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Traveling Agents: Political Change and Bureaucratic Turnover in India[*]

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Abstract

We develop a framework to empirically examine how politicians with electoral pressures control bureaucrats with career concerns as well as the consequences for bureaucrats' career investments. Unique micro-level data on Indian bureaucrats support our key predictions. Politicians use frequent reassignments (transfers) across posts of varying importance to control bureaucrats. High-skilled bureaucrats face less frequent political transfers and lower variability in the importance of their posts. We find evidence of two alternative paths to career success: officers of higher initial ability are more likely to invest in skill, but caste affinity to the politician's party base also helps secure important positions.

1   Introduction

In many countries, elected politicians and appointed bureaucrats are jointly responsible for governance. Bureaucrats typically face low-powered incentives and politicians have limited constitutional power to hire or fire them.[1] This is consistent with a desirable feature of the rule of law, which is that policy implementation not be politicized. Given such constitutional constraints, how would politicians facing electoral pressures ensure that their preferred policies are implemented by such protected bureaucrats? One approach may be to simply reserve the top bureaucratic posts for political appointees, as is the case in the U.S. federal government. Politicians can also use a variety of other devices. They may offer non-monetary incentives, identify motivated agents who share their world view, be gate-keepers with respect to who enters the bureaucracy or be selective in the tasks they delegate to bureaucrats.[2]

In this paper, we examine a hitherto unexplored mechanism for the politician to retain control: being selective in which bureaucrat he delegates authority to, for various tasks. Our study makes theoretical and empirical contributions to the literature on bureaucratic delegation. Theoretically, we endogenize bureaucrats' response to the politician's delegation, given their career concerns. Empirically, we provide evidence on both the politician's and

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[1]Holmstrom and Milgrom (1991) and Dewatripont, Jewitt and Tirole (1999) explore the normative rationale for providing low-powered incentives to bureaucrats, while Maskin and Tirole (2004) present the case for an independent bureaucracy insulated from political pressures.

[2]All these mechanisms have been explored in recent theoretical literature. See, respectively, the papers by Prendergast (2007), Besley and Ghatak (2005), Mueller (2007) and Alesina and Tabellini (2007). Calvert and Weingast (1989) and Epstein and O'Halloran (1999) provide a related "transactions cost" approach to delegation of authority by politicians to bureaucrats.

the bureaucrats' strategies, using a unique data set on the career histories of bureaucrats in the Indian Administrative Service. This is one of the very few detailed micro-empirical analyses of the interaction between politicians and bureaucrats.

Our work sheds light on the internal structure and working of government, which can greatly enhance our understanding of the policy process–a point emphasized by Dixit (2008).[3] The explicit modeling of bureaucrat career concerns shows how the political process can affect the professionalization of the bureaucracy, defined in a Weberian sense.[4] The degree of professionalization of the bureaucracy has been identified as a necessary condition for a state to be developmental and successfully achieve economic growth (Evans, 1995; Rauch and Evans, 2000).

Our theoretical framework assumes that the politician principal cares about having control over bureaucrats' actions, has the power to assign specific bureaucrats to specific tasks, but lacks the power to recruit, dismiss, demote or change the wages of appointed bureaucrats. Bureaucrats in turn care about the prestige and importance of the posts they are assigned to. The politician can assign bureaucrats across posts of varying importance, as a means to control them. In such a setting, will he reward "Weberian" bureaucrats with a

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[3]Dixit (2008) likens the value added by such work to the progress made from research on the internal organization of firms: "This 'opening the black box of policy administration' is analogous to what occurred in the theory of the firm. Our view of the firm has changed for the better, from a mechanical maximizer of profit (or some other objective in cases of managerial or labor-managed firms) taking technology and factor prices as given, to an organization that must tackle manifold problems of internal governance and incentives. Analysis of the process of policy implementation promises similar progress."

[4]We refer to Weber's notion of a bureaucracy with meritocratic recruitment and security of tenure, where officers apply their technical expertise in the impartial execution of assigned tasks, to maximize efficiency.

reputation for expertise and independent judgement or just those that are loyal to his party? How will junior bureaucrats with career concerns respond to these incentives? Our theoretical framework examines these mechanisms, and highlights two major sources of inefficiency. One stems from the fact that not all important posts are filled with the most skilled bureaucrats, due to the politician's preference for a degree of control over bureaucrat outcomes. The other is that politician's assignment practices result in underinvestment in skill by junior bureaucrats with career concerns, since investing in loyalty to specific politicians provides an alternative path to career success.

Our framework generates several testable hypotheses, which we test empirically using a unique data set on the career histories of 2800 officers in the Indian Administrative Service (IAS) between 1980 and 2004. We combine these data with data on political changes in major Indian states over the same period, proxy measures of bureaucrats' ability at the initial and later stage of their career, and a measure of the relative importance of different posts as viewed by bureaucrats themselves.

Our empirical findings on bureaucrat assignment patterns are highly consistent with the inefficiencies implied by our theoretical framework. First, we find that politicians do affect the process of bureaucrat assignment. A change in the identity of a state's Chief Minister (the de facto executive head of the state government) results in a significant increase in the probability of bureaucrat reassignments in that state. Second, we find that officers with higher initial ability face less frequent political transfers and lower variability in the importance of their posts. Third, over their entire career, we find that officers of high initial ability are no more likely to be assigned to important posts than other (loyal) officers. This confirms the model's view that there are alternative routes to success – it is not expertise

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alone that politicians value. Further support for this view comes from the finding that officers are more likely to be appointed to important positions when they belong to the same caste as the Chief Minister's party base. Fourth, consistent with the model's prediction that not all junior bureaucrats will invest in developing a reputation for expertise, we find that it is officers with high initial ability (i.e. a comparative advantage in developing expertise) who spend significantly more time acquiring training during the course of their career. They are also more likely to be recommended for senior positions in the central government, suggesting that they have developed a greater reputation for expertise.

We conduct a separate analysis of district level bureaucrat transfers. We find these to be significantly less likely in places where the district-level politicians are from the Chief Minister's party – suggesting that local politicians serve as an an alternative channel through which the Chief Minister exercises political control over bureaucrats. Thus, unlike the case of a new CEO bringing in his own team, bureaucrat transfers are not driven by efficiency considerations about the personal "match" between the bureaucrats and the new Chief Minister; nor are they driven by a desire for experimentation and type revelation since we would not expect this motive to differ by the party identity of the local politicians. Further, since local politicians and bureaucrats appear to be "substitutes" from the Chief Minister's point of view, we should not expect outcomes to differ systematically across districts with and without bureaucrat transfers. Data on specific policy implementation outcomes such as road construction and immunization rates are consistent with this implication.[5]

Our work is related to the few systematic empirical analyses of the relationship be-

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[5]See Bardhan and Mookherjee (2006) for a detailed model of the implications of delegating authority to bureaucrats versus local politicians in developing countries.

tween politicians and bureaucrats. Ramseyer and Rasmusen (2001) examine the impact of politically salient judicial decisions on the careers of judges in Japan; Park and Somanathan (2004) document explicit links between Korean politicians and public prosecutors, and their impact on bureaucrat assignments. The length of bureaucratic tenures has been shown to be an important determinant of long-term investments (Rauch, 1995) and the degree of professionalization of a bureaucracy (Evans, 1995). There is a larger empirical literature which compares the policy decisions made by appointed versus elected public officials, or the effects of rent-seeking opportunities, monetary incentives and term limits for politicians.[6] Previous empirical work on the Indian bureaucracy has been mostly descriptive (Wade, 1982; de Zwart, 1994; Potter, 1996; Das, 2001).

The rest of the paper is structured as follows: Section 2 describes the characteristics of the Indian Administrative Service and the political setting in India, and Section 3 sets up our theoretical framework. Section 4 describes our data, Sections 5 and 6 present our empirical results, and Section 7 concludes.

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[6]On comparing decisions of appointed versus elected officials, see Besley and Coate (2003), Besley and Payne (2003), Khemani (2003), Lim (2008) and Weingast and Moran (1983). Di Tella and Fisman (2004), Besley, Pande and Rao (2007), Ferraz and Finan (2008) and Smart and Sturm (2008) analyze the incentives for elected officials.

2   Bureaucrats and Politicians in India

2.1   The Indian Administrative Service

The Indian Administrative Service (IAS) is the top-most layer of the government bureaucracy in India, consisting of fewer than 5000 officers in 2005. IAS bureaucrats staff the most important positions in district administration, state and central government secretariats, and state-owned enterprises. A particularly important position is that of a District Officer, who is responsible for ensuring law and order, providing certain judicial functions, organizing relief and rehabilitation in cases of natural disasters, implementing development policies and overseeing all aspects of administration in a specific district.[7] These are positions of considerable importance: the median population of a district in 2001 was 1.5 million people, and District Officers frequently administer budgets of the order of $2 million. Lower levels of administration are staffed by members of State Civil Services.

IAS officers are career civil servants, and political neutrality is a requirement of their position. IAS officers cannot join political parties or be involved in any political events. On the other side, politicians are not involved in the hiring process of IAS officers. Recruitment is either through extremely competitive nationwide examinations conducted by an independent Commission ("direct recruits"), or by promotion of the best-performing officers from the lower State Civil Services ("SCS promotees"), the latter category being restricted to not more than one-third of officers in a state.[8] After recruitment and initial training, direct

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[7]These officers are variously known as District Collectors, District Magistrates and Deputy Commissioners in different parts of India.

[8]Nearly 50% of all posts are reserved for members of historically disadvantaged sections of society.

recruits are assigned to specific state cadres, where they typically spend most of their careers. This assignment of officers to states is done by a rigid (rather complicated) bureaucratic rule, resulting in a quasi-random assignment of officers to states. In particular, it is very difficult for elected politicians or the bureaucrats themselves to affect this assignment.[9] Not more than one-third of the direct recruits assigned to a state can be natives of that state.

