucrats that execute policy are increasingly seen as a key determinant of economic development (Besley & Persson (2009); Besley & Persson (2010)). By studying the promotions and lateral allocations of civil servants that design and implement policy for 110 million people, this thesis contributes to the rapidly expanding literature on organization economics of the state.

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. The thesis argues that while there might not be a universal answer to the question of discretion, giving center stage to the incentives of the person exercising discretion are key for meritocracy.

This thesis opens up further questions surrounding efficiency of discretionary allocations. 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. Another equally important aspect would be to understand the corruption aspect of these allocations. Is it that seniors pull up the high type juniors into their team so that they could together engage

in effective rent extraction? What is the effect on the senior's performance of working with a high type junior? Does it allow the senior to reduce effort?

A first step in this direction was taken in chapter 6. Result in this chapter highlight the tension between meritocracy and efficiency. While senior allocate lateral jobs meritocratically, this might not be the most efficient allocation. A system that is, in fact, *not* meritocratic is closer to efficiency. This is because bottom 10% exam performers perform better when allocated non-competitive positions that they prefer, while they perform worse than others when allocated competitive positions that they do not prefer.

In organizations where the force of competition drives out the low types, this trade-off appears less important. However, in bureaucratic organizations, with job security for life and with low exit of workers, this trade-off is potentially significant.[1] In these organizations, allocations through seniors might need to be combined with other kinds of allocation policies to ensure that the low types are incentivized to perform.

The thesis 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 better allocations, 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.

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. (2018)). 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.

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[1] In the PAS bureaucracy not even 2% of civil servants exit.

Appendices

Appendix A

Tables

Table A.1: OLS - Do seniors promote meritocratically?

	Dependent variable: Fast-track promotions										
	$\overline{Exam}$: Top5% $\underline{Exam}$: Bot5%	$\overline{Exam}$: Top6% $\underline{Exam}$: Bot6%	$\overline{Exam}$: Top7% $\underline{Exam}$: Bot7%	$\overline{Exam}$: Top8% $\underline{Exam}$: Bot8%	$\overline{Exam}$: Top9% $\underline{Exam}$: Bot9%	$\overline{Exam}$: Top10% $\underline{Exam}$: Bot10%	$\overline{Exam}$: Top11% $\underline{Exam}$: Bot11%	$\overline{Exam}$: Top12% $\underline{Exam}$: Bot12%	$\overline{Exam}$: Top13% $\underline{Exam}$: Bot13%	$\overline{Exam}$: Top14% $\underline{Exam}$: Bot14%	$\overline{Exam}$: Top15% $\underline{Exam}$: Bot15%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\overline{Power}$	-0.05	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.03
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)
$\overline{Exam}$	-0.03	-0.03	-0.02	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.00	-0.03
	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)
$\underline{Exam}$	0.01	-0.01	-0.01	-0.05	-0.06	-0.06	-0.06	-0.07	-0.05	-0.04	-0.04
	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.05)	(0.04)	(0.04)	(0.04)
$\overline{Power} \times \overline{Exam}$	0.14**	0.14**	0.13*	0.13*	0.13*	0.13*	0.14**	0.14**	0.14**	0.14**	0.06
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.06)
$\overline{Power} \times \underline{Exam}$	0.07	-0.04	-0.04	0.05	-0.05	-0.06	-0.06	-0.06	-0.04	-0.02	-0.05
	(0.05)	(0.08)	(0.08)	(0.09)	(0.12)	(0.10)	(0.10)	(0.10)	(0.08)	(0.08)	(0.07)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean	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	17229	17229	17229	17229	17229	17229	17229	17229	17229	17229	17229
Cohorts	39	39	39	39	39	39	39	39	39	39	39

* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Power of seniors ($\overline{Power}$) is the average seniority of first seniors of newly recruited PAS bureaucrats that they work with in the first month of the first job. It is measured as the average official promotions, over time, of the set of seniors. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It 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. $\overline{Exam}$ is as defined at the top of each column. As we move from left to right, it is a dummy that turns on one for those civil servants that were the top 10% to 50% of their cohort in the recruitment exam, respectively. Mean is mean value for the outcome variable in the estimation sample. Experience, experience squared of the new recruit, time trend of the first job, official rank of the junior and dummy for whether the job is in the field offices is included. Cohort & month-year FE included in all specifications. All specifications exclude first job.

Table A.2: Reduced form - Do seniors promote meritocratically?

	Dependent variable: Fast-track promotions										
	$\overline{Exam}$: Top5% $\overline{Exam}$: Bot5%	$\overline{Exam}$: Top6% $\overline{Exam}$: Bot6%	$\overline{Exam}$: Top7% $\overline{Exam}$: Bot7%	$\overline{Exam}$: Top8% $\overline{Exam}$: Bot8%	$\overline{Exam}$: Top9% $\overline{Exam}$: Bot9%	$\overline{Exam}$: Top10% $\overline{Exam}$: Bot10%	$\overline{Exam}$: Top11% $\overline{Exam}$: Bot11%	$\overline{Exam}$: Top12% $\overline{Exam}$: Bot12%	$\overline{Exam}$: Top13% $\overline{Exam}$: Bot13%	$\overline{Exam}$: Top14% $\overline{Exam}$: Bot14%	$\overline{Exam}$: Top15% $\overline{Exam}$: Bot15%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\overline{Power^p}$	-0.05	-0.05	-0.05	-0.04	-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)
$\overline{Exam}$	-0.04	-0.04	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.02	-0.01	-0.04
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.03)
$\underline{Exam}$	0.02	-0.01	-0.00	-0.05	-0.06	-0.06	-0.06	-0.06	-0.05	-0.04	-0.04
	(0.04)	(0.04)	(0.04)	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
$\overline{Power^p} \times \overline{Exam}$	0.08+	0.08+	0.08+	0.09*	0.08*	0.09*	0.10**	0.10**	0.10**	0.10*	0.03
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
$\overline{Power^p} \times \underline{Exam}$	0.04	-0.02	-0.02	0.04	-0.03	-0.04	-0.04	-0.04	-0.02	-0.01	-0.04
	(0.05)	(0.05)	(0.05)	(0.07)	(0.09)	(0.07)	(0.07)	(0.07)	(0.06)	(0.06)	(0.04)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean	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	17411	17411	17411	17411	17411	17411	17411	17411	17411	17411	17411
Cohorts	39	39	39	39	39	39	39	39	39	39	39

+ p<0.12, * p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Power of potential seniors ($\overline{Power^p}$) is the average rule-based seniority, over time, of the first set of potential seniors that junior PAS bureaucrats could have worked with in the first job. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It 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. $\overline{Exam}$ is as defined at the top of each column. As we move from left to right, it is a dummy that turns on one for those civil servants that were the top 10% to 50% of their cohort in the recruitment exam, respectively. Mean is mean value for the outcome variable in the estimation sample. Experience, experience squared of the new recruit, time trend of the first job, official rank of the junior and dummy for whether the job is in the field offices is included. Cohort & month-year FE included in all specifications. All specifications exclude first job.

Table A.3: Second stage - Do seniors promote meritocratically?

	Exam : Top5% Exam : Bot5%	Exam : Top6% Exam : Bot6%	Exam : Top7% Exam : Bot7%	Exam : Top8% Exam : Bot8%	Exam : Top9% Exam : Bot9%	Exam : Top10% Exam : Bot10%	Exam : Top11% Exam : Bot11%	Exam : Top12% Exam : Bot12%	Exam : Top13% Exam : Bot13%	Exam : Top14% Exam : Bot14%	Exam : Top15% Exam : Bot15%
	Dependent variable: Fast-track promotions										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\overline{Power}$	-0.13	-0.11	-0.11	-0.10	-0.09	-0.08	-0.08	-0.08	-0.09	-0.09	-0.09
	(0.10)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
$\overline{Exam}$	-0.04	-0.04	-0.03	-0.03	-0.03	-0.02	-0.02	-0.02	-0.01	-0.01	-0.04
	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)
$\underline{Exam}$	0.03	-0.00	0.00	-0.04	-0.05	-0.06	-0.06	-0.06	-0.05	-0.03	-0.03
	(0.04)	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)
$\overline{Power} \times \overline{Exam}$	0.12	0.12	0.12	0.13+	0.13+	0.14*	0.15*	0.15*	0.15*	0.14*	0.03
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.07)
$\overline{Power} \times \underline{Exam}$	0.09	-0.04	-0.04	0.05	-0.04	-0.06	-0.05	-0.05	-0.03	-0.01	-0.06
	(0.08)	(0.10)	(0.10)	(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
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mean	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	17166	17166	17166	17166	17166	17166	17166	17166	17166	17166	17166
Cohorts	39	39	39	39	39	39	39	39	39	39	39

+ p<0.13, * p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Power of seniors ($\overline{Power}$) is the average seniority of first seniors of newly recruited PAS bureaucrats that they work with in the first month of the first job. It is measured as the average official promotions, over time, of the set of seniors. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It 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. $\overline{Exam}$ is as defined at the top of each column. As we move from left to right, it is a dummy that turns on one for those civil servants that were the top 10% to 50% of their cohort in the recruitment exam, respectively. Mean is mean value for the outcome variable in the estimation sample. Experience, experience squared of the new recruit, time trend of the first job, official rank of the junior and dummy for whether the job is in the field offices is included. Cohort & month-year FE included in all specifications. All specifications exclude first job.

