

Local Embeddedness and Bureaucratic Performance: Evidence from India

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Abstract

While locally embedded bureaucrats may be more willing and able to enhance public goods provisioning in the places that they serve, they may also be more likely to be captured by elite interests. We reconcile these two viewpoints by arguing that locally embedded bureaucrats enhance public goods provisioning when they can be held accountable by the public. We test this theory using data from India, examining how changes in public goods provision within districts are related to the embeddedness of the senior bureaucrats who served in them, using the plausibly random initial assignment of bureaucrats to account for the endogeneity of officer assignment. We find that officers from the state they serve increase public goods provision. Consistent with our theory, this effect is only present in districts with conditions that favor accountability. Our findings further the literatures on embeddedness, bureaucracy, leadership and development.

Short title: Local Embeddedness and Bureaucratic Performance

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Supplementary material for this article is available in the appendix in the online edition. Replication files are available in the *JOP* Data Archive on Dataverse (<http://thedata.harvard.edu/dvn/dv/jop>).

Bureaucracies, both ancient and modern, have faced the choice of whether to administer their territories using people from the region administered or outsiders. The idea that individuals recruited externally to the communities they administer perform better than locals was central to the organization of traditional bureaucracies such as those in absolutist France and Imperial China (Beik 1985; Miyazaki 1976), and is usually attributed to local officials' greater susceptibility to capture by local elites. These ideas are reflected in modern "Weberian" bureaucracies, such as those in China, India, and international institutions like the International Monetary Fund, all of which focus on recruiting "objective" officials from the outside (Great Britain 1854; Weber 2009; Carpenter 2001). However, some have emphasized the *virtues* of embeddedness, noting that local bureaucrats may be more representative of the populations they serve and therefore may be more inclined to help locals (Meier and Nigro 1976), that communities might be able to hold local bureaucrats to account through informal means (Tsai 2007), and that embedded officials might have higher levels of information and influence (Evans 1995). The net effect of embeddedness on development outcomes is therefore unclear.

In this paper, we develop a theory to reconcile the positive and negative perspectives of the role of embeddedness in the development process. We argue that the effect of embeddedness is conditional on the degree to which bureaucrats may be held accountable for their actions. Where the conditions that favor accountability are weak—for example, where literacy is poor and newspaper circulation is low—elites will be able to divert local officers from their developmental efforts. Where accountability is strong, possibly due to high literacy and a rich information environment, elite capture would be more difficult, and local officers will improve development outcomes, due to their higher levels of local knowledge and commitment. Variation in the degree of accountability should therefore explain variation in the effect of embeddedness.

We test our theory by examining the effects of the embeddedness of Indian Administrative Service (IAS) officers on public goods provision in India. The IAS is a good case to study

since, as India’s bureaucratic “steel frame,” it possesses a remarkable level of power. If there is a bureaucracy whose effect we should be able to discern, it is the IAS. We draw on a unique dataset on the characteristics and career histories of the entirety of India’s upper bureaucracy over twenty years to examine whether the assignment of more embedded officers to districts increases public goods provision. We use panel data, a wide variety of controls and fixed effects, and an instrumental variables strategy to minimize endogeneity problems. On average, embeddedness increases public goods provision. Consistent with our theory, the positive effect of locally embedded bureaucrats obtains in districts with conditions that favor accountability. Given the context, we believe that citizens are able to hold local bureaucrats to account indirectly, via politicians.

In addition to exploring the effect of bureaucratic embeddedness, our work furthers the literatures on leadership and development. Although scholars consider broad social and economic forces to be the primary determinants of comparative development (North 1981; Acemoglu, Johnson and Robinson 2001), social scientists have recently begun to recognize that individuals have a role in influencing political and economic outcomes as well (Jones and Olken 2005; Ahlquist and Levi 2011; Humphreys, Masters and Sandbu 2006; Chattopadhyay and Duflo 2004; Hayo and Neumeier 2012; Besley, Montalvo and Reynal-Querol 2011; Moessinger 2012). This literature, however, has largely focused on the effects of *political* leadership. This is surprising given the rich literature on *bureaucratic* organization in sociology and political science (Weber 2009; Kaufman 1967; Meier and Nigro 1976; Pepinsky, Pierskalla and Sacks 2016), the existence of influential theories linking well-developed bureaucracies to developmental successes (Kohli 2004; Evans 1995), and strongly-held assumptions of what contributes to effective bureaucratic organization. Our paper furthers this literature by establishing the causal effect of bureaucratic leadership, and by examining whether a key attribute of bureaucrats—their embeddedness—matters.