The Constitution of India provides IAS officers considerable immunity from state-level politicians by stipulating that an IAS officer "holds office during the pleasure of the President," and cannot be "dismissed or removed by an authority subordinate to that by which he was appointed" (Articles 310 and 311). This means that IAS officers cannot be dismissed or demoted by state-level elected representatives.

2.2   Bureaucrat Careers

IAS officers start by holding positions at the sub-district level, and move on to higher positions within the district, the state secretariat or state-owned enterprises. Officers are usually appointed as District Officers after attaining five to ten years of experience (this varies by state). Promotions are based on years of service for the first few years, and have a merit-based component for the higher level positions. IAS officers are evaluated by their superior

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[9]Broadly, the assignment rule is as follows: each state is first assigned an officer who is from that state, then two officers from other states. A recruit can specify whether he wants to be assigned to his home state or not. Even if he expresses the desire to go to his home state, it may not happen if the state in question does not need any more officers, if the previous officer assigned to the state was from that state, if the reservation criteria for the disadvantaged sections of society have to be satisfied, and if too many top-ranked officers have already been assigned to that state. An officer who is not assigned to his home state is assigned to the next available state in alphabetical order.

officers in Annual Confidential Reports. Wages and salaries are set by independent Pay Commissions, and are determined by the bureaucrat's rank within the hierarchy.

IAS officers are subject to a comprehensive career review approximately twenty years after they join the service. This review is conducted by senior bureaucrats, who decide whether the officer is eligible to hold positions of Joint Secretary and higher in the central government at New Delhi; such positions are usually considered very prestigious. The selected officers are put on a panel from which they can be selected for such positions, as and when the need arises in the central government. This process is called "empanelment" and being "empaneled" is widely regarded as a signal of superior competence within the bureaucracy.

2.3   India's Political System

India is a parliamentary democracy in which elections are held every five years, both for the central government in New Delhi and for the 28 states that constitute the Indian Union. The head of the state executive is the Governor, who acts on the advice of the Chief Minister and the Council of Ministers. The Chief Minister is usually the leader of the party which wins a majority of seats in the state legislature (similar to the Prime Minister at the national level). If the current Chief Minister loses the support of his party (due to internal party politics), or the parties in a coalition government fall apart, efforts are made to form another government, either by choosing a new leader from the same party, or by putting together another coalition. If these efforts fail, the central government often steps in to declare "President's Rule" in the state, when the administration of the state is brought under the

central government until fresh elections are held. The election calendar resets to a five-year one after any such midterm poll. Differing incidence of midterm polls across states has now resulted in states' calendars being different from each other and from the national election calendar. For instance, the last national elections were in 2004, but five states had state elections in 2006.

2.4 Transfers of IAS Bureaucrats

As described in section 2.2, IAS officers cannot be hired or fired by state-level politicians. However, officers can be reassigned or transferred from one post to another. Such transfer orders are signed by the Chief Secretary (the top bureaucrat) who reports directly to the Chief Minister of the state. While bureaucrats can request specific assignments, they have very little power to affect the outcome of such requests. These transfers are almost always within the state, or sometimes between the state and central governments; transfers across states are extremely rare.

In our data, we find that IAS bureaucrats are transferred quite frequently: over the period 1980-2000, the probability that an officer experiences a transfer in a given year is 53% (Table 1, Panel B). The average tenure of IAS officers in a given post is 16 months and only 56% of District Officers spend more than one year in their jobs. This is in violation of the recommendations, put forward by the Ministry of Personnel and the Fifth Pay Commission, for a three-to-five year tenure in each post.

Interestingly, frequent transfers of bureaucrats has been a long-standing feature of the Indian bureaucracy. For instance, using data from the British colonial period, Potter (1996)

finds that two-thirds of all District Officers in 1936 had held their posts for less than one year. Gilmour (2005, p 220) provides a vivid example from an even earlier period: "...between 1879 and 1885 Colonel Tweedie did three stints in Gwalior, two in Baghdad, two in Ajmer, one in Jodhpur, one on the road between Peshawar and Kabul as Political Officer during the invasion of Afghanistan, and another as Political Officer in charge of Jalalabad."

Consistent with our hypothesis that such transfers are used as a control mechanism by politicians, we find that the average rate of bureaucrat transfers in a state increases significantly when there is a new Chief Minister in that state (see Figure 2 for a graphical illustration of bureaucrat transfers in Tamil Nadu state). Such alleged "politicization" of the bureaucracy has become a major public policy issue in India. A Public Services Bill currently exists in draft form, which proposes explicit limits on the political executive's ability to transfer bureaucrats before they complete two years of service.[10] However, politicians seem to value the ability to reassign bureaucrats frequently: during initial consultations regarding the Bill, only eleven states agreed to have a minimum two-year tenure for District Officers, and ten states refused outright!

3 Theoretical Framework

Our stylized framework captures how politicians facing short-term electoral pressures could use job assignments as a tool to control bureaucrats with long-term career concerns, as well as how bureaucrats' career investment decisions would respond to such incentives. We use this framework to derive testable hypotheses for our empirical work. In keeping with

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[10]http://persmin.nic.in/EmployeesCorner/Acts_Rules/DraftPublicServiceBill/PublicServiceBill_2007.pdf

the Indian setting, we assume that politicians do not have access to the standard incentive mechanisms, such as hiring and firing officers, or changing their wages. Our model has three key building blocks: (i) the politician seeks to control bureaucrats' output (ii) bureaucrats care about the prestige and importance of their jobs and (iii) junior bureaucrats can invest either in expertise or loyalty to a specific politician for career success. We lay out the basic features of our model here, and refer the reader to the Appendix for technical details.

3.1 Bureaucrats

Junior officers enter the bureaucracy with an ideological leaning, $j_B \in \{0, 1\}$, and an initial ability a_i that has a distribution $f(a_i)$. They can hold posts that are of two types, important or unimportant, where important posts are scarce. They derive positive utility from holding important positions (because they provide opportunities to make influential policy decisions, say), but nothing from unimportant ones. Hence officers define career success by the importance of their post assignments.

Given politician's preferences (described below), bureaucrats early in their career have two alternative routes to future success: either develop a reputation for expertise or build on loyalty to the politician whose ideology they share. Developing expertise requires effort, although such effort is less costly for officers with higher initial ability a_i. Provided there are incremental rewards to developing expertise, it follows that officers with a high enough initial ability will invest effort in becoming high-skilled officers; those with lower initial ability would prefer to build on their intrinsic loyalty to further their career concerns. Thus, starting with an initial ability a_i and ideological leaning j_B, bureaucrats emerge as one of three types

$b \in \{H, L_0, L_1\}$: those who are high-skilled, those loyal to party 0 and those loyal to party 1.

Bureaucrats who do not invest in skill generate a low output y_L in important posts, irrespective of party loyalty. High-skilled bureaucrats vary in their productivity, but they are each at least as productive as the other two types: $y_H = y_L + \theta$ where $\theta \sim U[0,1]$. The productivity advantage θ realized by a high-skilled officer does not depend upon his/her initial ability $a(i)$. In unimportant posts, we normalize output of all officers to zero.

3.2   Politician

As with bureaucrats, politicians are affiliated to one of two parties (ideologies), $j_P \in \{0, 1\}$. The politician's ultimate goal is to have political power, and he cares about bureaucratic output because it influences his chances of remaining in power. We assume that his prospects for success would depend both upon the size of the bureaucracy's total public good output that he can garner for his constituents, as well as overall public good efficiency.[11] We use $s_b \in [0, 1]$ to represent the share of bureaucrats' output that he can control (or channel in favor of his supporters). He makes assignments $\mathbf{n}_b = \{n_H, n_{L_1}, n_{L_0}\}$ of bureaucrats of different types across important posts optimally, given his preferences. The assumption here is that bureaucrats' ability is known to the politician i.e. that there is no asymmetric information.[12] The output of the bureaucrat is determined by his type. The politician's

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[11]Given that nearly half of the cases of political turnover in our data occur in the absence of elections, we have chosen not represent the politician's preferences in terms of utility from winning elections, per se.

[12]This is a realistic assumption in our context, given that at most a few hundred officers officers serve at a time in each state, and each of them over several decades.

problem is therefore purely a matter of assignment of bureaucrats across posts, and does not involve considerations of adverse selection or moral hazard.

The share s_b that the politician can control varies with the bureaucrat's type. With respect to officers loyal to his own party, he has complete control over their output, but he has little control over the output of officers loyal to the other party i.e. $s_{L_0} = 1$ and $s_{L_1} = 0$ for a politician of type 0; $s_{L_0} = 0$ and $s_{L_1} = 1$ for a politician of type 1. As for high-skilled officers, the politician can control a fraction $s_H \in (0, 1)$ of their output. This is because the policy decisions of high-skilled officers are ideologically neutral, coinciding with the politician's interests some of the time, but not always.[13] A typical scenario of this is one where funds have been earmarked for the construction of say, seven schools in a district. A bureaucrat who is loyal to the politician in power would agree to build all the schools in areas preferred by the latter, whereas one who is not loyal to this politician may disagree entirely on where the schools should be located in the district. An officer with a reputation for expertise would base his decision on a judgement of where the schools are most needed. As a result, he may end up allocating resources to some areas preferred by the politician, but not all of them.

Note that the case where officers choose to invest in skill *and* loyalty to both political parties is simply a special case of a type H officer with $s_H = 1$ in our present framework. We have chosen to assume $s_H \in (0, 1)$ because it is more consistent with the basic transfer patterns observed in our data: as will become clear in description of equilibrium below, if

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[13]This is a "reduced form" version of the preferences of bureaucrats and politicians modeled in Mueller (2007), where both parties' utilities depend upon the efficiency and ideological match of policies chosen by the bureaucrat.

all officers chose to be of type H, there would be no reason for politically induced transfers.