Table A.4: First stage - Do seniors promote meritocratically?

	Dependent variable: Fast-track promotions										
	$Exam$: Top5% $Exam$: Bot5%	$Exam$: Top6% $Exam$: Bot6%	$Exam$: Top7% $Exam$: Bot7%	$Exam$: Top8% $Exam$: Bot8%	$Exam$: Top9% $Exam$: Bot9%	$Exam$: Top10% $Exam$: Bot10%	$Exam$: Top11% $Exam$: Bot11%	$Exam$: Top12% $Exam$: Bot12%	$Exam$: Top13% $Exam$: Bot13%	$Exam$: Top14% $Exam$: Bot14%	$Exam$: Top15% $Exam$: Bot15%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
$\overline{Power^p}$	0.53***	0.54***	0.54***	0.54***	0.54***	0.54***	0.54***	0.54***	0.53***	0.53***	0.54***
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
$\overline{Exam}$	-0.04	-0.04	-0.04	-0.03	-0.03	-0.02	-0.03	-0.03	-0.02	-0.02	-0.01
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.03)	(0.04)	(0.03)
$\underline{Exam}$	0.08*	0.07**	0.07**	0.07**	0.06**	0.07**	0.06**	0.07**	0.07**	0.07**	0.09***
	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
$\overline{Power^p} \times \overline{Exam}$	-0.11	-0.12	-0.12	-0.11	-0.11	-0.11	-0.10	-0.10	-0.10	-0.10	-0.09
	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.09)	(0.06)
$\overline{Power^p} \times \underline{Exam}$	0.07	-0.07	-0.07	-0.05	-0.04	-0.03	-0.03	-0.03	-0.02	-0.02	-0.05
	(0.06)	(0.09)	(0.09)	(0.07)	(0.07)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)
AP F Statistic-I	42	48	48	49	56	54	53	52	48	48	46
AP F Statistic-II	112	103	109	123	127	139	143	143	135	147	264
AP F Statistic-III	302	305	304	270	312	414	420	418	558	626	527
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
person x mon	17166	17166	17166	17166	17166	17166	17166	17166	17166	17166	17166
Cohorts	39	39	39	39	39	39	39	39	39	39	39

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Power of seniors ($\overline{Power}$) is the average seniority of first seniors of newly recruited PAS bureaucrats that they work with in the first month of the first job. It is measured as the average official promotions, over time, of the set of seniors. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It 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. $\overline{Exam}$ is as defined at the top of each column. As we move from left to right, it is a dummy that turns on one for those civil servants that were the top 10% to 50% of their cohort in the recruitment exam, respectively. Mean is mean value for the outcome variable in the estimation sample. Experience, experience squared of the new recruit, time trend of the first job, official rank of the junior and dummy for whether the job is in the field offices is included. Cohort & month-year FE included in all specifications. All specifications exclude first job.

Table A.5: OLS - Do seniors promote meritocratically?

	Dependent variable: Fast-track promotions				
	$Exam =$ Top 10%	$Exam =$ Top 20%	$Exam =$ Top 30%	$Exam =$ Top 40%	$Exam =$ Top 50%
	(1)	(2)	(3)	(4)	(5)
$\overline{Power}$	-0.047	-0.041	-0.051	-0.048	-0.010
	(0.043)	(0.044)	(0.050)	(0.053)	(0.048)
$\overline{Power} \times \overline{Exam}$	0.136**	0.049	0.036	0.032	-0.027
	(0.067)	(0.063)	(0.043)	(0.044)	(0.048)
$\overline{Exam}$	-0.004	-0.002	-0.017	-0.004	0.008
	(0.037)	(0.028)	(0.028)	(0.028)	(0.032)
Controls	Yes	Yes	Yes	Yes	Yes
Cohort & time FE	Yes	Yes	Yes	Yes	Yes
Mean	0.31	0.31	0.31	0.31	0.31
person x mon	17229	17229	17229	17229	17229
Cohorts	39	39	39	39	39

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Power of seniors ($\overline{Power}$) is the average seniority of first seniors of newly recruited PAS bureaucrats that they work with in the first month of the first job. It is measured as the average official promotions, over time, of the set of seniors. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It 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. $\overline{Exam}$ is as defined at the top of each column. As we move from left to right, it is a dummy that turns on one for those civil servants that were the top 10% to 50% of their cohort in the recruitment exam, respectively. Mean is mean value for the outcome variable in the estimation sample. Experience, experience squared of the new recruit, time trend of the first job, official rank of the junior and dummy for whether the job is in the field offices is included. Cohort & month-year FE included in all specifications. All specifications exclude first job.

Table A.6: Reduced form - Do seniors promote meritocratically?

	Dependent variable: Fast-track promotions				
	$Exam =$ Top 10%	$Exam =$ Top 20%	$Exam =$ Top 30%	$Exam =$ Top 40%	$Exam =$ Top 50%
	(1)	(2)	(3)	(4)	(5)
$\overline{Power^p}$	-0.050	-0.048	-0.061	-0.056	-0.038
	(0.051)	(0.053)	(0.056)	(0.058)	(0.053)
$\overline{Power^p} \times \overline{Exam}$	0.094*	0.031	0.040	0.033	-0.004
	(0.049)	(0.049)	(0.036)	(0.039)	(0.040)
$\overline{Exam}$	-0.013	-0.006	-0.022	-0.008	0.004
	(0.034)	(0.028)	(0.028)	(0.028)	(0.030)
Controls	Yes	Yes	Yes	Yes	Yes
Cohort & time FE	Yes	Yes	Yes	Yes	Yes
Mean	0.31	0.31	0.31	0.31	0.31
person x mon	17411	17411	17411	17411	17411
Cohorts	39	39	39	39	39

* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Power of potential seniors ($\overline{Power^p}$) is the average rule-based seniority, over time, of the first set of potential seniors that junior PAS bureaucrats could have worked with in the first job. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It 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. $\overline{Exam}$ is as defined at the top of each column. As we move from left to right, it is a dummy that turns on one for those civil servants that were the top 10% to 50% of their cohort in the recruitment exam, respectively. Mean is mean value for the outcome variable in the estimation sample. Experience, experience squared of the new recruit, time trend of the first job, official rank of the junior and dummy for whether the job is in the field offices is included. Cohort & month-year FE included in all specifications. All specifications exclude first job.

Table A.7: Second Stage - Do seniors promote meritocratically?

	Dependent variable: Fast-track promotions				
	$Exam =$ Top 10%	$Exam =$ Top 20%	$Exam =$ Top 30%	$Exam =$ Top 40%	$Exam =$ Top 50%
	(1)	(2)	(3)	(4)	(5)
$\overline{Power}$	-0.111	-0.114	-0.134	-0.126	-0.104
	(0.093)	(0.097)	(0.104)	(0.106)	(0.096)
$\overline{Power} \times \overline{Exam}$	0.137*	0.035	0.056	0.048	0.002
	(0.080)	(0.071)	(0.050)	(0.052)	(0.051)
$\overline{Exam}$	-0.013	-0.013	-0.026	-0.012	-0.002
	(0.037)	(0.029)	(0.031)	(0.029)	(0.029)
Controls	Yes	Yes	Yes	Yes	Yes
Cohort & time FE	Yes	Yes	Yes	Yes	Yes
Mean	0.31	0.31	0.31	0.31	0.31
person x mon	17166	17166	17166	17166	17166
Cohorts	39	39	39	39	39

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Power of seniors ($\overline{Power}$) is the average seniority of first seniors of newly recruited PAS bureaucrats that they work with in the first month of the first job. It is measured as the average official promotions, over time, of the set of seniors. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It 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. $\overline{Exam}$ is as defined at the top of each column. As we move from left to right, it is a dummy that turns on one for those civil servants that were the top 10% to 50% of their cohort in the recruitment exam, respectively. Mean is mean value for the outcome variable in the estimation sample. Experience, experience squared of the new recruit, time trend of the first job, official rank of the junior and dummy for whether the job is in the field offices is included. Cohort & month-year FE included in all specifications. All specifications exclude first job.

Table A.8: First Stage - Do seniors promote meritocratically?

	Exam = Top 10%	Exam = Top 20%	Exam = Top 30%	Exam = Top 40%	Exam = Top 50%
	Dependent variable: Promotion power of seniors ($\overline{Power}$)				
	(1)	(2)	(3)	(4)	(5)
$Power^p$	0.547***	0.543***	0.531***	0.530***	0.524***
	(0.087)	(0.089)	(0.093)	(0.094)	(0.094)
$\overline{Power^p} \times \overline{Exam}$	-0.104	-0.048	-0.007	-0.000	0.011
	(0.098)	(0.053)	(0.048)	(0.047)	(0.035)
$\overline{Exam}$	-0.033	-0.041	-0.040	-0.038	-0.032
	(0.037)	(0.026)	(0.031)	(0.032)	(0.022)
AP F Statistic-I	45	38	35	35	35
AP F Statistic-II	99	177	246	280	404
Controls	Yes	Yes	Yes	Yes	Yes
Cohort & time FE	Yes	Yes	Yes	Yes	Yes
person x mon	17166	17166	17166	17166	17166
Cohorts	39	39	39	39	39

* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Power of seniors ($\overline{Power}$) is the average seniority of first seniors of newly recruited PAS bureaucrats that they work with in the first month of the first job. It is measured as the average official promotions, over time, of the set of seniors. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It 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. $\overline{Exam}$ is as defined at the top of each column. As we move from left to right, it is a dummy that turns on one for those civil servants that were the top 10% to 50% of their cohort in the recruitment exam, respectively. Mean is mean value for the outcome variable in the estimation sample. Experience, experience squared of the new recruit, time trend of the first job, official rank of the junior and dummy for whether the job is in the field offices is included. Cohort & month-year FE included in all specifications. All specifications exclude first job.