In the next section, we develop our theory of how bureaucrats might affect public goods provisioning. Section 2 will describe the Indian context, and Section 3 the data and empirical

strategy. Section 4 provides the results of our analysis while the last section discusses their implications and external validity.

1 Theory

A large descriptive literature notes the importance of bureaucrats to the development process (Goodnow 1964; Potter 1996; Das 2001). Bureaucrats are thought to be especially important in weakly institutionalized settings, where individuals have greater room to have an impact. To the extent that the literature has tested hypotheses, it has focused on the relationship between bureaucrats and their political masters. Lewis (2007), Whalley (2010) and Johnson (2014) focus on the differences in the efficacy of politically and merit-appointed officials within the US bureaucracy. Iyer and Mani (2012) focus on the frequent use of transfers as a mechanism of political control within the IAS. Despite many complaints among Indian bureaucrats and journalists about their negative effects, Iyer and Mani (2012) find no effect of transfers on public goods provision. Bertrand et al. (2015) find a positive association between the age of IAS officers and state-level economic performance. Another strand of the literature has shown that personality has a strong effect on the performance of specific types of government professionals, such as doctors and teachers (Callen et al. 2014; Hanushek and Rivkin 2012). In this paper, we focus on assessing the causal impact of one particular trait of bureaucrats, their embeddedness. By doing so, we will also implicitly be examining the larger question of whether bureaucrats matter, since evidence that bureaucrat characteristics influence development outcomes amounts to evidence that bureaucrats themselves matter.

Evans (1995) and Kohli (2004) have emphasized the importance of strong bureaucracies in creating the conditions for economic growth, through their role in administering interventionist “developmental states.” These works identify two dynamics that link the social ties of bureaucrats to their performance. On the one hand, bureaucrats with dense social ties might have a greater incentive or ability (possibly because of their superior knowledge of

local conditions) to make positive changes. However, these same ties might lead bureaucrats to lack autonomy from powerful social actors, and may lead them to serve elites rather than the population as a whole. The developmental state outcome thus requires a delicate balance of these two forces—what Evans calls “embedded autonomy.” Below, we will consider the theoretical grounding for these two effects, and the factors that might lead one to be more important than the other.

1.1 Positive Effects of Embeddedness

Officers who come from an area—that is, those that are “embedded” in their communities (Granovetter 1985)—might be more likely to provide public goods.¹ This is the case for three reasons. First, more embedded local leaders might simply care more about what happens to the local population. This parallels the large literature on coethnic favoritism in public service provision (Butler and Broockman 2011; Franck and Rainer 2012; Easterly and Levine 1997). Second, populations will find it much easier to sanction locals rather than outsiders, as they are more likely to have repeated dealings with locals and may find it easier to meet embedded bureaucrats socially (Tsai 2007). Finally, local officers might be able to work more effectively with local elites and populations, due to their superior local knowledge, command of the local language and culture (Kasara 2007). Shared social links would thus give local leaders a technical advantage over outsiders.²

The possible positive effect of embeddedness is consistent with our fieldwork among bureaucrats in the North Indian state of Bihar, where some subjects argued that officers from outside the state were more corrupt than the “local boys.” One informant commented that South Indian officers “steal everything and take it back to Chennai.” Similarly, ethnographies note that IAS officers are themselves aware of the development-promoting aptitude of

¹We of course recognize that regional origin is but one definition of embeddedness. Our definition is particularly appropriate for India, since regional identities are important in this context, and since the definition matches the government’s definition of embeddedness, as employed in its anti-nepotism rule. More on this below.