3.3   Timing

Our model consists of three time periods. The first period is an "incubation" period. Junior officers enter the bureaucracy, receive training and make decisions on investments that influence their career prospects. The bureaucrats' type is realized after these investments are made, and the politician currently in office makes an initial assignment of officers across posts of varying importance (period 2). In period three, the incumbent faces elections (or other similar pressures against his remaining in office). If he manages to retain power, there is no change in bureaucrat assignments. If, however, he loses power, the new politician who assumes office re-assigns bureaucrats across posts, so as to maximize gains to himself (or his constituency of voters). Bureaucrats retire from the service at the end of period three and the game ends.

3.4   Equilibrium

An equilibrium in our framework consists of a cut off initial ability for bureaucrats and an assignment rule for the politician such that (i) bureaucrats at or above this ability level invest in skill, (ii) both politicians and bureaucrats maximize their respective utilities and (iii) all posts are filled. We sketch out the equilibrium outcome of this game below. The appendix provides a more formal exposition.

Politicians of either party will prefer to assign high-skilled officers to important posts over type L officers as long as $s_H y_H > y_L$. Since $y_H = y_L + \theta$, $\theta \sim U[0,1]$ bureaucrats

with a high enough realized skill level will get priority in important posts. The rest of the important posts will be filled by officers loyal to the politician in power, while officers loyal to the other party get unimportant posts. The inefficiency here is that some loyal officers are favored over more productive, high-skilled officers, for important posts.

In period 3, reassignment of officers happens only if the incumbent is ousted by the other party's politician, but not otherwise. The new politician has an incentive to reassign (transfer) at least some bureaucrats from important to unimportant posts, and vice versa.[14] Since high-skilled officers have been assigned to important posts only if $s_H \; y_H > y_L$, the new politician has little incentive to reassign them out of important posts. However, he will prefer to replace officers loyal to the other party with those loyal to his own. In other words, political change induces bureaucrat transfers across important versus unimportant posts under the presence of officers loyal to either party. Hence restrictions on the politician's ability to transfer officers will reduce the value of loyalty, on the margin. Over the long run, limits on politician's ability to transfer officers will positively affect productivity by raising the incentive to invest in high skill.

3.5   Testable Hypotheses

The testable hypotheses that emerge from our framework are:

Hypothesis 1: Given bureaucrats who are loyal to either party ideology, political change induces bureaucrat transfers.

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[14]Since output does not differ among posts at the same level of importance, transfers occur only across posts of differing importance. Transfer transaction costs (due to dislocation or inexperience of newly assigned officers on their jobs) would lower the incidence of transfers further.

Hypothesis 2: Irrespective of the type of politician in office, high-skilled (type H) officers face fewer transfers, compared to loyal officers (type L_0 and type L_1).

Hypothesis 3: Over the course of their career, the variation in the importance of the posts held by type H officers is lower.

Hypothesis 4: Given the politician's preferences, bureaucrats with high initial ability will be more likely to invest in expertise and hence become type H officers.

4   Data

4.1   Bureaucrat Transfers

Our main data set contains detailed information on the career histories of all officers serving in the Indian Administrative Service (IAS) as of October 2005, obtained from the website of the Ministry of Personnel, Public Grievances and Pensions. Our analysis will focus on 2802 officers recruited directly (i.e. on the basis of a competitive examination) in 19 major states in or before the year 2000.[15] This is because we have information on both the initial examination rank and a long career path for these officers, which enables us to test key features of our model. Officers recruited after 2000 have not had time to invest in their

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[15]http://persmin.nic.in/ersheet/startqryers.asp, accessed October-December 2005. The states are Andhra Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, Uttaranchal and West Bengal. These states comprised 96% of India's population in 2001. Chhattisgarh, Jharkhand and Uttaranchal were carved out of Madhya Pradesh, Bihar and Uttar Pradesh respectively, in November 2000. There were a total of 4047 officers serving in these states, of which 2802 are directly recruited on or before 2000.

careers and develop a reputation, and have also experienced fewer instances of politician change.[16] 15% of the officers in our data set are female and 33% hold appointments in their home state, consistent with the official assignment rule described in footnote 10 (Table 1, Panel A).

We have information on the start and end dates of each post held by the officer, the exact designation, the level of seniority, and the department. 7% of all posts are the particularly powerful District Officer positions. Based on the start and end dates of each post, we construct a transfer dummy variable which equals one if an officer is recorded as starting a new post in a given year. If he does not start a new post in that year, the transfer dummy is zero. Multiple transfers within the same calendar year are coded as one as well, so that our measure is an underestimate of the actual transfer probability. We find that IAS officers experience very frequent transfers: the average transfer probability for an officer in a given year is 53%.[17]

Since this data set consists of all currently serving officers, it excludes officers who retired in earlier years and is thus less comprehensive for the earliest cohorts. However, attrition due to non-retirement reasons is very small in our data. Based on administrative records, we find that about a quarter of officers recruited before 1979 are no longer present in our data, but only 4% of officers recruited between 1979 and 2000 are absent. We address the attrition issue in three ways: first, we include officer fixed effects in all of our specifications. This would control for factors such as the characteristics or size of specific cohorts. Second,

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[16]40% of the officers recruited after 2000 have not experienced a single politician change, and less than 2% of their positions are important ones.

[17]11% of the transfers in our data are caused by officers taking up more than one new job in a given year.

all our results are robust to excluding the cohorts prior to 1979. Third, we constructed a second position-level data set on District Officers. In this specification, we have a panel data set for a set of specific positions over time, thereby alleviating concerns of selective attrition of officers from our data set. Transfer probabilities in our District Officer data set are very similar to the overall data set, about 52% in a given year.[18]

4.2   Importance of Posts

Based on detailed interviews with several IAS officers, we constructed a measure of whether certain departments were considered more important, more prestigious or more desirable than others, by the bureaucrats themselves.[19]   We should note that in our context, it is precisely such subjective measures of the importance of posts that are required. After all, it is only these perceptions of officers that allow politicians to use assignment across posts as "carrots and sticks." Constitution precludes formal demotion of IAS officers by state politicians, but a move from the Department of Finance to, say, the Department of Youth Affairs would be regarded as a de facto demotion by most officers.

We currently identify the following departments as important (out of a list of 50 departments): excise and sales tax, finance, food and civil supplies, health, home, industries, irrigation, public works and urban development. We should note that departments were

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[18]We constructed the District Officer data set by using the data on career histories from the first data set to identify District Officer positions. We then filled in the gaps in this data by collecting information from the printed copies of the annually published IAS Civil List, which lists the position held by each officer at the beginning of the year.

[19]A department is coded as important if the majority of the officers who did the ranking regarded it as important.

identified as desirable for several different reasons: the Home Ministry is considered important because it is a prominent position with responsibility for law and order, the Sales Tax department because it gives officers access to a lot of state funds, and Finance because this department controls the budgets of all other departments.[20] We classify all District Officer positions and central government positions as important. Overall, 51% of our observations involve officers holding important positions (Table 1, Panel B). Approximately three-fifths of all transfers (31% out of 53%) take place between posts of similar importance, while the rest involve a move from an important position to a non-important one or vice versa.

4.3   Bureaucrat Ability and Loyalty

We measure a bureaucrat's initial ability by the officer's rank within his/her cohort after initial recruitment and training. Using this, we created dummies for whether the officer was among the top 10, top 20 and top 30 members of his/her cohort. We measure career investments in expertise by the total number of weeks spent in training, and the number of weeks spent in foreign training; the latter requires more effort by the bureaucrat to secure funds and official leave, signalling a greater willingness to acquire competence. The ex-post measure of expertise is a dummy for whether the officer has been "empaneled" i.e. reviewed and deemed eligible for senior central government positions in New Delhi (see Section 2.2).

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[20]These diverse considerations make it difficult to use more "objective" measures of importance, such as the share of that department in the state's budget. For instance, the Finance Department does not command a large share of the budget, while Education, which accounts for up to one-fifth of state expenditure, is not considered very prestigious by the bureaucrats themselves. This is probably because most of the budget is earmarked for teacher salaries, leaving very little room for bureaucratic discretion.

For the cohorts recruited between 1979 and 1987, approximately 65% of the officers are empaneled (Table 1, Panel A).

In order to examine the presence of a "loyalty" route to career success, we obtained data on caste identity for the officers of Uttar Pradesh and Uttaranchal cadres. Politics in the state of Uttar Pradesh have been dominated by caste-based appeals by most parties in the 1990s (Chandra, 2004; Banerjee and Pande, 2007). We compute a measure of whether the officer's caste is the same as that of the Chief Minister's party base. In terms of our framework, being of the same caste as that of the party base should make it easier for an officer to invest in "loyalty" to that politician.[21]

4.4 Political Events

We gathered data on changes in the identity of the Chief Minister in the 19 major states over the period 1980-2004.[22] We also collected information on the dates of state and national elections, as well as the party identity of the elected representative in each constituency, from the website of the Election Commission of India.

Over the years 1980-2004, states had an election about once every five years, but a new Chief Minister once in three years (Table 1, Panel C). This is because a change in the Chief Minister of a state can happen in several ways: first, the incumbent party might

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[21]We obtained this information for 80% of the directly recruited officers in the states of Uttar Pradesh and Uttarakhand. We have currently assigned party-wise caste bases as follows: the Samajwadi Party (SP) is associated with appeals to Yadavs, Backward Castes and Muslims, the Bahujan Samaj Party (BSP) with the Scheduled Castes, and the Bharatiya Janata Party (BJP) with the Forward Castes (Brahmins, Rajputs, Banias and Kayasths).