Table A.9: Correlation between end of training and vacancies

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

* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Clustered standard errors in parentheses.

Table A.10: 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. Clustered standard errors in parentheses.

Note: 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. Standard errors are clustered at the tehsil level.

Table A.11: Correlation between district characteristics, vacancies and tenure

	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. Clustered standard errors in parentheses.

Note: 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). Standard errors are clustered at the district level.

Table A.12: Are tax targets determined by power of seniors?

	Tax Targets (Rs. in million)	
	(1)	(2)
$\overline{Power}^p$	0.05	-1.09
	(2.99)	(3.33)
$\overline{Power}^p$ × Exam Top 10% (α)		0.37
		(4.08)
$\overline{Power}^p$ × Exam Bottom 10% (β)		-3.01
		(3.53)
Exam Top 10%		-0.85
		(2.86)
Exam Bottom 10%		1.41
		(2.43)
mean	9.00	9.41
person x mon	1483	1297
cohorts	31	30

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Note: The unit of observation is a civil-servant month. Tax target is the annual target (in rupees) for the Assistant Commissioners in a tehsil. Power of potential seniors ($\overline{Power}^p$) is the average rule-based rank 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. The omitted category is mid 80% exam performers. Standard errors are clustered at the cohort level.

Table A.13: Determinants of tax targets

	Tax Target (Rs. in million)	
	(1)	(2)
Past tax collection	-0.029	0.022
	(0.121)	(0.200)
Election year	0.346	6.574
	(3.749)	(5.489)
Real wage	-0.008	0.006
	(0.048)	(0.058)
Population estimates	-0.912*	-7.281
	(0.523)	(6.464)
Rural employment	0.439**	0.529
	(0.216)	(0.375)
Agriculture production	0.355***	1.341***
	(0.127)	(0.356)
Irrigated area	0.026***	0.047***
	(0.005)	(0.018)
year FE	Yes	Yes
district FE	No	Yes
Observations	121	121

* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Clustered standard errors in parentheses.

Note: The unit of observation is a district-fiscal year. Tax target is the annual target (in rupees) set by the BOR for the Assistant Commissioners in tehsils. Election year is a dummy that turns on one in election years. Data on past tax collection has been digitized from records of BOR. Data on rest of the independent variables is from the Pakistan Bureau of Statistics.

Table A.14: First stage - Do seniors use pvt. info meritocratically?

	Dependent variable: Promotion power of seniors ($\overline{power}$)	
	(1)	(2)
$\overline{Power}^p$	0.70***	0.68***
	(0.08)	(0.11)
$\overline{Power}^p \times$ Tax Top 10% (γ)	0.09**	0.09
	(0.04)	(0.07)
Tax Top 10%	-0.03	-0.05***
	(0.02)	(0.01)
$\overline{Power}^p \times$ Exam Top 10% (α)		0.05
		(0.06)
Exam Top 10%		0.04**
		(0.02)
AP F Statistic-I	88	55
AP F Statistic-II	945	709
AP F Statistic-III		69
Controls	Yes	Yes
Cohort & time FE	Yes	Yes
person x mon	6673	5668
Cohorts	29	29

* $p<0.1$, ** $p<0.05$, *** $p<0.01$. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Power of seniors ($\overline{Power}$) is the average official rank of seniors of newly recruited PAS bureaucrats with whom they work with in their first job. Power of potential seniors ($\overline{Power}^p$) is the average rule-based rank of potential seniors that junior PAS bureaucrats could have worked with in the first job. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It 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. Tax top 10% is a dummy that turns on one when the civil servant is in the top 10% of the cohort in tax collection. Exam top 10% is a dummy that turns on one when the civil servant is in the top 10% of the cohort in recruitment exam. Angrist & Pischke (2009) f-stat is reported for each endogenous variable at the bottom. Mean is mean value for the outcome variable in the estimation sample. Cohort & month-year FE, experience of the new recruit, time trend of the first job and official rank of the junior is included. All specifications exclude first job.

Table A.15: Second stage - Do seniors use pvt. info meritocratically?

	OLS		IV		Reduced Form	
	(1)	(2)	(3)	(4)	(5)	(6)
Power (θ)	0.00	-0.02	-0.02	-0.04		
	(0.07)	(0.09)	(0.14)	(0.17)		
$\overline{Power}$ × Tax Top 10% (γ)	-0.04	0.01	-0.05	0.02		
	(0.07)	(0.09)	(0.07)	(0.09)		
Tax Top 10%	-0.01	0.02	-0.01	0.03	-0.01	0.02
	(0.04)	(0.06)	(0.04)	(0.06)	(0.04)	(0.06)
$\overline{Power}$ × Exam Top 10% (α)		0.27		0.50***		
		(0.19)		(0.13)		
Exam Top10%		-0.03		-0.04		-0.03
		(0.06)		(0.06)		(0.05)
$\overline{Power^p}$ (θ)					-0.01	-0.03
					(0.10)	(0.12)
$\overline{Power^p}$ × Tax Top 10% (γ)					-0.05	0.01
					(0.06)	(0.08)
$\overline{Power^p}$ × Exam Top 10% (α)						0.37***
						(0.12)
Ho: $\gamma=\alpha$ (p-value)		0.27		0.00		0.03
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Cohort & time FE	Yes	Yes	Yes	Yes	Yes	Yes
Mean	0.33	0.35	0.33	0.35	0.33	0.35
person x mon	6673	5668	6673	5668	6706	5701
Cohorts	29	29	29	29	29	29

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Power of seniors ($\overline{Power}$) is the average official rank of seniors of newly recruited PAS bureaucrats with whom they work with in their first job. Power of potential seniors ($\overline{Power^p}$) is the average rule-based rank of potential seniors that junior PAS bureaucrats could have worked with in the first job. Fast-track promotions are promotions at the discretion of the senior civil servants and the chief executive of the province. It 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. Tax top 10% is a dummy that turns on one when the civil servant is in the top 10% of the cohort in tax collection. Exam top 10% is a dummy that turns on one when the civil servant is in the top 10% of the cohort in recruitment exam. Mean is mean value for the outcome variable in the estimation sample. Cohort & month-year FE, experience of the new recruit, time trend of the first job and official rank of the junior is included. All specifications exclude first job.

Table A.16: OLS - Do seniors improve lateral allocations?

	Dependent variable: Competitive job location	
	(Tax collection job)	
	(1)	(2)
$\overline{Power}$	0.13	0.35
	(0.10)	(0.21)
Exam Top 10%		0.04
		(0.07)
Exam Bottom 10%		-0.08
		(0.05)
$\overline{Power}$ × Exam Top 10% (α)		0.08
		(0.31)
$\overline{Power}$ × Exam Bottom 10% (β)		-0.65***
		(0.22)
Ho: $\alpha=\beta$ (p-value)		0.02
Controls	No	Yes
Cohort & time FE	No	Yes
Mean	0.33	0.34
person x mon	7378	5638
cohorts	44	39

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Exam top 10%, bottom 10% are dummy variables that turn on one for those juniors that are in the top 10%, bottom 10% of their cohort in the recruitment exam respectively. Competitiveness job location is the index is competitiveness of the location that junior works in. The index is defined as demand for the job location as a proportion of maximum demand for any location. Power of seniors ($\overline{Power}$) is the average official rank, over time, of seniors that newly recruited PAS bureaucrats work with in their first job.

Table A.17: Reduced form - Do seniors improve lateral allocations?

	Dependent variable: Competitive job location	
	(Tax collection job)	
	(1)	(2)
$\overline{Power}^p$	0.09	0.19
	(0.07)	(0.27)
Exam Top 10%		0.04
		(0.07)
Exam Bottom 10%		-0.08
		(0.05)
$\overline{Power}^p$ × Exam Top 10% (α)		0.03
		(0.19)
$\overline{Power}^p$ × Exam Bottom 10% (β)		-0.46**
		(0.20)
Ho: $\alpha=\beta$ (p-value)		0.05
Controls	No	Yes
Cohort & time FE	No	Yes
Mean	0.33	0.34
person x mon	7376	5640
Cohorts	43	39

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Exam top 10%, bottom 10% are dummy variables that turn on one for those juniors that are in the top 10%, bottom 10% of their cohort in the recruitment exam respectively. Competitiveness job location is the index is competitiveness of the location that junior works in. The index is defined as demand for the job location as a proportion of maximum demand for any location. Power of potential seniors ($\overline{Power}^p$) is the average rule-based rank, over time, of potential seniors that junior bureaucrats could have worked with in their first job.

Table A.18: Do seniors improve lateral allocations?