²Note that none of these mechanisms require bureaucrats to know the population personally—an impossibility in large areas—but merely that they originate there.

local officials, with people noting that outsiders “are only interested in consolidating their position” (Taub 1969, 129–130).

This account of the virtues of embeddedness parallels the representative bureaucracy literature, which finds that women and members of traditionally underrepresented minorities benefit from the recruitment of women and minorities to bureaucracies (Meier and Nigro 1976; Keiser et al. 2002; Kingsley 1944; Krislov 2012), and that such bureaucracies also improve overall welfare (Meier, Wrinkle and Polinard 1999). Although the embeddedness and representative bureaucracy literatures both examine whether bureaucratic behavior is influenced by personal traits, they examine different questions. Instead of studying whether bureaucrats vary in their effectiveness depending on whether they are male, female, or members of majority or minority groups, the embeddedness literature and this paper examines whether locally-drawn bureaucrats are more or less effective than bureaucrats without local ties.

1.2 Negative Effects of Embeddedness

The embeddedness of bureaucrats could potentially cut both ways. As governments have long worried, too close a connection with an area could lead bureaucrats to be “captured” by local elites, and to serve their interests over those of the population as a whole. In India, for instance, civil servants are attractive marriage partners for local business families, and thus become entangled in doing favors for their in-laws. A further factor encouraging social ties between elites and bureaucrats is that a large proportion of bureaucrats come from high-status castes, particularly Brahmins (Chaudhary 2009). Elites are frequently thought to prefer the targeted provision of goods towards themselves, rather than the broad provision of public goods to many.

The view that locals lack objectivity and are prone to corruption is shared by many IAS officers. Taub (1969, 129–130) notes that outside officers “each have a story of a local man asking him to decide a case, because the local man was so entangled in kinship and

other obligations that he felt he could not be objective.” In contrast with the idea that embeddedness makes bureaucrats more desirous of and able to provide public goods, this mechanism predicts that embedded officials will provide fewer public goods, since they will prefer to devote their energies to providing private goods to elites.

In many poor countries, the fear of elite capture has historically been more influential than the hope of improvement due to embeddedness. This is the case to the extent that the use of outsiders, who are more likely to be autonomous, is thought to be a defining characteristic of modern bureaucracies (Weber 2009; Huber and Shipan 2002; Carpenter 2001). Imperial China, the cities of Medieval Italy and *ancien regime* France banned high officials from serving in their own provinces, to enable them to work at a distance from local elites (Beik 1985; Miyazaki 1976). Such policies continue today: the contemporary Chinese communist party has instituted mandatory rotation policies that mean that only 18% of provincial leaders serve in their home province (McCulloch and Malesky 2014, 223). The Indian Civil Service, initially recruited entirely from Britain, was especially proud of its outsider status, which it argued enabled the government to float above the corruption and vested interests of rural Indian life. Even today, its successor organization—the IAS—maintains strict rules about the number of local officers allowed to serve within states and the length of time an individual is allowed to remain in a post. Too much familiarity, in the eyes of the Indian bureaucracy, is not a good thing.

1.3 Reconciling the Two Effects: The Role of Accountability

The discussion thus far suggests that embeddedness could have positive and negative effects on public goods provision. What, however, are the net effects of embeddedness, and when will they be positive and negative? The development state literature provides some guidance on these questions (Evans 1995; Kohli 2004), arguing that cohesive bureaucracies, or those in societies without a single dominant social class or economic interest are able to reconcile embeddedness and autonomy. However, these factors mainly operate at the national level,

and therefore fail to explain subnational variation in the effect of embeddedness.

One possible solution to this difficulty lies in the differences between the implications of the two mechanisms. While the positive effects of embeddedness (increased effort, or more efficacious effort) are likely to be approved of by the public and bureaucrats' superiors, its negative (rent-seeking) effects are likely to be strongly disapproved of. We should thus expect the positive effects of embeddedness to be apparent in areas where mechanisms of accountability are effective, and the elite capture mechanism to be apparent where mechanisms of accountability are ineffective. In other words, while we believe that embeddedness gives bureaucrats an increased interest in or ability to affect outcomes, the degree of accountability will determine whether embeddedness is used for good or bad.