[22]This information is available from the official websites of the relevant State Governments in most cases.

lose a state election. Second, it might happen that the incumbent party is re-elected, but chooses a different leader to become the Chief Minister. Third, there can be a change in the Chief Minister even without elections, if his government loses a vote of confidence in the state legislature (see Section 2.3). Finally, in rare cases, there can be a change in the Chief Minister due to the death or resignation of the incumbent for reasons apart from losing legislative support. In our data, about 52% of new CMs come to power as a result of a new party coming to power, and only 54% of new CMs come to power as a result of elections.

5   Politician Change and Bureaucrat Transfers

5.1   Are Bureaucrats Transferred when the Politician Changes?

We quantify the relationship between political and bureaucratic turnover using the following linear regression specification:

$$Transfer_{ijt} = a_i + b_t + cNewCM_{jt} + X'_{ijt}d + u_{ijt} \tag{1}$$

where $Transfer_{ijt}$ is a dummy variable for whether officer i of state j was transferred in year t, a_i is a fixed effect for the officer, b_t is a fixed effect for the year, $NewCM_{jt}$ is a dummy indicating whether a new Chief Minister came to power in state j in year t, and X_{ijt} is a vector of controls for other time-varying officer and state characteristics (years of experience, state and general elections). Since transfers within the same state might be correlated over time, we cluster our standard errors at the state level (Bertrand, Duflo and Mullainathan, 2004).

We find that, despite the strong constitutional provisions for insulating the bureau-

cracy from politics, bureaucrat transfers significantly increase when a new Chief Minister (CM) takes office in the state (Table 2, Column 1). In terms of magnitude, this represents an increase of 10% over the baseline transfer probability of 0.53. This result is robust to controlling for other time-varying state characteristics such as the timing of state-level and national elections (Column 2) as well as controlling for real state domestic product, crime rates and the incidence of riots (Column 3). Note that there could also be reverse causality in the sense that frequent transfers of bureaucrats might result in a deterioration of law and order or poor implementation of economic policies; hence, we present this specification only as a robustness check.[23] Figure 3 shows that most of these transfers take place in the first four months after a new Chief Minister takes over, rather than before the political change. Our results thus confirm Hypothesis 1.

A Chief Minister who comes to power along with a new party in power is twice as likely to transfer bureaucrats than a Chief Minister who comes to power without a change in the party in power, an increase of 7.6% points in transfer probability compared to 3.7%, although this difference is not statistically significant (Table 2, Column 4). In contrast, Chief Ministers who come to power as a result of elections are only slightly more likely to transfer bureaucrats, compared to those who come to power in other circumstances (Table 2, Column 5). While the timing of elections is anticipated, non-election based Chief Minister changes are unlikely to be. Hence this last finding clarifies that the rise in transfers associated with political turnover is not driven by officer transfers being bunched up around an expected

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[23]Kingston (2004) examines the relationship between riots and transfer frequency in the 1980s, and finds ambiguous results: transfers are negatively correlated with riots in the cross-section, but positively related in the panel specification.

Chief Minister change, for pure administrative convenience. Further confirmation of this is provided by the fact that the majority of CM-induced transfers are "lateral" transfers i.e. not accompanied by a promotion, so that the reassignments we observe are not a reward for past performance or routine promotions that merely coincide with a new CM coming into office (Columns 6 and 7). Finally, we show that our results on the relationship between political change and bureaucratic turnover are not driven by selective attrition across cohorts or changes in hiring over time. The results remain essentially unchanged when we drop all cohorts prior to 1979, where retirement-related attrition is highest, or when we include officers who are hired through promotion from lower-level State Civil Services (Columns 8 and 9).

5.2   Are High-skilled Bureaucrats Less Likely to be Transferred?

We test Hypothesis 2 by extending the regression equation 1 to include the interaction of political change and officer ability as follows:

$$Transfer_{ijt} = a_i + b_t + cNewCM_{jt} + fNewCM_{jt} * Ability_i + X'_{ijt}d + u_{ijt} \qquad (2)$$

where $Ability_i$ represents a measure of officer ability, and X_{ijt} is a vector of controls for other time-varying officer and state characteristics (years of officer experience, state and general elections, as well as the interactions of political change and other officer characteristics such as gender, years of experience and whether s/he serves in his/her home state). Our measures of ability are based on the within-cohort ranks of the officers, as described in Section 4.3. We construct dummies for whether the officer was among the top 10, top 20 or top 30 people

in his/her cohort.[24] Our theory predicts that the coefficient on $NewCM_{jt} * Ability$ will be negative. As in all the other regressions, standard errors are clustered at the level of the state.

Our officer-level regressions strongly support our hypothesis that high-skilled officers are significantly less likely to be reassigned when a new politician comes into office (Table 3, Columns 1 and 2). In particular, an officer who was ranked among the top 20 in his/her cohort is 2.3 percentage points less likely to be transferred when a new politician takes office. Given that the average effect of an incoming politician is to increase transfer probability by 4.9 percentage points, this points to a 47% lower transfer probability for high-skilled officers.[25] These results remain significant, and the magnitudes in fact become larger, when we exclude cohorts prior to 1979 (Columns 4-6). The magnitudes are much larger and also statistically significant when we use a logit specification rather than OLS (Columns 7-9).[26]

These regressions also illustrate differences across other types of officer characteristics. Most interesting is the fact that officers serving in their home state are significantly more likely to be reassigned by incoming politicians. Ex-ante, it is not clear what to expect here: home state officers have some inherent advantages, such as familiarity with the local

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[24]These ranks are slightly different from "top 10% in cohort" due to the differences in cohort sizes across the years. We prefer this specification, since officers are typically known by their rank, rather than their percentile rank. These ranks are highly correlated with percentile ranks (correlations>0.80).

[25]We find similar results if we include all the officers (not just the direct recruits), and use the length of tenure in the previous post as a proxy for greater ability. Officers who have spent a longer time in their previous post are less likely to be transferred when a new Chief Minister takes office (results available upon request).

[26]We run the logit regressions without officer fixed effects, but with controls for the officer fixed characteristics such as ability, gender and whether they serve in their home state.

language and culture, which may decrease their marginal cost of becoming an "high-skilled" type. On the other hand, they may have pre-existing ties with specific state politicians, or may find it easier to develop such ties and thus have a lower cost of becoming a "loyal" type. The empirical results suggest that the latter effect dominates over the former. More experienced officers are significantly more likely to be reassigned by an incoming politician, which is consistent with our model in the sense that these are the officers who have developed a specific reputation i.e. whose type has been revealed.

5.3   Do "Able" Bureaucrats Have More Even Career Paths?

We test Hypothesis 3 by classifying our transfer dummy into two types: transfer between posts of similar importance (important-important or unimportant-unimportant) and transfer between posts of dissimilar importance (important-unimportant or unimportant-important). We define importance as described in Section 4.2. We then run the following specification:

$$TransfertoDifferentImportance_{ijt} = a_i + b_t + cNewCM_{jt} + fNewCM_{jt} * Ability_i$$

$$+X'_{ijt}d + u_{ijt} \tag{3}$$

where $TransfertoDifferentImportance_{ijt}$ is a dummy variable which equals one if officer i of state j was transferred to a post of a different importance in year t (i.e. transferred from an important post to an unimportant one, or from an unimportant post to an important one), and all other variables are the same as in equation 2. Our theory predicts that the coefficient on $NewCM_{jt} * Ability$ will be negative.

We find clear support for the hypothesis that the "high-skilled" types will have more even career paths. The coefficient on $NewCM_{jt} * Ability$ is negative and statistically

significant, both in the OLS and in the logit specification, for officers in the top 20 ranks in their cohort (Table 4, Columns 2 and 8). We note that of the 2.3 percent percentage points lower transfer probability of officers in top 20 ranks (reported in table 3, column 2), 1.9 percentage points or over 80 percent, is because they are less likely to be moved to posts of different importance. Qualitatively, this is consistent with our model, where the main reason for politically induced transfers is the movement of loyal, rather than able officers, from important to unimportant posts. The results are in the same direction for officers in the top 30 ranks in their cohort (Columns 3 and 9). The coefficients change very little when we exclude cohorts prior to 1979, though the standard errors are a little larger and the statistical significance decreases (Columns 4-6). Overall, we find confirmation for our hypothesis that the possibility of getting important positions is an important tool used by politicians to motivate bureaucrats in this setting.

5.4 Bureaucrats' Career Concerns

We first assess whether bureaucrats of higher initial ability invest more in developing expertise, a key assumption in our model. We use the extent of training undergone by the bureaucrat as a proxy for such investment in expertise, and run regressions of the form:

$$Training_{ic} = \alpha_c + \gamma Ability_{ic} + X'_{ic}\delta + u_{ic} \tag{4}$$

where $Training_{ic}$ measures the weeks of training (domestic and foreign) undergone by officer i of cohort c, a_c is a fixed effect for the cohort (so that we are only comparing each officer to others of his cohort), $Ability_{ic}$ is the initial within-cohort rank of officer i, and X_{ic} represent

other characteristics of the officer. In our model, we expect the coefficient on *Ability* to be positive, because of able officers' comparative advantage in developing expertise.

We find that bureaucrats of higher initial ability undergo longer durations of training over the course of their career, and particularly so for periods of foreign training (Table 5). The foreign training variable is particularly relevant as a measure of investment in expertise, since foreign training is not required (unlike certain types of domestic training courses), and officers would need to expend greater effort in order to find training opportunities outside the country, as well as to arrange funding and the necessary leave from their duties. This provides support for our Hypothesis 4 that these officers are more willing to invest in developing a reputation for expertise. These regressions are robust to excluding the cohorts prior to 1979. The coefficients on ability for these training regressions become larger in magnitude and retain statistical significance if we employ a Tobit model instead of a linear one (results available upon request).