	Dependent variable: Competitive job location			
	(Tax collection job)			
	OLS		IV	
	(1)	(2)	(3)	(4)
$\overline{Power}$	0.13	0.35	0.16	0.49
	(0.10)	(0.21)	(0.13)	(0.56)
Exam Top 10%		0.04		0.04
		(0.07)		(0.07)
Exam Bottom 10%		-0.08		-0.08
		(0.05)		(0.05)
$\overline{Power} \times$ Exam Top 10% (α)		0.08		0.34
		(0.31)		(0.78)
$\overline{Power} \times$ Exam Bottom 10% (β)		-0.65***		-0.83*
		(0.22)		(0.44)
Ho: $\alpha=\beta$ (p-value)		0.02		0.20
Controls	No	Yes	No	Yes
Cohort & time FE	No	Yes	No	Yes
Mean	0	0	0	0
person x mon	7378	5638	7374	5638
Cohorts	44	39	43	39

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Exam top 10%, bottom 10% are dummy variables that turn on one for those juniors that are in the top 10%, bottom 10% of their cohort in the recruitment exam respectively. Competitiveness job location is the index is competitiveness of the location that junior works in. The index is defined as demand for the job location as a proportion of maximum demand for any location. Power of seniors ($\overline{Power}$) is the average official rank, over time, of seniors that newly recruited PAS bureaucrats work with in their first job.

Table A.19: First stage - Do seniors improve lateral allocations? (tax collection job)

	Dependent variable: Promotion power of work ties ($\overline{power}$)	
	(1)	(2)
$\overline{Power}^p$	0.55***	0.56***
	(0.10)	(0.08)
$\overline{Power}^p \times$ Exam Top 10% (α)		-0.13**
		(0.06)
$\overline{Power}^p \times$ Exam Bottom 10% (β)		0.23***
		(0.07)
Exam Top 10%		-0.00
		(0.00)
Exam Bottom 10%		0.00
		(0.00)
AP F Statistic-I	32	45
AP F Statistic-II		9
AP F Statistic-III		234
Controls	No	Yes
Cohort & time FE	No	Yes
person x mon	7374	5638
Cohorts	43	39

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Exam top 10%, bottom 10% are dummy variables that turn on one for those juniors that are in the top 10%, bottom 10% of their cohort in the recruitment exam respectively. Competitiveness job location is the index is competitiveness of the location that junior works in. The index is defined as demand for the job location as a proportion of maximum demand for any location. Power of seniors ($\overline{Power}$) is the average official rank, over time, of seniors that newly recruited PAS bureaucrats work with in their first job. Power of potential seniors ($\overline{Power}^p$) is the average rule-based rank, over time, of potential seniors that junior bureaucrats could have worked with in their first job.

Table A.20: OLS - Do seniors improve lateral allocations?

	Dependent variable: Preferred job location	
	(Tax collection job)	
	(1)	(2)
Power	0.75**	-1.01
	(0.24)	(0.64)
Exam Top 10%		0.03
		(0.27)
Exam Bottom 10%		0.23**
		(0.07)
$\overline{Power}$ × Exam Top 10% (α)		0.66
		(0.74)
$\overline{Power}$ × Exam Bottom 10% (β)		-1.22
		(0.79)
Ho: $\alpha=\beta$ (p-value)		0.13
Controls	No	Yes
Cohort & time FE	No	Yes
Mean	0.37	0.34
person x mon	1456	1199
cohorts	10	10

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Exam top 10%, bottom 10% are dummy variables that turn on one for those juniors that are in the top 10%, bottom 10% of their cohort in the recruitment exam respectively. At the end of training PAS bureaucrats are asked to list their preferred job location from first to fourth most preferred. A location is preferred if it has ever been categorized as a preferred one by a bureaucrat. Preferred location is a dummy that turns on 1 whenever a junior is working as a tax collector, in a job location that he or she prefers. Power of seniors ($\overline{Power}$) is the average official rank, over time, of seniors that newly recruited PAS bureaucrats work with in their first job.

Table A.21: Reduced form - Do seniors improve lateral allocations?

	Dependent variable: Preferred job location	
	(Tax collection job)	
	(1)	(2)
$\overline{Power^p}$	0.13	0.55
	(0.30)	(0.57)
Exam Top 10%		0.04
		(0.26)
Exam Bottom 10%		0.22**
		(0.08)
$\overline{Power^p}$ × Exam Top 10% (α)		1.06***
		(0.26)
$\overline{Power^p}$ × Exam Bottom 10% (β)		-0.56
		(0.69)
Ho: $\alpha=\beta$ (p-value)		0.10
Controls	No	Yes
Cohort & time FE	No	Yes
Mean	0.37	0.34
person x mon	1456	1199
Cohorts	10	10

* p<0.1, ** p<0.05, *** p<0.01. Clustered standard errors in parentheses.

Note: The unit of observation is a civil servant-month. Exam top 10%, bottom 10% are dummy variables that turn on one for those juniors that are in the top 10%, bottom 10% of their cohort in the recruitment exam respectively. At the end of training PAS bureaucrats are asked to list their preferred job location from first to fourth most preferred. A location is preferred if it has ever been categorized as a preferred one by a bureaucrat. Preferred location is a dummy that turns on 1 whenever a junior is working as a tax collector, in a job location that he or she prefers. Power of potential seniors ($\overline{Power^p}$) is the average rule-based rank, over time, of potential seniors that junior bureaucrats could have worked with in their first job.

Appendix B

Data

Figure B.1: This figure shows career chart of civil servants. The source of the data is 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 B.2: Recruitment exam ranking published in newspapers

Figure B.3: Historical tax records of the central revenue agency i.e. the Board of Revenue's (BOR) record room

Figure B.4: The BOR tax collection pro forma

Figure B.5: The BOR tax collection pro forma duly verified by District Accounts Officer

Figure B.6: An example of an incumbency board: Assistant Commissioner Multan. This data was digitized to create a tehsil-day level panel of vacancy and tenure of Assistant Commissioner positions across Punjab. This data when combined with career charts data identified the set of potential seniors of newly recruited PAS bureaucrats.

Appendix C

Details of Complete Data Digitized

Career charts data on bureaucrats
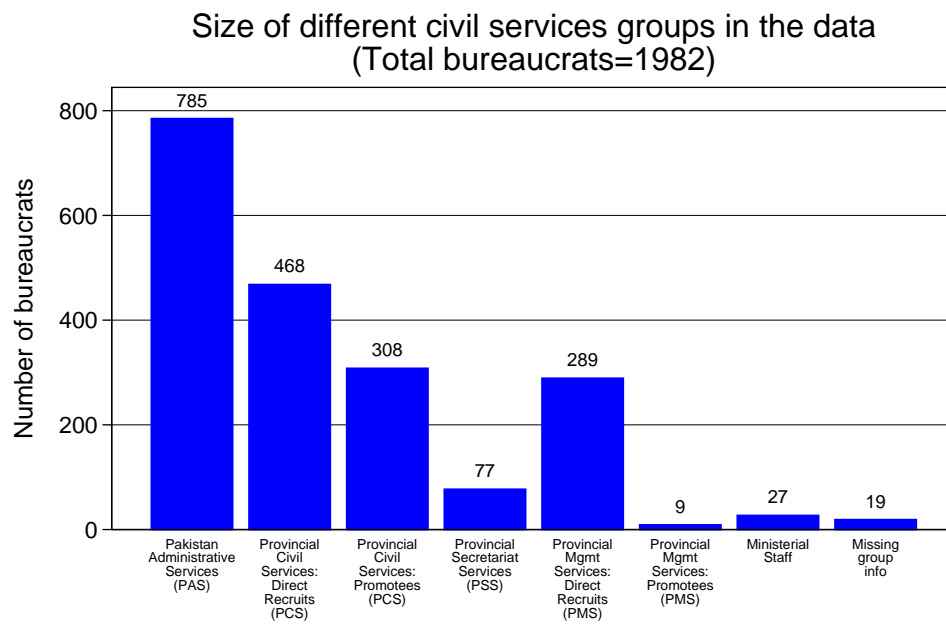
Figure C.1: Details of the digitized career charts data

Table C.1: The table describes details of the career charts data.