Following the literature ([Ahmad et al. 2005](#)), we note that there are two theoretical ways in which voters (principals) can hold bureaucrats (their agents) to account, either of which could explain variation in the effect of embeddedness. The “short route” to accountability obtains when voters are able to directly pressure bureaucrats to deliver goods. [Tsai \(2007\)](#) argues that this occurs through informal social pressures in China, where formal mechanisms of accountability are weak. In contrast, the “long route” to accountability obtains when voters are able to pressure politicians—possibly via electoral incentives—to pressure bureaucrats to perform well. Following the literature, we argue and show below that the long route to accountability is more likely to operate in the case of India ([Besley and Burgess 2002](#); [Blair 2000](#)).

2 The Context

2.1 The Indian Bureaucracy

The Indian Administrative Service (IAS) is the most important group of bureaucrats in India, eclipsing in prestige and administrative importance the other central civil services, such as the Indian Police Service, and the “subordinate” civil services recruited at the state

level. The IAS is the successor to the colonial-era Indian Civil Service, and maintains the traditions and structure of that organization, which viewed itself as a small elite cadre that provided a “steel frame” for the colonial state. Like the other central services, the IAS has a dual nature. While its members are recruited by the central government, and its officers staff central government offices, most officers—especially at the beginning of their careers—also staff posts in the state governments, where they exercise supervisory authority over local civil servants. This structure is consistent with the IAS’s self-image as objective and highly educated outsiders, bringing order to the chaos of Indian society.

Regular recruitment to the IAS occurs through a national exam conducted by the Union Public Service Commission and open to all college graduates. While there are special provisions for members of underprivileged caste groups, the key to success for all is the examination, which covers a wide range of topics (some optional), but is mostly focused on general knowledge of history and politics. The IAS has a very high (albeit declining) status within Indian society, and a large industry of test preparation has grown up around the exam. Only the very highest ranked test takers (usually around 70 a year out of the approximately 400,000 who take the preliminary exam and 7,500 who sit the main exam) score well enough to enter the IAS, after which they undergo a period of training in civil service history and practice. Joining them are a small number of officers who are recruited after good performance in the state civil service, who are for that reason usually older than their counterparts.³

After graduation, officers are posted to the IAS cadre of a particular state, in which they will spend the majority of their careers, as transfers between cadres are almost unheard of. Assignment to cadres is governed by strict rules. While up to a third of a cadre may be “local” (domiciled in the state in which they serve), at least one two-thirds must be outsiders. Freshly-minted officers ranked highest within their batch, based on the civil service exam and interview, are able to choose their cadre.⁴ Others are allocated to cadres using an assignment

³Approximately 25% of the IAS officers in our data were recruited through this mechanism.

⁴Not all top recruits choose their state of domicile. The correlation between exam rank and a dummy for

procedure based on the alphabetical ordering of states and students' rank within their batch. This system is designed to secure the even distribution of talent across states, and ensures that assignment of officers to cadres is “quasi-random” (Iyer and Mani 2012). Bertrand et al. (2015) confirms this, insofar as it shows that assignments to states are orthogonal to the predetermined observables of gender, caste, age, a dummy for whether individuals were STEM (science, technology, engineering, mathematics) majors, and exam rank.

Within each state the fundamental unit of administration is the district. The head of the district administration—called the district magistrate, district collector or deputy commissioner—is frequently from the IAS, although some are from the state civil service at the end of their careers. These officers are assisted by a large number of additional officials, including sub-divisional and district development officers, the more important of whom are also sometimes recruited from the IAS.⁵ The collector is the head of the administration in the district, and even the sub-divisional magistrate (the starting position for most IAS officers) is the supreme official within a tehsil or subdivision. As we note below, this makes them the focus for the attribution of responsibility and focused lobbying by politicians and the citizenry. In colonial times, the district administration's responsibilities were confined to law and order and tax collection. More recently, its responsibilities have extended to supervising a wide variety of subordinates and activities. Indeed, many commentators have emphasized the profusion of responsibilities for district officers as a cause of administrative failure in India (Arora and Goyal 1995; Potter 1996).