Are there career rewards to such investments? We find that officers of higher initial ability are significantly more likely to be "empaneled" about twenty years into their careers (Table 6, Columns 1-3) i.e. recommended for senior positions in the central government. This strongly suggests that their career investments have resulted in a perception of them as competent officers, as viewed by senior bureaucrats. Central government positions are considered prestigious, and only empaneled officers are eligible for these important posts.

Our model suggests that there is another path to obtaining important positions–by developing "loyalty" to specific politicians. We provide empirical support for the existence of such a "loyalty" track as follows: as described in section 4.3, we computed a measure of whether the officer belongs to the same caste as that of the Chief Minister's party base, on

the assumption that it is easier to develop loyalty links if the politician and the bureaucrat share the same caste identity. We check whether this helps their career concerns by running the following regression:

$$OfficerinImportantPost_{ijt} = a_i + b_t + hOfficerSameCaste_{ijt} + X'_{ijt}d + u_{ijt} \quad (5)$$

where $OfficerinImportantPost_{ijt}$ is a dummy variable for whether officer i of state j holds an important post in year t, a_i is a fixed effect for the officer, b_t is a fixed effect for the year, $OfficerSameCaste_{ijt}$ is a dummy which equals one if the officer belongs to the caste base of the current Chief Minister's party and X_{ijt} is a vector of controls for other time-varying officer and state characteristics. Our theory predicts that the coefficient on $OfficerSameCaste$ should be positive.

We find strong support for this hypothesis: being of the same caste as the Chief Minister's party base significantly increases an officer's probability of being in an important post by 6.6 percentage points (Table 6, Columns 4-6). We should note that since this regression is run with officer fixed effects, it compares the same officer at different points of time: when his "preferred" Chief Minister is in power, and when he is not. This is the first empirical analysis of the role of caste in the public sector that we are aware of.[27]

Having provided some evidence that officers have two potentially viable paths to obtaining better career positions, we investigate whether the expertise track yields better career success overall. The answer is no: the average importance of the posts held by an officer over the course of his or her career does not vary significantly with the initial ranking (Table

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[27]See Munshi and Rozenzweig (2006) for an empirical analysis of the influence of caste networks on education investments and labor market outcomes in the private sector.

6, Columns 7-9). This is very much in keeping with our framework which emphasizes that officers have alternative routes to career success; investment in expertise is not the only one.

6 District Level Transfers and Outcomes

6.1 Extending our Framework: the Role of Local Politicians

We introduce a subordinate (district-level) politician as a "middleman" M between the politician and the bureaucrat at the district level. These subordinate politicians belong to one of the two parties, so $j_M \in \{0, 1\}$. We assume that subordinates from the same party are motivated to act in the interests of the politician and his constituents i.e. $s_M = 1$ if $j_M = j_P$, and $s_M = 0$ otherwise.

As described in Section 2.1, we consider District Officer positions as important posts in our framework. We showed that a politician of type 0 will assign only type L_0 and type H bureaucrats to these posts; when he comes into office, he would thus thus want to reassign type L_1 officers in district posts to unimportant ones. However, this can change with the presence of subordinate politicians, depending on whether the subordinate politician and the bureaucrat are "complements" or "substitutes" in determining the politician's control over output at the district level. Of course, if local politicians have no effect on politician's control over bureaucrats, their presence should not impact transfers in any way.

If subordinate politicians and bureaucrats are complements (say $s^{dist} = \min\{s_M, s_b\}$), a newly elected politician will assign all officers loyal to him in districts where the local politician is from his own party i.e. we expect to see *more bureaucrat transfers in districts*

where the local politician belongs to the same party as the Chief Minister. If subordinate politicians and bureaucrats are substitutes (say $s^{dist} = \max\{s_M, s_b\}$), either a loyal district politician *or* a loyal bureaucrat is enough to ensure that the politician's interests in the district are well-served. This predicts more bureaucrat transfers in districts where the local politicians are *not* from the same party as the Chief Minister.

We therefore generate the following hypotheses to take to the data:

Hypothesis 5: Following political change, district officer transfer patterns will depend on the proportion of local politicians who belong to the new Chief Minister's party.

Hypothesis 6: If there is a change in the politician (Chief Minister) without a change in the party in power, then there is no effect of local politicians from the CM's party on transfer patterns.

What does this imply for district level outcomes? If, in fact, local politicians and local bureaucrats are good substitutes, it means that outcomes in districts where bureaucrats are transferred will not be systematically different from those in districts where bureaucrats are not transferred. We test this specific implication of our framework in section 6.3 below.

6.2 District Level Bureaucrat Transfers

We use our data set of District Officer transfers to test these predictions, by running the following regression:

$$Transfer_{djt} = a_d + b_t + cNewCM_{jt} + fNewCM_{jt} * DistrictChar_{djt} + X'_{jt}d + u_{djt} \quad (6)$$

where $Transfer_{djt}$ is a dummy variable for whether the District Officer of district d of state j was transferred in year t, a_d is a fixed effect for the district, b_t is a fixed effect for the year,

$NewCM_{jt}$ is a dummy indicating whether a new Chief Minister came to power in state j in year t, $DistrictChar_{djt}$ represent different district characteristics (in particular, the fraction of local politicians who belong to the same party as the CM) and X_{ijt} is a vector of controls for other time-varying state characteristics (state and national elections). For this analysis, we aggregate electoral outcomes to the administrative district level. State electoral districts are usually subsets of administrative districts, with one administrative district containing on average 10 electoral districts.[28]

We first document that District Officers are indeed significantly likely to be reassigned when a new Chief Minister takes office (Table 7, Column 1). The probability of reassignment depends strongly on the presence or absence of local politicians from the CM's party (Column 2), consistent with Hypothesis 5. If none of the politicians in a district belong to the CM's party, then the probability that the bureaucrat is transferred rises by nearly 14% points when a new CM comes into office. In contrast, if all the local politicians are from the CM's party, this probability rises by only 3.7 percentage points (0.137-0.100), which is not significantly different from zero. This strongly favors the interpretation that local level politicians and local bureaucrats are viewed as "substitutes" by the Chief Minister.

We also find strong support for Hypothesis 6: If there is a change in the Chief Minister without a change in the party in power, then there are no significant reassignments of district bureaucrats (Table 7, Column 3). Finally, we verify that the effects we document are not

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[28]All variables are further aggregated to the 1988 administrative district boundaries, to account for splits in districts over time. This makes our transfer dummy to lie between 0 and 1 in a few cases; we verify that our results are robust to recoding all transfer probabilities greater than 0.5 as 1 and those less than 0.5 as 0.

simply a function of political turnover or the extent of anti-incumbent voting (Column 4).[29]

While the results of our district level analysis are interesting in their own right, they also help to rule out some alternative hypotheses about why political change may trigger an increase in bureaucrat transfers, not all of which may be associated with greater inefficiency as portrayed in our framework. For instance, it is not uncommon for a new boss to bring in his own team of subordinates for key positions, simply because there is an efficient *personal* match between them which enhances productivity. However, we observe that the presence of local politicians matters, and that there are very few transfers if the party in power does not change. Thus, the motivation for these transfers is more political control rather than the efficiency of the personal "match" between the officers and the new Chief Minister.

Another alternative motivation for transfers could be experimentation to reveal efficient officer-post match. However, there is no a priori reason to explain why such experimentation is only valuable (a) when there is a change in the political party and (b) in districts that are not represented by a subordinate politician from the Chief Minister's party. Further, such experimentation is likely to be most valuable for junior officers, whose type has not been revealed. In fact, our earlier results show that it is officers with greater experience who are more likely to be transferred, following political change. This weakens the support for the experimentation hypothesis.

6.3   Are District Outcomes Affected by Bureaucrat Transfers?

We examine two specific measures of district-level policy implementation outcomes: immunization coverage in the year 2001, and the completion status of road projects in 2007.

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[29]See Linden (2003) for details on the increasing incumbency disadvantage in Indian politics.

The major caveat with using these outcomes is that these are only a subset of the district administrator's purview. To get a more comprehensive picture of the effect on district outcomes, we use an overall measure of well-being: poverty reduction over a twelve year period (1987-1999), based on district-level poverty estimates from Topalova (2005).

In immunization coverage and road completion, we find no significant differences in outcomes in areas with a higher frequency of politician-induced transfers (Table 8, columns 1-3).[30] In contrast, with the comprehensive measure of long term poverty reduction (1987-1999), we do observe somewhat greater success in districts with lower politically induced transfers (Column 4). Poverty rates declined by 0.9 percentage points less in districts which had a 10 percentage point higher probability of politically induced transfer. This is similar to the effect for poverty reduction over a shorter period 1993-1999, though the latter is not statistically significant (Column 5). These results suggest that the cost of political transfers in terms of longer-term outcomes can be quite high. It is possible, of course, that the observed associations are driven by variables which affect both the extent of political transfers and the rate of poverty reduction. Our results should therefore be treated as suggestive, rather than conclusive.

7   Conclusion

In this paper, we have opened up the "black box of government" by providing one of the first micro-economic analyses of the the interaction between politicians and bureaucrats,

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[30]Here we define "politician-induced" transfer as one which happens to coincide with a change in the identity of the Chief Minister.

using unique data from the Indian Administrative Service (IAS). We find significant political influence on the bureaucracy, despite the constitutional insulation provided to them against political pressures. The patterns of bureaucrat transfers across posts is consistent with the predictions of our model, and indicates the presence of two types of inefficiencies. One results from the fact that not all important posts are given to the most competent bureaucrats, and the second arises endogenously due to the career concerns of junior bureaucrats: given that competence is not the only consideration for obtaining important positions, junior officers underinvest in developing competence.