Civil Service Group	Year	No. of Bureaucrats	Total no. of months observed in year	Average no. of months observed per person
Pakistan Administrative Services (PAS)	1956	1	12	12
Pakistan Administrative Services (PAS)	1957	1	12	12
Pakistan Administrative Services (PAS)	1958	1	12	12
Pakistan Administrative Services (PAS)	1959	2	15	8
Pakistan Administrative Services (PAS)	1960	2	18	9
Pakistan Administrative Services (PAS)	1961	2	24	12
Pakistan Administrative Services (PAS)	1962	2	24	12
Pakistan Administrative Services (PAS)	1963	4	37	9
Pakistan Administrative Services (PAS)	1964	6	62	10
Pakistan Administrative Services (PAS)	1965	12	108	9
Pakistan Administrative Services (PAS)	1966	12	112	9
Pakistan Administrative Services (PAS)	1967	15	156	10
Pakistan Administrative Services (PAS)	1968	15	170	11
Pakistan Administrative Services (PAS)	1969	16	161	10
Pakistan Administrative Services (PAS)	1970	23	246	11
Pakistan Administrative Services (PAS)	1971	26	263	10
Pakistan Administrative Services (PAS)	1972	30	314	10
Pakistan Administrative Services (PAS)	1973	34	385	11
Pakistan Administrative Services (PAS)	1974	37	402	11
Pakistan Administrative Services (PAS)	1975	46	426	9
Pakistan Administrative Services (PAS)	1976	55	572	10
Pakistan Administrative Services (PAS)	1977	64	666	10
Pakistan Administrative Services (PAS)	1978	72	764	11
Pakistan Administrative Services (PAS)	1979	78	835	11
Pakistan Administrative Services (PAS)	1980	87	958	11
Pakistan Administrative Services (PAS)	1981	107	1060	10
Pakistan Administrative Services (PAS)	1982	123	1311	11
Pakistan Administrative Services (PAS)	1983	155	1538	10
Pakistan Administrative Services (PAS)	1984	196	1958	10
Pakistan Administrative Services (PAS)	1985	200	2254	11
Pakistan Administrative Services (PAS)	1986	220	2352	11
Pakistan Administrative Services (PAS)	1987	238	2558	11
Pakistan Administrative Services (PAS)	1988	258	2875	11
Pakistan Administrative Services (PAS)	1989	282	3020	11
Pakistan Administrative Services (PAS)	1990	310	3285	11
Pakistan Administrative Services (PAS)	1991	324	3656	11
Pakistan Administrative Services (PAS)	1992	339	3742	11
Pakistan Administrative Services (PAS)	1993	355	3955	11
Pakistan Administrative Services (PAS)	1994	369	4151	11
Pakistan Administrative Services (PAS)	1995	380	4265	11
Pakistan Administrative Services (PAS)	1996	388	4382	11
Pakistan Administrative Services (PAS)	1997	394	4410	11
Pakistan Administrative Services (PAS)	1998	402	4195	10
Pakistan Administrative Services (PAS)	1999	361	4048	11
Pakistan Administrative Services (PAS)	2000	363	3968	11
Pakistan Administrative Services (PAS)	2001	348	3758	11
Pakistan Administrative Services (PAS)	2002	340	3683	11
Pakistan Administrative Services (PAS)	2003	334	3762	11
Pakistan Administrative Services (PAS)	2004	343	3862	11
Pakistan Administrative Services (PAS)	2005	340	3806	11
Pakistan Administrative Services (PAS)	2006	326	3616	11
Pakistan Administrative Services (PAS)	2007	327	3589	11

Continued on next page

Table C.1 – continued from previous page

Civil Service Group	Year	No. of Bureaucrats	Total no. of months observed in year	Average no. of months observed per person
Pakistan Administrative Services (PAS)	2008	361	3705	10
Pakistan Administrative Services (PAS)	2009	337	3691	11
Pakistan Administrative Services (PAS)	2010	329	3554	11
Pakistan Administrative Services (PAS)	2011	310	3151	10
Pakistan Administrative Services (PAS)	2012	281	2888	10
Pakistan Administrative Services (PAS)	2013	262	1821	7
Pakistan Administrative Services (PAS)	2014	72	545	8
Pakistan Administrative Services (PAS)	2015	45	200	4
Pakistan Administrative Services (PAS)	2016	2	6	3
Provincial Civil Services: Direct Recruits (PCS)	1950	1	1	1
Provincial Civil Services: Direct Recruits (PCS)	1966	1	8	8
Provincial Civil Services: Direct Recruits (PCS)	1967	1	12	12
Provincial Civil Services: Direct Recruits (PCS)	1968	1	12	12
Provincial Civil Services: Direct Recruits (PCS)	1969	1	12	12
Provincial Civil Services: Direct Recruits (PCS)	1970	3	36	12
Provincial Civil Services: Direct Recruits (PCS)	1971	5	39	8
Provincial Civil Services: Direct Recruits (PCS)	1972	10	100	10
Provincial Civil Services: Direct Recruits (PCS)	1973	12	127	11
Provincial Civil Services: Direct Recruits (PCS)	1974	24	223	9
Provincial Civil Services: Direct Recruits (PCS)	1975	54	620	11
Provincial Civil Services: Direct Recruits (PCS)	1976	50	540	11
Provincial Civil Services: Direct Recruits (PCS)	1977	50	570	11
Provincial Civil Services: Direct Recruits (PCS)	1978	62	666	11
Provincial Civil Services: Direct Recruits (PCS)	1979	53	600	11
Provincial Civil Services: Direct Recruits (PCS)	1980	62	665	11
Provincial Civil Services: Direct Recruits (PCS)	1981	73	791	11
Provincial Civil Services: Direct Recruits (PCS)	1982	73	814	11
Provincial Civil Services: Direct Recruits (PCS)	1983	73	821	11
Provincial Civil Services: Direct Recruits (PCS)	1984	87	857	10
Provincial Civil Services: Direct Recruits (PCS)	1985	93	1031	11
Provincial Civil Services: Direct Recruits (PCS)	1986	122	1267	10
Provincial Civil Services: Direct Recruits (PCS)	1987	119	1272	11
Provincial Civil Services: Direct Recruits (PCS)	1988	140	1499	11
Provincial Civil Services: Direct Recruits (PCS)	1989	190	1979	10
Provincial Civil Services: Direct Recruits (PCS)	1990	186	2053	11
Provincial Civil Services: Direct Recruits (PCS)	1991	187	2087	11
Provincial Civil Services: Direct Recruits (PCS)	1992	232	2170	9
Provincial Civil Services: Direct Recruits (PCS)	1993	234	2590	11
Provincial Civil Services: Direct Recruits (PCS)	1994	267	2887	11
Provincial Civil Services: Direct Recruits (PCS)	1995	269	2998	11
Provincial Civil Services: Direct Recruits (PCS)	1996	287	3120	11
Provincial Civil Services: Direct Recruits (PCS)	1997	291	3138	11
Provincial Civil Services: Direct Recruits (PCS)	1998	294	3195	11
Provincial Civil Services: Direct Recruits (PCS)	1999	348	3497	10
Provincial Civil Services: Direct Recruits (PCS)	2000	339	3677	11
Provincial Civil Services: Direct Recruits (PCS)	2001	332	3687	11
Provincial Civil Services: Direct Recruits (PCS)	2002	319	3582	11
Provincial Civil Services: Direct Recruits (PCS)	2003	309	3544	11
Provincial Civil Services: Direct Recruits (PCS)	2004	297	3439	12
Provincial Civil Services: Direct Recruits (PCS)	2005	295	3432	12
Provincial Civil Services: Direct Recruits (PCS)	2006	289	3347	12
Provincial Civil Services: Direct Recruits (PCS)	2007	284	3362	12
Provincial Civil Services: Direct Recruits (PCS)	2008	286	3333	12

Table C.1 – continued from previous page

Civil Service Group	Year	No. of Bureaucrats	Total no. of months observed in year	Average no. of months observed per person
Provincial Civil Services: Direct Recruits (PCS)	2009	284	3289	12
Provincial Civil Services: Direct Recruits (PCS)	2010	271	2990	11
Provincial Civil Services: Direct Recruits (PCS)	2011	227	1914	8
Provincial Civil Services: Direct Recruits (PCS)	2012	87	351	4
Provincial Civil Services: Direct Recruits (PCS)	2013	11	113	10
Provincial Civil Services: Direct Recruits (PCS)	2014	6	61	10
Provincial Civil Services: Direct Recruits (PCS)	2015	3	4	1
Provincial Civil Services: Promotees (PCS)	1971	1	3	3
Provincial Civil Services: Promotees (PCS)	1972	2	19	10
Provincial Civil Services: Promotees (PCS)	1973	5	46	9
Provincial Civil Services: Promotees (PCS)	1974	8	68	9
Provincial Civil Services: Promotees (PCS)	1975	10	120	12
Provincial Civil Services: Promotees (PCS)	1976	8	96	12
Provincial Civil Services: Promotees (PCS)	1977	7	84	12
Provincial Civil Services: Promotees (PCS)	1978	28	187	7
Provincial Civil Services: Promotees (PCS)	1979	26	285	11
Provincial Civil Services: Promotees (PCS)	1980	45	427	9
Provincial Civil Services: Promotees (PCS)	1981	55	612	11
Provincial Civil Services: Promotees (PCS)	1982	71	725	10
Provincial Civil Services: Promotees (PCS)	1983	90	959	11
Provincial Civil Services: Promotees (PCS)	1984	90	1015	11
Provincial Civil Services: Promotees (PCS)	1985	100	1080	11
Provincial Civil Services: Promotees (PCS)	1986	101	1148	11
Provincial Civil Services: Promotees (PCS)	1987	102	1172	11
Provincial Civil Services: Promotees (PCS)	1988	104	1212	12
Provincial Civil Services: Promotees (PCS)	1989	105	1229	12
Provincial Civil Services: Promotees (PCS)	1990	123	1321	11
Provincial Civil Services: Promotees (PCS)	1991	119	1288	11
Provincial Civil Services: Promotees (PCS)	1992	123	1301	11
Provincial Civil Services: Promotees (PCS)	1993	115	1264	11
Provincial Civil Services: Promotees (PCS)	1994	130	1426	11
Provincial Civil Services: Promotees (PCS)	1995	117	1306	11
Provincial Civil Services: Promotees (PCS)	1996	116	1312	11
Provincial Civil Services: Promotees (PCS)	1997	120	1124	9
Provincial Civil Services: Promotees (PCS)	1998	128	1261	10
Provincial Civil Services: Promotees (PCS)	1999	148	1527	10
Provincial Civil Services: Promotees (PCS)	2000	147	1535	10
Provincial Civil Services: Promotees (PCS)	2001	135	1367	10
Provincial Civil Services: Promotees (PCS)	2002	114	1288	11
Provincial Civil Services: Promotees (PCS)	2003	106	1173	11
Provincial Civil Services: Promotees (PCS)	2004	106	1162	11
Provincial Civil Services: Promotees (PCS)	2005	93	1039	11
Provincial Civil Services: Promotees (PCS)	2006	89	1007	11
Provincial Civil Services: Promotees (PCS)	2007	87	978	11
Provincial Civil Services: Promotees (PCS)	2008	76	839	11
Provincial Civil Services: Promotees (PCS)	2009	75	802	11
Provincial Civil Services: Promotees (PCS)	2010	75	792	11
Provincial Civil Services: Promotees (PCS)	2011	81	784	10
Provincial Civil Services: Promotees (PCS)	2012	73	829	11
Provincial Civil Services: Promotees (PCS)	2013	74	760	10
Provincial Civil Services: Promotees (PCS)	2014	59	413	7
Provincial Civil Services: Promotees (PCS)	2015	17	63	4
Provincial Secretariat Services (PSS)	1969	1	11	11