On their first assignment to a state, officers are assigned to districts within their states in a plausibly random manner, as sub-divisional officers. We elaborate below on the assignment method, on which we build our identification strategy. New recruits spend six to ten years in their initial assignments, gradually assuming greater responsibility in the district administration, until they become district officers themselves, typically in their early thir-

whether IAS officers serve in their state of domicile is -0.2 .

⁵The modal number of IAS officers per district was one. Outside the state capitals, no district had more than six IAS officers.

ties. After this, officers typically move between district assignments and positions within the state or central secretariats, with the latter becoming more common until an officer is finally too senior for district assignments. The later assignments of bureaucrats are politicized, as bureaucrats have acquired the information and capital with which to lobby for particular posts (in some instances, particularly in the lower bureaucracy, transfers are bought from politicians by the payment of bribes), and as politicians reward or punish bureaucrats for their actions. After about 20 years of service, the records of officers are reviewed by the central government, and those considered the best are “empaneled,” which means that they are eligible for senior appointments within the central government.

2.2 Accountability in the Indian Bureaucracy

District administrations play a crucial role in local development activities. Villages that want schools, health clinics or electricity must approach the district administration, often via a prominent local figure. Voters’ efforts at influencing bureaucrats directly are often unsuccessful, since the hierarchical nature of Indian society insulates officials from social pressures. This is particularly the case since IAS officers tend to be upper caste, with their own social circles. IAS officers also do not do not live in the rural villages which feel most severely the consequences of their ineffectiveness. Lastly, voters lack a formal mechanism with which to pressure bureaucrats to provide public goods. An institution—the local district council or zilla parishad—that could provide a forum for the operation of direct pressure is not autonomous, and is thought to have little effect on official policies (Potter 1996).

However, given the small number of officers and the influential posts they hold, IAS officers are often the subject of scrutiny by the press and by elites. Bertrand et al. (2015, 10) finds that the average member of its sample of local elites can identify and access the performance of 21 IAS officers in their states. Scandals involving IAS officers, or even more general tales of incompetence and insensitivity, are bread and butter to the press in India. To quote a few examples, newspapers in the last year announced the investigation of 20 IAS

officers in frauds related to midday meals in government schools,⁶ reported the reprimanding (by the chief minister) of an officer for putting his leg on a patient's bed during a hospital visit,⁷ and printed a detailed interview with a senior IAS officer about the investigation of a possibly corrupt land deal.⁸ In all these cases, the role of the press in bringing questionable actions to light is crucial. While politicians and senior bureaucrats might well know of such scandals, they would face little pressure to act in the absence of press coverage and popular clamor.

The connection between media coverage and a more responsive bureaucracy is also attested in the literature. [Mangla \(2015\)](#) notes several instances of especially effective officers being widely known, with one officer even having a billboard describing his achievements, while noting that examples of scandals or poor performance, especially in the educational sector are widely covered and discussed.⁹ [Kruks-Wisner \(forthcoming\)](#) describes how the media can publicize the rights of citizens relative to the state, and empower them in their interactions with it. [Besley and Burgess \(2002\)](#) finds that India's state governments are more likely to ship grains to states with food shortages under conditions that favor accountability. Outside of India, [Tendler et al. \(1997\)](#) provides a discussion of the role of media coverage in encouraging high bureaucratic performance in Brazil.

The scrutiny IAS officers face interacts with their vulnerability to pressure from elected officials. These checks are strong but are informal, insofar as the salaries and tenure of IAS officers are guaranteed by the central government and Indian constitution. However, IAS officers' can be sanctioned by bureaucratic superiors and politicians, via their powers to evaluate and transfer officers between different posts.¹⁰ Officers are exceedingly sensitive

⁶"Many IAS officers linked to mid-day meal scam" *Times of India*, July 19th 2016

⁷"IAS officer pulled up for misconduct." *Times of India* May 5th, 2016. "After the ill-mannered pose drew criticism from various quarters, chief minister Raman Singh too expressed strong displeasure over it. 'He needs to be trained on etiquettes and protocol,' he said, adding state chief secretary Vivek Dhand would be asked to issue a notice to the officer concerned."