What are the implications of our analysis for efficient governance? Our framework suggests that instituting limits on the politician's power to frequently transfer bureaucrats, such as those in a proposed Public Services Bill in India, will reduce the politician's ability to appoint loyal bureaucrats to important positions. This, in turn, will favorably affect junior officers' incentives to invest in expertise. Similarly, an increase in the politician's transactions costs of reassignment (for instance, through a review process requiring him to justify his choice of specific bureaucrats) may limit the likelihood of less competent bureaucrats obtaining important posts. Our analysis is also relevant for multilateral agencies that channel funds for public projects through the existing bureaucratic machinery of individual countries. An increase in the funds channeled through bureaucracies may increase the value of officer loyalty to politicians, with adverse long term consequences for bureaucratic competence. Measures to curtail opportunities for such rent-seeking, perhaps by limiting the role of the state in such projects, could be one way to maintain incentives for bureaucratic efficiency.

8 Appendix: Theoretical Framework Details

8.1 Politician

The politician seeks to maximize the size of total bureaucrat output he can control as well overall public good efficiency.[31] If we denote his relative weight on control and efficiency by the parameters $\lambda \in [0, 1]$ and $(1 - \lambda)$ respectively and the shares of bureaucrats' output that he controls $s_b \in [0, 1]$, he seeks to maximize $Z = \lambda \sum_{b.n_b} s_b y_b + (1 - \lambda) \sum_{b.n_b} y_b$. For our analysis below, we consider the case where $\lambda = 1$.[32] Accordingly, the politician's preferences can be represented by

$$\underset{\mathbf{n}_b}{Max} \sum_{b.n_b} s_b y_b \tag{7}$$

where $\mathbf{n}_b = \{n_H, n_{L_0}, n_{L_1}\}$ is the assignment of bureaucrats to important posts in a given time period.

8.2 Bureaucrats

Junior bureaucrats are of two ideologies and the initial number of officers of the two ideologies are N_0 and N_1, such that $N_0 + N_1 = N$, the total number of officers (and posts). Posts are of

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[31]The implicit assumption here is that politicians' probability of remaining in power is a direct (linear) function of the output they control. There could be several reasons for this: greater control over output would allow them to direct its allocation strategically towards citizen blocs, so as to maximize their probability of staying in power. Under elections, it could also increase their access to campaign funds.

[32]When $\lambda = 0$, the politician cares about efficiency alone, and bureaucratic assignment by politicians of either party is based solely on officers' productivity. Political change will therefore not trigger bureaucrat transfers. All our results would still be true for $\lambda \in (0, 1)$, albeit in a weaker manner.

two types, important and unimportant, important posts being scarce. Bureaucrats derive positive utility from being assigned to important posts.

Junior bureaucrats can allocate effort into developing a reputation for expertise, or choose loyalty to particular politicians/parties as the route to career success. Officers can choose between high effort e_h or low effort e_l in developing expertise; greater effort increases their chances of becoming a type H officer, but it is more costly too. The effective cost of such effort, $c(e) \geq 0$ is lower for those with higher initial ability, i.e. the effective effort cost $c(e).g(a_i)$ is decreasing in initial ability a_i, $g'(a_i) < 0$.

Let us denote the lifetime expected utility of officers of types H and L by U_H and U_L respectively. A bureaucrat will choose high effort e_h if and only if the expected utility net of the cost of effort is greater for high effort than for low effort, i.e.:

$$e_h U_H + (1 - e_h)U_L - c(e_h).g(a_i) > e_l U_H + (1 - e_l)U_L - c(e_l).g(a_i) \tag{8}$$

To simplify matters, we set $e_h = 1$ and $e_l = 0$, $c(e_l) = 0$. In the above equation then, the bureaucrat chooses high effort in developing expertise if and only if:

$$(U_H - U_L) - c(1).g(a_i) \geq 0, \tag{9}$$

and zero effort otherwise.

8.3   Equilibrium

An equilibrium consists of a cut off ability threshold a^* among bureaucrats and an assignment rule $\mathbf{n}_b$ for the politician such that:

(1) All officers with initial ability above a certain threshold a^* optimally choose the high effort level e_h and those with ability below a^* optimally choose effort level $e_l = 0$.

(2) Politicians and bureaucrats both maximize their individual utility and

(3) All officers are assigned among the N posts available, i.e. $\sum_b n_b = N, b = \{H, L_0, L_1)$.

We solve for the equilibrium outcome of the first two periods of this game backwards.[33]

Let us begin with the politicians' optimal assignment rule that will maximize equation(7) for a politician of type j, given the number of officers of each type $b = \{H, L_0, L_1\}$. Since $s_H \in (0, 1), s_{L_j} = 1$ and $s_{L)j(} = 0$ and $y_H = y_L + \theta, \theta \sim U[0, 1]$, the optimal assignment rule for important posts is:

1. First assign type H officers for whom $s_H y_H(\theta) > y_L$, which implies that the number of type H officers assigned to important posts in period two, $n_H > 0$ irrespective of the type of politician in office.

2. Then assign other important posts to type L_j officers, which implies that $n_{L_{b=j}} \geq 0$

3. Do not assign type $L_{b \neq j}$ officers to important posts (since the politician can control none of their output), implying that $n_{L_{b \neq j}} = 0$.

    This assignment rule gives rise to a corresponding probability $q(I \,|b, j)$ of an important post I for an officer of type b when a politician of type j is in office. So for instance, if a politician of type 0 is in office, these probabilities for different types of officers are as follows:

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[33]Period three of the game is a repeat of period two, for a given initial assignment of bureaucrats to posts.

$$q(I \mid H, 0) = \min\{1, \frac{N^I}{(1 - \theta^*)[(1 - F(a^*))N^0 + (1 - F(a^*))N^1]}\} = q(I \mid H, 1) \quad (10a)$$

$$q(I \mid L_0, 0) = \max\{0, \frac{N^I - n_H}{N^0.F(a^*)}\} \quad (10b)$$

$$q(I \mid L_1, 0) = 0 \quad (10c)$$

where θ^* is the cutoff value of θ above which politicians prefer able officers over loyal ones

for important posts, a^* is the equilibrium level of initial ability above which officers invest in

becoming type H in period one and $F(.)$ is the c.d.f. for officer ability a_i. Once important

posts have been assigned to *all* type H and L_0 officers as per the optimal assignment rule,

there will be no important posts left for type L_1 officers. This is because $N^I < N_0$ by

assumption and the combined total number of the first two types of officers must exceed N_0.

Let p_j^{win} represent the probability of party j winning power in a given time period.

Naturally, officers determining their lifetime utilities take this probability as exogenous to

their own career investment decisions. Given the above expressions for officers' probability

of getting important posts $q(.)$, we can write U_H and U_L as:

$U_H = \delta(1 + \delta)u_{IMP}[p_0^{win}. q(I \mid 0, H) + p_1^{win}. q(I|1, H)]$ and

$U_L = \delta(1 + \delta)u_{IMP}[p_0^{win}. q(I \mid 0, L) + p_1^{win}.q(I \mid 1, L)]$

where is δ the per-period discount factor and u_{IMP} represents per-period utility to a

bureaucrat from an important post. The components of U_H within square brackets indicate

the likelihood of a bureaucrat of type H being assigned to an important post, conditional

on a politician of type $j = \{0, 1\}$ being in office. The expression for U_L is similar.

Plugging the probabilities $q(.)$ back into equation (9) and using the expressions for U_H

and U_L, we can solve for a^* in period one by imposing equality, as follows:

$$u_{IMP}[p_0^{win}q(I \mid 0, H) + p_1^{win}q(I \mid 1, H) - p_0^{win}q(I \mid 0, L_0)] = c(1).g(a_i) \qquad (11)$$

The right hand side of equation (11) is decreasing in a_i whereas the left-hand side is constant in a_i. As a result, there exists a unique intersection between the LHS and RHS, giving us a unique equilibrium ability level a^* above which all officers invest high effort in expertise in period one. This gives rise to three types of officers, where the number of each type $n_H = (N^0 + N^1)(1 - F(a^*))$, $n_{L_1} = F(a^*)N^1$ and $n_{L_0} = F(a^*)N^0$.

We can now predict the pattern of transfers in period three as follows. If the incumbent in period two retains power, no bureaucrats are transferred, irrespective of their type. What happens when a politician of type 0 assumes office in this period (with probability $p_0^{win} = (1 - p_1^{win})$), when the incumbent in period two was of type 1? At the beginning of period three, we have initial assignments $\mathbf{n}_b^2 = \{n_H^2, n_{L_1}^2, n_{L_0}^2\}$, which were the outcome of the maximization of equation (2) by politician of type 1 in period two. We can infer that these assignments are such that $n_H^2 > 0, n_{L_1}^2 \geq 0$ and $n_{L_0}^2 = 0$.

Transfers are a function of the initial allocation $\mathbf{n}_b^2$ relative to politician 0's optimal assignments $\mathbf{n}_b^3$ as outlined above. The optimal assignment for politician of type 0 are $n_H^2 > 0, n_{L_0}^2 \geq 0$ and $n_{L_1}^2 = 0$. This implies that, when a type 0 politician takes over from a type 1 politician in period three,

1. All type L_1 officers in important posts are transferred to unimportant posts.

2. They are replaced first, with type L_0 officers and then type H officers, as needed.

3. Type H officers who initially had important posts under politician from party 1 are retained by politician of party 0.