Table C.1 – continued from previous page

Civil Service Group	Year	No. of Bureaucrats	Total no. of months observed in year	Average no. of months observed per person
Provincial Secretariat Services (PSS)	1970	1	12	12
Provincial Secretariat Services (PSS)	1971	1	12	12
Provincial Secretariat Services (PSS)	1972	1	12	12
Provincial Secretariat Services (PSS)	1973	1	9	9
Provincial Secretariat Services (PSS)	1974	1	12	12
Provincial Secretariat Services (PSS)	1975	1	12	12
Provincial Secretariat Services (PSS)	1976	1	12	12
Provincial Secretariat Services (PSS)	1977	2	18	9
Provincial Secretariat Services (PSS)	1978	2	24	12
Provincial Secretariat Services (PSS)	1979	3	36	12
Provincial Secretariat Services (PSS)	1980	5	59	12
Provincial Secretariat Services (PSS)	1981	5	59	12
Provincial Secretariat Services (PSS)	1982	8	76	10
Provincial Secretariat Services (PSS)	1983	10	118	12
Provincial Secretariat Services (PSS)	1984	10	120	12
Provincial Secretariat Services (PSS)	1985	12	134	11
Provincial Secretariat Services (PSS)	1986	27	251	9
Provincial Secretariat Services (PSS)	1987	33	339	10
Provincial Secretariat Services (PSS)	1988	36	413	11
Provincial Secretariat Services (PSS)	1989	40	450	11
Provincial Secretariat Services (PSS)	1990	41	479	12
Provincial Secretariat Services (PSS)	1991	44	503	11
Provincial Secretariat Services (PSS)	1992	53	544	10
Provincial Secretariat Services (PSS)	1993	54	631	12
Provincial Secretariat Services (PSS)	1994	62	719	12
Provincial Secretariat Services (PSS)	1995	63	736	12
Provincial Secretariat Services (PSS)	1996	65	729	11
Provincial Secretariat Services (PSS)	1997	64	740	12
Provincial Secretariat Services (PSS)	1998	72	801	11
Provincial Secretariat Services (PSS)	1999	71	850	12
Provincial Secretariat Services (PSS)	2000	72	856	12
Provincial Secretariat Services (PSS)	2001	71	815	11
Provincial Secretariat Services (PSS)	2002	73	864	12
Provincial Secretariat Services (PSS)	2003	73	867	12
Provincial Secretariat Services (PSS)	2004	72	860	12
Provincial Secretariat Services (PSS)	2005	72	863	12
Provincial Secretariat Services (PSS)	2006	72	848	12
Provincial Secretariat Services (PSS)	2007	70	833	12
Provincial Secretariat Services (PSS)	2008	70	833	12
Provincial Secretariat Services (PSS)	2009	68	794	12
Provincial Secretariat Services (PSS)	2010	64	706	11
Provincial Secretariat Services (PSS)	2011	59	378	6
Provincial Secretariat Services (PSS)	2012	10	25	3
Provincial Management Services: Direct Recruits (PMS)	2001	1	10	10
Provincial Management Services: Direct Recruits (PMS)	2002	1	12	12
Provincial Management Services: Direct Recruits (PMS)	2003	2	24	12
Provincial Management Services: Direct Recruits (PMS)	2004	2	24	12
Provincial Management Services: Direct Recruits (PMS)	2005	2	24	12
Provincial Management Services: Direct Recruits (PMS)	2006	58	433	7
Provincial Management Services: Direct Recruits (PMS)	2007	119	807	7
Provincial Management Services: Direct Recruits (PMS)	2008	118	1387	12
Provincial Management Services: Direct Recruits (PMS)	2009	117	1384	12
Provincial Management Services: Direct Recruits (PMS)	2010	184	1975	11

Table C.1 – continued from previous page

Civil Service Group	Year	No. of Bureaucrats	Total no. of months observed in year	Average no. of months observed per person
Provincial Management Services: Direct Recruits (PMS)	2011	203	2281	11
Provincial Management Services: Direct Recruits (PMS)	2012	197	2285	12
Provincial Management Services: Direct Recruits (PMS)	2013	268	2513	9
Provincial Management Services: Direct Recruits (PMS)	2014	259	1840	7
Provincial Management Services: Direct Recruits (PMS)	2015	78	246	3
Provincial Management Services: Promotees (PMS)	1972	1	1	1
Provincial Management Services: Promotees (PMS)	1973	1	12	12
Provincial Management Services: Promotees (PMS)	1974	1	12	12
Provincial Management Services: Promotees (PMS)	1975	1	12	12
Provincial Management Services: Promotees (PMS)	1976	1	12	12
Provincial Management Services: Promotees (PMS)	1977	1	12	12
Provincial Management Services: Promotees (PMS)	1978	1	12	12
Provincial Management Services: Promotees (PMS)	1979	1	12	12
Provincial Management Services: Promotees (PMS)	1980	1	10	10
Provincial Management Services: Promotees (PMS)	1981	1	2	2
Provincial Management Services: Promotees (PMS)	1982	1	12	12
Provincial Management Services: Promotees (PMS)	1983	1	11	11
Provincial Management Services: Promotees (PMS)	1984	1	12	12
Provincial Management Services: Promotees (PMS)	1987	1	12	12
Provincial Management Services: Promotees (PMS)	1988	1	12	12
Provincial Management Services: Promotees (PMS)	1989	1	5	5
Provincial Management Services: Promotees (PMS)	2004	1	4	4
Provincial Management Services: Promotees (PMS)	2005	1	12	12
Provincial Management Services: Promotees (PMS)	2006	5	48	10
Provincial Management Services: Promotees (PMS)	2007	6	62	10
Provincial Management Services: Promotees (PMS)	2008	6	72	12
Provincial Management Services: Promotees (PMS)	2009	6	61	10
Provincial Management Services: Promotees (PMS)	2010	7	81	12
Provincial Management Services: Promotees (PMS)	2011	8	81	10
Provincial Management Services: Promotees (PMS)	2012	7	75	11
Provincial Management Services: Promotees (PMS)	2013	7	82	12
Provincial Management Services: Promotees (PMS)	2014	7	43	6
Provincial Management Services: Promotees (PMS)	2015	3	9	3
Ministerial Staff	1980	6	72	12
Ministerial Staff	1981	6	71	12
Ministerial Staff	1982	12	111	9
Ministerial Staff	1983	14	161	12
Ministerial Staff	1984	15	172	11
Ministerial Staff	1985	17	190	11
Ministerial Staff	1986	17	204	12
Ministerial Staff	1987	17	198	12
Ministerial Staff	1988	16	186	12
Ministerial Staff	1989	17	193	11
Ministerial Staff	1990	17	199	12
Ministerial Staff	1991	17	189	11
Ministerial Staff	1992	15	154	10
Ministerial Staff	1993	12	131	11
Ministerial Staff	1994	12	117	10
Ministerial Staff	1995	9	97	11
Ministerial Staff	1996	8	83	10
Ministerial Staff	1997	7	79	11
Ministerial Staff	1998	5	60	12
Ministerial Staff	1999	5	55	11

Table C.1 – continued from previous page

Civil Service Group	Year	No. of Bureaucrats	Total no. of months observed in year	Average no. of months observed per person
Ministerial Staff	2000	6	43	7
Ministerial Staff	2001	6	72	12
Ministerial Staff	2002	5	60	12
Ministerial Staff	2003	5	60	12
Ministerial Staff	2004	4	48	12
Ministerial Staff	2005	4	48	12
Ministerial Staff	2006	10	73	7
Ministerial Staff	2007	9	108	12
Ministerial Staff	2008	9	93	10
Ministerial Staff	2009	7	84	12
Ministerial Staff	2010	7	83	12
Ministerial Staff	2011	7	66	9
Ministerial Staff	2012	6	72	12
Ministerial Staff	2013	6	64	11
Ministerial Staff	2014	5	41	8
Ministerial Staff	2015	3	9	3

Exam performance data of PAS bureaucrats

Table C.2: The table describes details of the data on exam performance from Federal Public Service Commission, Pakistan.