⁸"The six charges against IAS officer Ashok Khemka and his replies." *The Indian Express* November 5th, 2015.

⁹[Mangla \(2015\)](#) also discusses the role of another factor, state size, in improving information flow and responsiveness.

¹⁰Politicians are prone to transfer officers that are later in their careers (since by this point they have

to such moves since prestige, influence and living conditions vary widely between posts (even for officers with similar levels of seniority). Bureaucrats are therefore anxious to please their superiors in the bureaucracy, who ultimately report to the Chief Minister of the state (the equivalent of a US Governor), whose power depends on winning elections. This means that citizens through the medium of elected officials and local political parties, can influence figures who influence the life-chances of bureaucrats, creating a potential “long route” to accountability. [Blair \(2000\)](#) argues that such accountability obtains in the state of Karnataka; [Besley and Burgess \(2002\)](#) posits its existence in India more generally. Many officers we encountered in fieldwork feel that the demands placed on them from politicians—frequently viewed as interference—have become more insistent in recent years, as the Indian political system has become more representative of non-elites.

The final step in this chain of accountability is that politicians are accountable to voters. Since India is a democracy, elections serve as an obvious mechanism to sanction poor performing politicians. Indian elections are widely regarded as free and fair, and are highly competitive, with incumbents being turned out of power frequently.¹¹ While this accountability has not yielded an honest political class, politicians work very hard to enhance their reputations for responsiveness. In fact, [Vaishnav \(2017\)](#) suggests that one reason “criminal” politicians are prevalent in India is because they are highly skilled in catering to their constituents and are viewed as credible.

To review, a viable “long route” to bureaucratic accountability requires three things to be true: 1) Politicians must have some means of sanctioning bureaucrats, 2) citizens must have some means of sanctioning politicians and 3) citizens must have some means of assessing bureaucratic performance. We believe that all three of these facts are true in the case of IAS

great deal of information about the officers) and, reflecting the use of transfers as a tool of accountability, around elections ([Iyer and Mani 2012](#)). Partly for this reason, IAS officers tend to move rapidly between posts. [Iyer and Mani \(2012\)](#) find the average tenure in a given post to be sixteen months, and that only 56% of district officers hold their posts for more than a year.

¹¹Note that despite an incumbency disadvantage, Indian politicians have strong incentives to be responsive to their constituents. Incumbents rerun for office at high rates (68.5% in 2004, much higher than challengers; see [De Magalhaes 2015](#); [Lee 2016](#)), and also make active use of constituency development funds to serve their constituents ([Keefer and Khemani 2009](#)).

bureaucrats. Firstly, politicians can sanction bureaucrats through the highly effective (and empirically well-documented) mechanism of transfers. Secondly, given India’s democratic political structure, citizens are capable of sanctioning politicians through elections. Finally, citizens—particularly well-informed, literate citizens—are capable of assessing bureaucratic performance.

3 Dataset and Empirical Strategy

The empirical analysis presented here is based on the complete service records for the 4,793 members of the IAS as on March 7, 2007, obtained from the Union Public Service Commission. The fact that fewer than 5,000 officers are largely responsible for running a country of over 1.3 billion people is indicative of the power of IAS officers. For each officer, the service record gives a complete list of the posts held and the dates for which they were held, in addition to biographical details. For this analysis, we confined ourselves to the positions that IAS officers held in the country’s districts, thereby ignoring the large number of other positions (i.e., those in the state capitals, New Delhi or at parastatals). The data were reorganized to yield, for each of the approximately 300 districts in India in 1971, a list of the IAS officers that served in them, along with the officers’ dates of service and biographical details. The majority of these officers held district officer positions, with the remainder serving as district development officers and subdivisional officers.