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Table 1: Descriptive Statistics

Sample: Direct recruits who joined the service on or before 2000

	# Obs	Mean	s.d.	Minimum	Maximum
Panel A: Bureaucrat characteristics					
Year of joining service	2802	1984	8.11	1968	2000
Proportion female	2802	0.15	0.35	0	1
Proportion of home state officers	2796	0.33	0.47	0	1
Proportion in top 10 ranks of cohort	2797	0.12	0.32	0	1
Proportion in top 20 ranks of cohort	2797	0.23	0.42	0	1
Proportion in top 30 ranks of cohort	2797	0.34	0.47	0	1
Total weeks of training	2791	28.5	30.6	0	192
Weeks of foreign training	2788	15.9	23.6	0	172
Proportion empaneled for central government posts (1979-1987 cohorts)	1048	0.65	0.48	0	1
Proportion same caste as Chief Minister's party base (Uttar Pradesh officers, 1990s)	3595	0.42	0.49	0	1
Panel B: Bureaucrat transfers (1980-2004 annual data)					
Transfer dummy	54798	0.53	0.50	0	1
Proportion in District Officer posts	54798	0.07	0.26	0	1
Important post based on officer interviews	54798	0.51	0.50	0	1
Transfer to a post of similar importance	54248	0.31	0.46	0	1
Transfer toa post of different importance	54248	0.21	0.41	0	1
District Officer transfer dummy (1985-2004)	6692	0.52	0.48	0	1
Panel C: State-level political variables (1980-2004)					
New Chief Minister (CM) dummy	415	0.32	0.47	0	1
New party in power dummy	415	0.17	0.37	0	1
State election year dummy	415	0.23	0.42	0	1
General election year dummy	415	0.32	0.47	0	1

Table 2: Does a politician change result in bureaucrat turnover?

Dependent variable: bureaucrat transfer dummy

	New CM (1)	Control for elections (2)	Controls for SDP and crime (1991-2003) (3)	How did CM come to power		Transfers with and without promotion		Robustness Checks	
				With party change (4)	With elections (5)	Transfers with promotion (6)	Lateral transfer (7)	Exclude cohorts prior to 1979 (8)	Include non-direct recruits (9)
New Chief Minister dummy	0.051***	0.049***	0.046**			0.004	0.046***	0.050**	0.047***
	(0.014)	(0.015)	(0.017)			(0.005)	(0.015)	(0.019)	(0.014)
New CM, new party in power				0.076***					
				(0.022)					
New CM, no new party in power				0.037**					
				(0.017)					
New CM after election					0.055***				
					(0.015)				
New CM, no election					0.047**				
					(0.017)				
State election dummy		0.006	0.017	-0.012	0.002	0.008	-0.002	0.003	0.006
		(0.016)	(0.021)	(0.017)	(0.013)	(0.005)	(0.014)	(0.019)	(0.017)
General election dummy		-0.024**	0.014	-0.035**	-0.024**	-0.016**	-0.007	-0.038**	-0.021
		(0.011)	(0.020)	(0.014)	(0.011)	(0.006)	(0.007)	(0.016)	(0.013)
Years of experience		0.191***	0.083	0.196***	0.191***	0.143***	0.035**	0.673***	0.310***
		(0.020)	(0.058)	(0.019)	(0.020)	(0.010)	(0.015)	(0.035)	(0.016)
Years of experience (squared)		-0.066***	-0.029***	-0.066***	-0.066***	-0.054***	-0.010**	-0.215***	-0.101***
		(0.005)	(0.010)	(0.005)	(0.005)	(0.003)	(0.004)	(0.012)	(0.005)
Officer fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	54798	54798	32752	54798	54798	53741	53741	33398	68553
R-squared	0.05	0.05	0.08	0.05	0.05	0.04	0.06	0.09	0.10

Robust standard errors in parentheses, corrected for state-level clustering
* significant at 10%; ** significant at 5%; *** significant at 1%
Sample for columns 1-7: Direct recruits who joined the service on or before 2000

Table 3: Are Able Officers Less Likely to be Transferred by Politicians?

Dependent variable =1 if officer was tranferred during the year

	Base sample, OLS			Excluding cohorts prior to 1979			Base sample, logit		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
New CM dummy	0.006	0.007	0.008	-0.001	0.001	0.001	0.050	0.058	0.058
	(0.010)	(0.011)	(0.011)	(0.013)	(0.014)	(0.015)	(0.053)	(0.056)	(0.058)
New CM * top 10 rank in cohort	-0.026*			-0.034**			-0.135**		
	(0.014)			(0.015)			(0.055)		
New CM * top 20 rank in cohort		-0.023**			-0.030**			-0.111**	
		(0.011)			(0.012)			(0.048)	
New CM * top 30 rank in cohort			-0.014			-0.018			-0.064*
			(0.009)			(0.013)			(0.039)
New CM * female dummy	-0.026*	-0.026*	-0.025*	-0.015	-0.015	-0.014	-0.111**	-0.110**	-0.109**
	(0.013)	(0.013)	(0.013)	(0.012)	(0.012)	(0.012)	(0.047)	(0.048)	(0.049)
New CM * Years of experience	0.029***	0.030***	0.029***	0.048***	0.048***	0.048***	0.116***	0.116***	0.116***
	(0.010)	(0.010)	(0.010)	(0.016)	(0.016)	(0.016)	(0.037)	(0.037)	(0.037)
New CM * home state	0.035***	0.036***	0.034***	0.035*	0.036*	0.034*	0.134***	0.137***	0.126***
	(0.010)	(0.011)	(0.010)	(0.017)	(0.018)	(0.018)	(0.037)	(0.039)	(0.039)
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Officer fixed effects	YES	YES	YES	YES	YES	YES			
Officer characteristics							YES	YES	YES
Quadratic for years of experience	YES	YES	YES	YES	YES	YES	YES	YES	YES
Control for state & general elections	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	54606	54606	54606	33256	33256	33256	54606	54606	54606
R-squared	0.05	0.05	0.05	0.09	0.09	0.09			

Robust standard errors in parentheses, corrected for state-level clustering
* significant at 10%; ** significant at 5%; *** significant at 1%
Base sample: Direct recruits who joined the service on or before 2000

Table 4: Do Able Bureaucrats have Less Variation in Job Quality?

Dependent variable: Transfer to a post of different importance

	Base sample, OLS			Excluding cohorts prior to 1979			Base sample, Logit		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
New CM dummy	0.004	0.006	0.006	-0.008	-0.005	-0.006	0.047	0.058	0.062
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.063)	(0.063)	(0.066)
New CM * top 10 rank in cohort	-0.011			-0.010			-0.070		
	(0.011)			(0.012)			(0.059)		
New CM * top 20 rank in cohort		-0.019**			-0.018*			-0.119**	
		(0.008)			(0.009)			(0.054)	
New CM * top 30 rank in cohort			-0.013*			-0.010			-0.087**
			(0.007)			(0.007)			(0.038)
New CM * female dummy	-0.021*	-0.021*	-0.021*	-0.017	-0.017	-0.017	-0.148**	-0.148**	-0.146**
	(0.011)	(0.011)	(0.011)	(0.012)	(0.012)	(0.012)	(0.058)	(0.059)	(0.060)
New CM * Years of experience	0.012**	0.013**	0.013**	0.023**	0.023**	0.023**	0.070**	0.071**	0.071**
	(0.005)	(0.005)	(0.005)	(0.010)	(0.010)	(0.010)	(0.031)	(0.031)	(0.031)
New CM * home state	0.008	0.010	0.009	0.019	0.021	0.019	0.044	0.060	0.053
	(0.009)	(0.009)	(0.009)	(0.012)	(0.012)	(0.012)	(0.048)	(0.050)	(0.047)
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Officer fixed effects	YES	YES	YES	YES	YES	YES			
Officer characteristics							YES	YES	YES
Quadratic for years of experience	YES	YES	YES	YES	YES	YES	YES	YES	YES
Control for state & general elections	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	54058	54058	54058	33254	33254	33254	54058	54058	54058
R-squared	0.06	0.06	0.06	0.08	0.08	0.08			

Robust standard errors in parentheses, corrected for state-level clustering.
* significant at 10%; ** significant at 5%; *** significant at 1%
Base sample: Direct recruits who joined the service on or before 2000

Table 5: Initial Abililty and Investments in Expertise

Dependent variable	Total weeks of training			Weeks of foreign training		
	(1)	(2)	(3)	(4)	(5)	(6)
Rank in top 10 of the cohort	1.565			3.207**		
	(1.494)			(1.198)		
Rank in top 20 of cohort		1.611			1.964*	
		(1.198)			(1.042)	
Rank in top 30 of cohort			1.447			1.920***
			(0.933)			(0.622)
Female	1.239	1.242	1.216	1.643	1.650	1.614
	(1.464)	(1.466)	(1.458)	(1.163)	(1.181)	(1.174)
Home state dummy	-1.862*	-1.972*	-1.946*	-0.556	-0.479	-0.485
	(1.043)	(1.077)	(1.075)	(1.042)	(1.032)	(1.006)
Year of recruitment fixed effects	YES	YES	YES	YES	YES	YES
No. of observations	2780	2780	2780	2777	2777	2777
R-squared	0.37	0.37	0.37	0.24	0.24	0.24

Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%
Base sample: Direct recruits who joined the service on or before 2000

Table 6: Bureaucrats' Career Progression: The Role of Skill and (Caste) Loyalty

Dependent variable	Empanelment dummy			Officer holds an important post Uttar Pradesh and Uttaranchal officers			Mean Importance of officer's posts over career		
	Base sample						Base sample		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Rank in top 10 of the cohort	0.089**						0.006		
	(0.042)						(0.012)		
Rank in top 20 of cohort		0.143***						0.007	
		(0.021)						(0.010)	
Rank in top 30 of cohort			0.138***						0.006
			(0.028)						(0.009)
Female	0.033	0.034	0.029				-0.055***	-0.055***	-0.055***
	(0.058)	(0.060)	(0.059)				(0.012)	(0.012)	(0.012)
Home state dummy	-0.003	-0.022	-0.024				-0.031***	-0.031***	-0.031***
	(0.035)	(0.035)	(0.036)				(0.009)	(0.009)	(0.009)
Officer belongs to the caste base of CM's party				0.066***	0.066***	0.067***			
				(0.021)	(0.022)	(0.021)			
New CM				0.094	0.093	0.092			
				(0.087)	(0.087)	(0.087)			
New CM * top 10 rank in cohort				0.003					
				(0.044)					
New CM * top 20 rank in cohort					-0.006				
					(0.038)				
New CM * top 30 rank in cohort						0.016			
						(0.036)			
Year of recruitment fixed effects	YES	YES	YES				YES	YES	YES
Year and officer fixed effects				YES	YES	YES			
No. of observations	1044	1044	1044	3499	3499	3499	2791	2791	2791
R-squared	0.07	0.08	0.08	0.22	0.22	0.22	0.15	0.15	0.15

Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

Regressions (4)-(6) are for 1990s only, and include controls for the years of experience (quadratic) and interactions of New CM with years of experience, gender dummy and home state dummy.