Year of Recruitment	Total no. of bureaucrats observed in career charts data (Work in Punjab)	Total no. of bureaucrats in FPSC exam rank data (Recruited for Pakistan)
1973	7	13
1974	8	18
1975	6	12
1976	6	10
1977	8	15
1978	7	15
1979	15	24
1980	19	31
1981	17	30
1982	14	22
1983	13	32
1984	15	33
1985	21	24
1986	28	31
1987	16	21
1988	11	16
1989	13	23
1990	18	23
1991	14	17
1992	13	16
1993	8	11
1994	11	18
1995	10	23
1996	12	23
1997	12	19
1998	12	18
1999	13	22
2000	13	20
2002	9	20
2003	9	23
2004	11	25
2005	17	36
2006	15	35
2007	12	35
2008	4	38
2009	15	36
2010	10	37
2011	7	35
2012	13	33
2013	-	36
2014	-	28
2015	-	36

Tax collection data

Figure C.2: Tax circles in tehsils of Punjab with data on tax. Juniors head the revenue administration in tehsils. Tax performance of juniors is created as an average of revenue circles in a tehsil.

Table C.3: The table describes details of the tax data. The data is a monthly unbalanced panel of revenue circles in tehsils. Where zero revenue circles are mentioned the data is at a tehsil level. Juniors head the revenue administration in tehsils. Monthly tax performance of juniors is created as an average of revenue circles in a tehsil.

Details of the Tax Data					
District	Tehsil	Start year	End year	Total no. of months of data	Revenue Circles
Attock	Hazro	2001	2012	53	6
Attock	Attock	1991	2012	84	8
Attock	Pindi Gheb	1991	2012	66	8
Attock	Jand	1991	2012	66	6
Attock	Hassan Abdal	1992	2012	44	6
Attock	Fateh Jang	1991	2012	66	11
Bahawalnagar	Fort Abbas	1987	2013	116	7
Bahawalnagar	Minchanabad	1987	2013	130	6
Bahawalnagar	Haroonabad	1987	2013	118	9
Bahawalnagar	Chishtian	1987	2013	129	6
Bahawalnagar	Bahawalnagar	1987	2013	116	6
Bahawalpur	Khairpur Tamewali	1995	2013	54	8
Bahawalpur	Ahmedpur Sharqia	1987	2013	98	4
Bahawalpur	Hasilpur	1987	2013	72	2
Bahawalpur	Bahawalpur city	1987	2013	82	9
Bahawalpur	Yazman	1987	2013	74	4
Bhakkar	Mankera	1995	2013	71	8
Bhakkar	Kaloorkot	1995	2013	74	8
Bhakkar	Darya Khan	2001	2013	56	13
Bhakkar	Bhakkar	1995	2013	109	15
Chakwal	Kallar Kahar	2004	2013	47	9
Chakwal	Chakwal	1988	2013	119	15
Chakwal	Choa Saidan Shah	1991	2013	88	5
Chakwal	Talagang	1988	2013	112	11
Chiniot	Lalian	2009	2013	26	9
Chiniot	Bhohana	2009	2013	26	5
Chiniot	Chiniot	1987	2013	70	13
Dera Ghazi Khan	Dera Ghazi Khan	1995	2013	79	6
Dera Ghazi Khan	Taunsa Sharif	1998	2013	49	6
Faisalabad	Jaranwala	1984	2013	128	11
Faisalabad	Faisalabad Saddar	1984	2013	142	25
Faisalabad	Chak Jhumra	1991	2013	130	9
Faisalabad	Tandlianwala	2002	2013	90	5
Faisalabad	Samundri	1984	2013	127	7
Faisalabad	Faisalabad City	1995	2013	85	3
Gujranwala	Kamoki	1991	2013	111	4
Gujranwala	Nowshera Virkan	1991	2013	114	4
Gujranwala	Gujranwala City	1991	2013	118	4
Gujranwala	Wazirabad	1991	2013	113	6
Gujranwala	Gujranwala Saddar	1995	2012	81	0
Gujrat	Sarai Alamgir	2001	2013	82	0
Gujrat	Kharian	2001	2013	88	0
Gujrat	Gujrat	1994	2013	118	8
Hafizabad	Pindi Bhattian	1994	2013	104	12
Hafizabad	Hafizabad	1991	2013	115	7
Jhang	Shorkot	1987	2012	73	4
Jhang	18 Hazari	2010	2013	35	4
Jhang	Ahmed Pur Sial	2005	2012	31	4
Jhang	Jhang	1987	2013	85	18
					Continued on next page

Table C.3 – continued from previous page

District	Tehsil	Start year	End year	Total no. of months of data	Revenue Circles
Jhelum	Dina	2008	2013	47	1
Jhelum	Pind Dadan Khan	1987	2013	99	4
Jhelum	Sohawa	1991	2003	38	4
Jhelum	Jhelum	1987	2013	125	5
Kasur	Kasur	1987	2013	179	11
Kasur	Chunian	1987	2013	179	13
Kasur	Pattoki	1995	2013	145	7
Kasur	Kot Rada Kishan	2006	2013	73	4
Khanewal	Jahanian	1991	2013	150	4
Khanewal	Khanewal	1987	2013	173	9
Khanewal	Kabirwala	1987	2013	166	6
Khanewal	Mian Channu	1987	2013	167	10
Khushab	Khushab	1987	2013	117	4
Khushab	Noorpur Thal	1987	2013	117	7
Khushab	Quaidabad	2007	2013	54	3
Lahore	Lahore Nishtar Town	1997	2011	48	9
Lahore	Lahore Saddar	1987	2012	121	2
Lahore	Lahore Modeltown	1997	2012	35	1
Lahore	Lahore City	1987	2012	125	1
Lahore	Lahore Shalimar	1997	2012	49	4
Layyah towns	Layyah	1987	2013	100	9
Layyah towns	Fatehpur	1987	2013	94	4
Layyah towns	Chaubara	1987	2013	94	5
Lodhran	Lodhran	1987	2013	107	0
Lodhran	Dunya Pur	2001	2013	64	4
Lodhran	Kahror Pacca	2001	2013	63	3
Mandi Bahauddin	Mandi Bahauddin	1995	2013	77	13
Mandi Bahauddin	Phalia	1995	2013	74	8
Mandi Bahauddin	Malakwal	1995	2013	75	4
Mianwali	Isakhel	1987	2013	107	13
Mianwali	Piplan	1995	2013	103	11
Mianwali	Mianwali	1987	2013	130	12
Multan	Jalalpur Pirwala	1991	2013	142	8
Multan	Shujabad	1987	2013	169	10
Multan	Multan	1987	2013	173	22
Multan	Multan Saddar	1991	2013	154	14
Muzaffargarh	Kot Addu	1987	2013	155	9
Muzaffargarh	Jatoi	1997	2013	112	11
Muzaffargarh	Alipur	1987	2013	156	11
Muzaffargarh	Muzaffargarh	1987	2013	168	5
Nankana Sahib	Nankana Sahib	1995	2013	97	11
Nankana Sahib	Shahkot	2006	2013	42	3
Nankana Sahib	Sangla Hill	2003	2013	42	3
Narowal	Zaffarwal	2009	2013	22	3
Narowal	Shakargarh	1987	2013	140	13
Narowal	Narowal	1987	2013	143	16
Okara	Depalpur	1983	2012	87	3
Okara	Okara	1983	2012	109	7
Okara	Renala khurd	1999	2012	80	2
Pakpattan	Arifwala	1987	2013	104	1
Pakpattan	Pakpattan	1987	2013	103	10
Rahim Yar Khan	Liaquatpur	1996	2012	42	3
Rahim Yar Khan	Rahim Yar Khan	1984	2012	47	6
Rahim Yar Khan	Khanpur	1984	2012	43	1

Table C.3 – continued from previous page

District	Tehsil	Start year	End year	Total no. of months of data	Revenue Circles
Rahim Yar Khan	Sadiqabad	1984	2012	42	7
Rajanpur	Jampur	1987	2013	114	7
Rajanpur	Rojhan	1987	2013	114	6
Rajanpur	Rajanpur	1987	2013	131	6
Rawalpindi	Kotli Sattian	1991	2006	19	0
Rawalpindi	Gujar Khan	1987	2006	38	0
Rawalpindi	Kallar Syedan	2004	2006	5	0
Rawalpindi	Murree	1987	2006	37	0
Rawalpindi	Rawalpindi City	1987	2006	38	0
Rawalpindi	Taxila	1989	2006	23	0
Rawalpindi	Kahuta	1987	2006	38	0
Sahiwal	Sahiwal	1995	2013	70	8
Sahiwal	Chichawatni	1995	2013	69	7
Sargodha	Sillanwali	1995	2013	60	3
Sargodha	Kotmomin	2007	2013	46	5
Sargodha	Sahiwal	1995	2013	78	17
Sargodha	Sargodha	1987	2013	85	9
Sargodha	Shahpur	1987	2013	90	4
Sargodha	Bhalwal	1987	2013	90	10
Sheikhupura	Ferozewala	1995	2013	85	16
Sheikhupura	Safdarabad	1998	2013	97	7
Sheikhupura	Sheikhupura	1995	2013	86	16
Sheikhupura	Muridke	1997	2013	56	8
Sheikhupura	Sharaqpur	2006	2013	50	3
Sialkot	Sialkot	1987	2013	75	7
Sialkot	Sambrial	2012	2013	12	0
Sialkot	Pasrur	1987	2013	58	7
Sialkot	Daska	1987	2013	58	2
Toba Tek Singh	Gojra	1994	2012	77	7
Toba Tek Singh	Toba Tek Singh	1995	2012	75	9
Toba Tek Singh	Kamalia	1994	2012	78	5
Vehari	Vehari	1991	2013	81	11
Vehari	Mailsi	1991	2012	79	7
Vehari	Burewala Mailsi	1991	2013	106	15