It is worth emphasizing the unusual nature of our data. Few studies have been able to leverage comprehensive data on bureaucrats—even though these should be, in principle, readily available—to understand their effects on any sort of policy outcomes. Those studies that have done so have focused on rich-world bureaucracies (Johnson 2014), rather than poor-world ones.¹² That said, our data on district officers are incomplete for two reasons. First, because our portrait of the IAS is a snapshot in time, some officers who held district positions will have already retired. Second, we have no information on the state civil service

¹²Exceptions are Iyer and Mani (2012); Bertrand et al. (2015); Ferguson and Hasan (2013).

officers who hold district posts.

Since few of the officers we have data on were active in the 1970s, our analysis employs data from the 1991 and 2001 censuses, giving us two observations for each district. During this period, many Indian districts were split into smaller districts or were otherwise reorganized. We therefore follow the literature in using 1971 districts as our unit of analysis, with subsequent split districts being added to recreate “parent” districts (Banerjee and So-manathan 2007). For the small number of cases where a new district was created from multiple 1971 districts, data for the original 1971 district were created using the proportion of the population of the old district that was in the new districts.

3.1 The Key Independent Variable

Our key independent variable is bureaucrats’ embeddedness in the areas in which they serve. Our measure of embeddedness is the proportion of IAS officers serving in the district that report being “domiciled” in the state in which they are serving when they joined the IAS, weighted by each bureaucrat’s time in district.¹³ So, for example, if a district had six IAS officers in the decade before 1991, two of whom were domiciled in the state, and all of whom served for 20 months each, the embeddedness measure would take on a value of 0.33. Although there are a number of other ways to code embeddedness (including, for example, coding officers as embedded if they speak the same language as the majority of the district population), our coding is appropriate since regional identities are important in India, and since language and caste often reinforce regional divisions. This definition of embeddedness is also precisely the one that the IAS is most concerned with, insofar as the proportion of local IAS officers so defined is capped at one-third. In our analysis of the mechanisms through which embeddedness might work, we use alternate codings of embeddedness, to examine whether bureaucrats that speak the same language as the local population, or those that are politically connected, perform better than others.

¹³IAS officers cannot change their domicile as recorded by the IAS.

3.2 The Dependent Variable

To measure our dependent variable—the provision of local public goods—we note that the state delegates two of its core responsibilities, to provide people with education and health-care, to the country’s district administrations. Because of this, we employ the proportion of villages with high schools as our main dependent variable, and use proportion of villages with healthcare facilities as a robustness check. Importantly, educational and healthcare facilities are built and administered by district administrations, although private provisioning has increased since the 2000s. In 1993, only 6.8% of rural high school students attended private schools (Kingdon 2007). We also report results on phones (land lines)—which are installed by a parastatal, and over which local bureaucrats have little control—as a placebo test, to ensure that our results are not caused by wider social and economic trends but by bureaucrats. The data come from the “village directory” of the decennial censuses of India, which lists the availability of public goods in each rural village (urban areas are excluded).

While not pure public goods, rural high schools benefit a large share of the population. Our dependent variable—the proportion of villages with high school—reflects both the number and spread of high schools, insofar as building multiple high schools in the same village does not increase the measure. That said, even putting high schools in villages that previously had a high school can have significant positive effects on attendance (Siddhu 2011; Muralidharan and Prakash 2013), possibly because of the lack of wheeled transport in many villages and parents’ concern about harassment of female children while walking to school.

Figure 1 shows the gradual increase in the spread of high schools over time. While only 6.6% of villages had a high schools in 1971, 15.4% had them in 2001. For the median-sized 1971 district of 1,365 villages, this means an additional 120 villages (four a year) would have obtained high schools in this period. Importantly, the low % of villages with high schools in 2001 means that our analysis does not suffer from ceiling effects.¹⁴

¹⁴A similar analysis of primary schools would suffer from ceiling effects, since a preponderance of villages had primary schools in 1991. The data on middle schools is inconsistently coded.

3.3 Identification Strategy

We start by using OLS to model public goods as a function of IAS officers' embeddedness. Note, however, that the estimated partial correlation between the IAS officers' embeddedness and public goods outcomes could suffer from endogeneity bias, due to three reasons. First, omitted variables could influence both public goods provisioning and the bureaucrats posted to districts. These variables would bias the estimated effect of embeddedness. Second, the estimated effect of embeddedness could be biased due to reverse causality, as bureaucrats could be assigned to districts based on the prevailing level of public goods. And third, our key independent variable—embeddedness—likely suffers from measurement error, for previously-discussed reasons.