Base sample: Direct recruits who joined the service on or before 2000

Table 7: Do Local Politicians Influence Bureaucrat Transfers?

Dependent variable =1 if the district gets a new District Officer in that year

	(1)	Presence of local politicians (2)	Local politicians + party change (3)	Political turnover (4)
New CM dummy	0.084**	0.137***		0.079*
	(0.039)	(0.034)		(0.045)
New CM * %local politicians from CM's party		-0.100**		
		(0.044)		
New CM, new party			0.232***	
			(0.042)	
New CM, no new party			0.048	
			(0.043)	
New CM, new party * % local politicians from CM's party			-0.157**	
			(0.067)	
New CM, no new party * % local politicians from CM's party			0.008	
			(0.097)	
% local politicians from CM's party		0.033	0.035	
		(0.036)	(0.035)	
New CM * political turnover				0.040
				(0.108)
Political turnover				-0.048
				(0.103)
Year fixed effects	YES	YES	YES	YES
District fixed effects	YES	YES	YES	YES
Control for state and general elections	YES	YES	YES	YES
Observations	6679	6679	6679	6679
# districts	356	356	356	356
R-squared	0.07	0.07	0.07	0.07

Robust standard errors in parentheses, corrected for state-level clustering.
* significant at 10%; ** significant at 5%; *** significant at 1%
"Political turnover" is measured as the proportion of incumbents in the district who lost in the most recent election.

Table 8: Bureaucrat Transfers and District Outcomes

| | Proportion of children completely immunized 2001 | Completion of road projects 2007 | | Change in poverty 1987-99 | Change in poverty 1993-99 |
| | | Sanctioned in 2000 | Sanctioned in 2003 | | |
	(1)	(2)	(3)	(4)	(5)
Mean political transfers in last 5 years	-0.013	0.131	0.181		0.085
	(0.067)	(0.188)	(0.204)		(0.049)
Mean other transfers in last 5 years	-0.037	0.055	-0.011		0.045
	(0.072)	(0.136)	(0.163)		(0.027)
Mean political transfers in last 10 years				0.087*	
				(0.049)	
Mean other transfers in last 10 years				0.032	
				(0.040)	
Initial poverty level				-0.787***	-0.764***
				(0.055)	(0.042)
State FE	yes	yes	yes	yes	yes
Mean of dep var	0.58	0.71	0.34	-0.13	-0.07
Observations	363	330	328	350	350
R-squared	0.70	0.54	0.28	0.69	0.65

Robust standard errors in parentheses, clustered at state-level
* significant at 10%; ** significant at 5%; *** significant at 1%
"Completion of road projects 2007" is a dummy which equals one if the road projects sanctioned in a
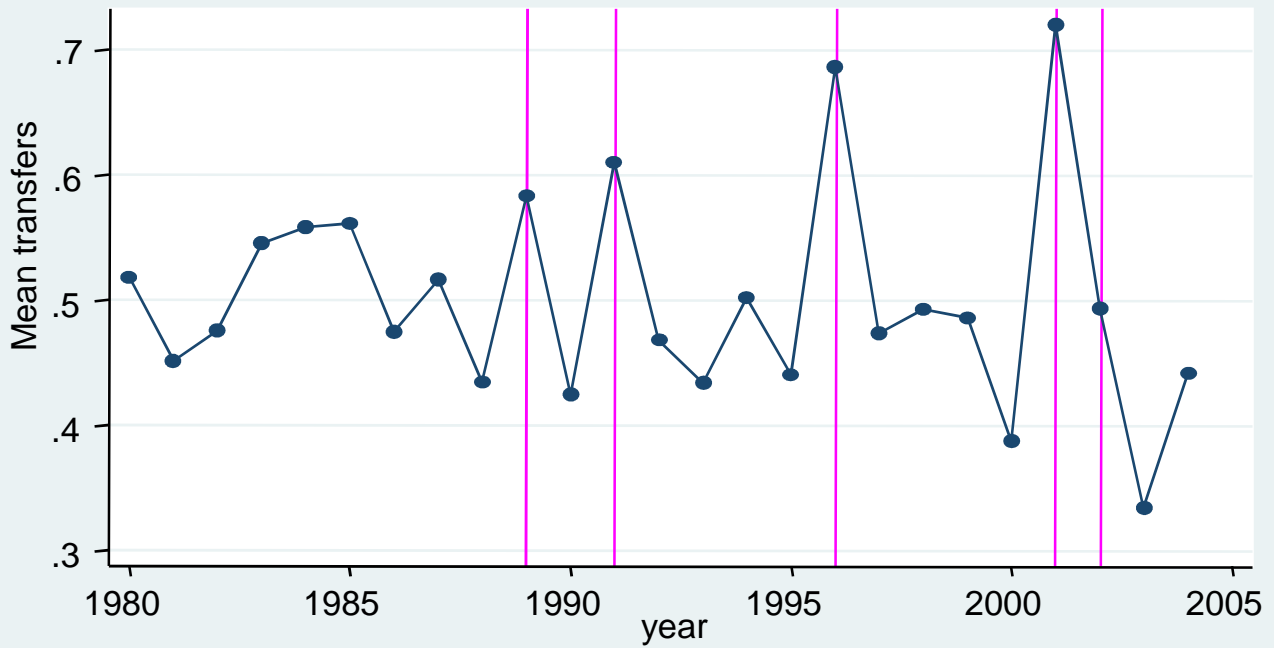given year was completed by June 2007.
"Change in poverty" is the change in the head count ratio.

Figure 1: Mean transfer rates in major states 1980-2004
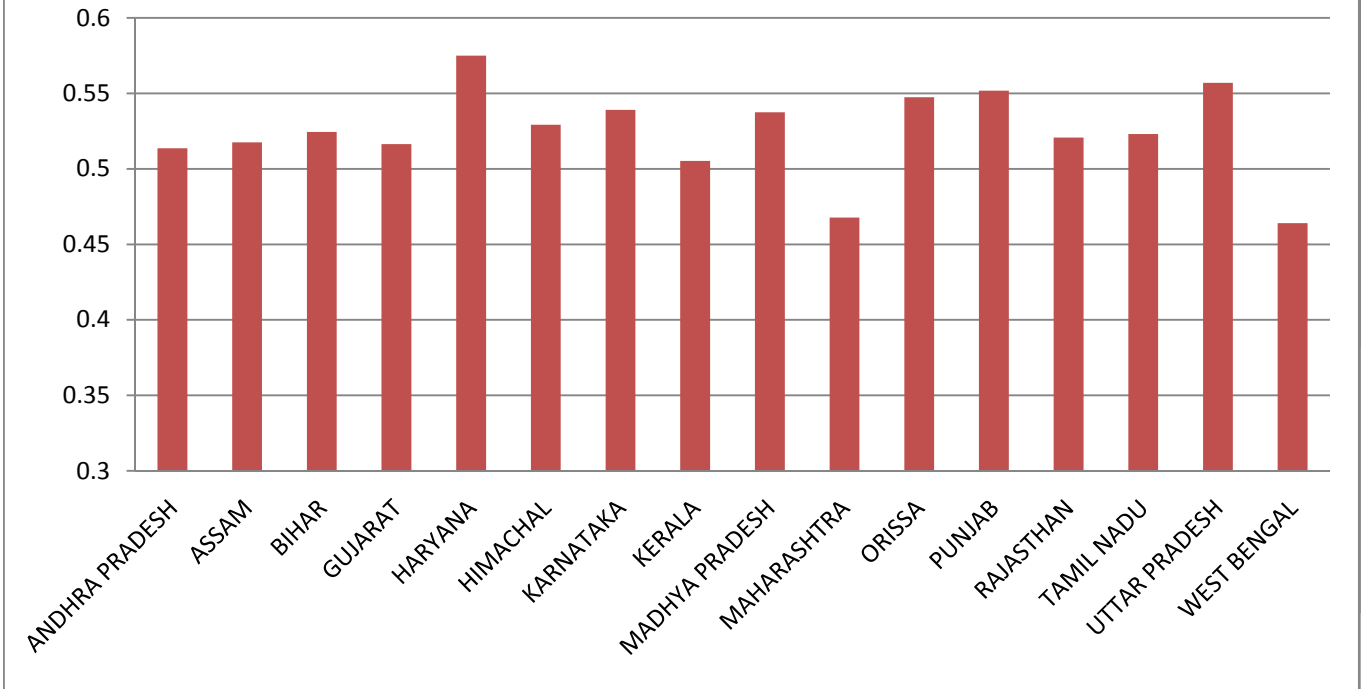
Figure 2: Chief Minister changes in Tamil Nadu

Figure 3: Monthly Bureaucrat Transfers