Vacancy and tenure of Assistant Commissioner positions across Punjab: incumbency board data

Table C.4: The table describes details of the incumbency board data on vacancy and tenure of Assistant Commissioner (tax collector) positions across Punjab

District	Tehsil	Start year	End year	Total no. of years observed	Average no. of days per year observed
Attock	Attock	1970	2013	44	360
Attock	Fateh Jang	1988	2016	29	347
Attock	Hassan Abdal	2001	2015	15	329
Attock	Hazro	2004	2013	10	306
Attock	Jand	1985	2013	29	354
Attock	Pindi Gheb	1971	2013	43	363
Bahawalnagar	Bahawalnagar	1973	2015	43	362
Bahawalnagar	Chishtian	1961	2014	54	365
Bahawalnagar	Fort Abbas	1972	2012	36	346
Bahawalnagar	Haroonabad	1991	2014	24	361
Bahawalnagar	Minchanabad	1972	2014	43	362
Bahawalpur	Ahmedpur Sharqia	1979	2015	37	351
Bahawalpur	Bahawalpur city	2011	2014	4	293
Bahawalpur	Bahwalpur Sadar	2005	2013	9	323
Bahawalpur	Hasilpur	1972	2013	42	365
Bahawalpur	Khairpur Tamewali	1990	2014	25	363
Bahawalpur	Yazman	2011	2015	5	277
Bhakkar	Bhakkar	1982	2014	33	359
Bhakkar	Darya Khan	2003	2014	12	330
Bhakkar	Kaloorkot	1982	2015	34	355
Bhakkar	Mankera	1982	2015	34	356
Chakwal	Chakwal	1947	2014	68	365
Chakwal	Choa Saidan Shah	2010	2014	5	332
Chakwal	Kallar Kahar	2005	2015	11	326
Chakwal	Talagang	1971	2013	43	358
Chiniot	Bhohana	2009	2014	6	308
Chiniot	Chiniot	1966	2015	50	360
Chiniot	Lalian	2009	2015	7	304
Dera Ghazi Khan	Dera Ghazi Khan	1970	2015	46	355
Dera Ghazi Khan	Taunsa Sharif	1964	2014	51	363
Faisalabad	Chak Jhumra	2001	2015	15	339
Faisalabad	Faisalabad City	1987	2015	29	359
Faisalabad	Faisalabad Saddar	1971	2014	44	362
Faisalabad	Jaranwala	1970	2014	45	361
Faisalabad	Samundri	1970	2015	46	357
Faisalabad	Tandlianwala	1994	2015	22	347
Gujranwala	Gujranwala City	1999	2014	16	332
Gujranwala	Gujranwala Saddar	1970	2014	45	359
Gujranwala	Kamoki	1970	2015	46	358
Gujranwala	Nowshera Virkan	1995	2015	21	338
Gujranwala	Wazirabad	1963	2015	53	360
Gujrat	Gujrat	1974	2015	42	363
Gujrat	Kharian	1989	2015	27	359
Gujrat	Sarai Alamgir	1996	2014	19	365
Hafizabad	Hafizabad	1970	2013	44	357
Hafizabad	Pindi Bhattian	1993	2014	22	359

Continued on next page

Table C.4 – continued from previous page

District	Tehsil	Start year	End year	Total no. of years observed	Average no. of days per year observed
Jhang	18 Hazari	2010	2014	5	310
Jhang	Ahmed Pur Sial	2003	2013	11	319
Jhang	Jhang	1971	2013	43	358
Jhang	Shorkot	1970	2015	46	357
Jhelum	Dina	2004	2014	11	346
Jhelum	Jhelum	2001	2014	14	361
Jhelum	Pind Dadan Khan	1947	2013	67	358
Jhelum	Sohawa	1985	2014	30	356
Kasur	Chunian	1970	2011	42	359
Kasur	Kasur	2001	2014	14	337
Kasur	Kot Rada Kishan	2006	2013	8	336
Kasur	Pattoki	1992	2013	22	345
Khanewal	Jahanian	2001	2014	14	346
Khanewal	Kabirwala	1975	2014	40	361
Khanewal	Khanewal	1947	2014	68	358
Khanewal	Mian Channu	1985	2013	29	359
Khushab	Jauharabad	1947	2014	68	364
Khushab	Noorpur Thal	1982	2015	34	355
Khushab	Quaidabad	2009	2013	5	339
Lahore	Lahore City	1993	2014	22	353
Lahore	Lahore Modeltown	1982	2014	24	357
Lahore	Lahore Nishtar Town	2001	2014	14	330
Lahore	Lahore Saddar	1982	2015	34	363
Lahore	Lahore Shalimar	2011	2014	4	307
Layyah towns	Fatehpur	1982	2014	33	358
Layyah towns	Layyah	1981	2014	34	357
Lodhran	Dunya Pur	1991	2013	23	352
Lodhran	Kahror Pacca	1991	2013	23	351
Lodhran	Lodhran	1963	2014	52	363
Mandi Bahauddin	Malakwal	1993	2013	21	353
Mandi Bahauddin	Mandi Bahauddin	1963	2015	53	357
Mandi Bahauddin	Phalia	1993	2014	22	351
Mianwali	Isakhel	1971	2015	45	357
Mianwali	Mianwali	1970	2015	46	357
Mianwali	Piplan	1993	2015	23	355
Multan	Jalalpur Pirwala	1991	2015	25	355
Multan	Multan	1989	2014	26	361
Multan	Multan Saddar	1977	2015	39	353
Multan	Shujabad	1989	2015	27	348
Muzaffargarh	Alipur	1964	2015	52	355
Muzaffargarh	Jatoi	1996	2015	20	338
Muzaffargarh	Kot Addu	2012	2014	3	289
Muzaffargarh	Muzaffargarh	2001	2015	15	331
Nankana Sahib	Sangla Hill	2005	2014	10	345
Nankana Sahib	Shahkot	2006	2014	9	312
Narowal	Narowal	1950	2013	64	361
Narowal	Shakargarh	1970	2015	46	359
Narowal	Zaffarwal	2009	2013	5	277
Okara	Depalpur	1970	2015	46	362
Okara	Okara	1963	2013	51	362
Okara	Renala khurd	2002	2015	14	351
Pakpattan	Arifwala	1987	2015	29	351

Table C.4 – continued from previous page

District	Tehsil	Start year	End year	Total no. of years observed	Average no. of days per year observed
Pakpattan	Pakpattan	1947	2014	68	361
Rahim Yar Khan	Khanpur	1979	2013	35	349
Rahim Yar Khan	Liaquatpur	1971	2001	31	350
Rahim Yar Khan	Rahim Yar Khan	1978	2013	36	352
Rahim Yar Khan	Sadiqabad	2001	2014	14	349
Rajanpur	Jampur	2001	2011	11	329
Rajanpur	Rajanpur	1968	2001	34	352
Rajanpur	Rojhan	1982	2013	32	356
Rawalpindi	Gujar Khan	1963	2014	52	362
Rawalpindi	Kahuta	1972	2013	42	352
Rawalpindi	Kallar Syedan	2004	2014	11	335
Rawalpindi	Kotli Sattian	1990	2014	25	346
Rawalpindi	Murree	1947	2013	67	364
Rawalpindi	Rawalpindi City	1982	2013	22	351
Rawalpindi	Taxila	1988	2013	26	349
Sahiwal	Chichawatni	1980	2014	35	358
Sahiwal	Sahiwal	1972	2014	43	360
Sargodha	Bhalwal	1972	2015	44	356
Sargodha	Kotmomin	2003	2014	12	339
Sargodha	Sahiwal	1994	2015	22	333
Sargodha	Sargodha	1974	2013	40	360
Sargodha	Shahpur	1975	2014	40	363
Sargodha	Sillanwali	1996	2013	18	363
Sheikhupura	Ferozewala	1963	2015	53	360
Sheikhupura	Muridke	2006	2014	9	342
Sheikhupura	Safdarabad	2001	2015	15	351
Sheikhupura	Sharaqpur	2006	2015	10	323
Sheikhupura	Sheikhupura	1970	2015	46	361
Sialkot	Daska	1963	2015	53	365
Sialkot	Pasrur	1970	2013	44	361
Sialkot	Sambrial	2005	2015	11	314
Sialkot	Sialkot	1972	2015	44	357
Toba Tek Singh	Gojra	1982	2013	32	355
Toba Tek Singh	Kamalia	1982	2015	34	355
Toba Tek Singh	Toba Tek Singh	1949	2014	66	364
Vehari	Burewala Mailsi	1976	2013	38	356
Vehari	Vehari	2003	2014	12	337

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