For an ideal test of the leadership influence hypothesis, we would want bureaucrats to be randomly assigned to districts, and for their characteristics to thus be uncorrelated with those of districts. In order to approximate this experiment, we proceed on two fronts.

First, we note that the initial assignment of IAS officers to districts within states is plausibly random, and use this fact to craft an instrumental variables strategy. The precise procedures used to allocate IAS officers to districts vary slightly from state to state and over time, and the small number of officers makes it difficult to determine the procedure in many state-years. However, the IAS posting orders that we obtained suggest that heuristics such alphabetical order and serial number—which are arbitrary and orthogonal to district and officer characteristics—are used to match officers to districts. For example, with the exception of two officers (both transferred out of state), IAS officers from the 2013 Andhra Pradesh cadre were assigned in alphabetical order of their names to districts that were ordered based on their serial number ([Andhra Pradesh 2014](#); district serial numbers are assigned based on the district's geographical position in the state proceeding clockwise). Also, with one exception, the officers from the 2013 Karnataka cadre were similarly assigned based on officer serial number and district number.¹⁵ In the cases of Rajasthan (1999–2004)

¹⁵See the 2014 state civil list.

and Uttar Pradesh (2001–2003), officers were ordered by exam rank and were matched with districts that were ordered geographically (north to south in Rajasthan, and south to north in Uttar Pradesh).¹⁶ In our analysis, geographic variation in development patterns is controlled for using district fixed effects.

That apolitical methods are used to assign early-career officers to districts stands to reason, since these officers have had little time to build up the social networks that would enable them to lobby for postings. Such officers would also be less likely to be known to the powerful politicians said to control district postings. The positions that they occupy, as subdivisional officers and block development officers, are remote from the law and order issues that are of greatest concern to politicians. Officers' initial assignments are considered an extension of their training (Prasad 1968; Bhattacharyya 2012). This is explicitly recognized by the official documents on assignment procedures that we were able to obtain (Government of Orissa 2000; Indian Ministry of Home Affairs 2010), which recognize that while late-career officers will be able to lobby for postings, early-career officers will have to go where they are sent. This frequently means that junior officers are sent to relatively undesirable locations, which sometimes become objects of nostalgia among senior bureaucrats (Chatterji and Das Gupta 2015).¹⁷

The plausibly random, apolitical assignment of IAS officers early in their careers to districts allows us to use the proportion of local officers among those in the first five years of service (the number 5 is arbitrarily chosen; as we note below, our results are robust to use 4 years as the cut off) to instrument for the proportion of local officers assigned to that district. Online Appendix Table A2 confirms that this instrument is indeed uncorrelated with 12 observable confounds, including, strikingly, the lagged dependent variable and the proportion

¹⁶Districts were ordered using the latitude of the largest district towns.

¹⁷A possible objection to this strategy is that junior officers are too low in rank to influence public goods levels. Note, however, that this would lead to attenuated estimates of the effect of bureaucrats, rather than spuriously high estimates. Moreover, the structure of the IAS means that even young officers have substantial responsibility. The starting job of IAS officers, sub-divisional magistrate is the most important civil servant within a subdivision with a population of hundreds of thousands, where he is responsible for the enforcement of the land revenue laws, the coordination of government functions, and the acquisition of land for government projects (District 2016*b*, *a*).

of late-career bureaucrats.¹⁸ Further, the traits of initial assignees are necessarily correlated with the traits of all assignees, since the former is a part of the latter. [Clots-Figueras \(2012\)](#) uses a similar empirical strategy, wherein an endogenous variable is instrumented with the same variable in a subset of the data. [Figure 2](#) plots the first stage relationship, and confirms that the early assignment variable is a robust predictor of the overall embeddedness of bureaucrats. Lastly, the traits of early-career officers should also only affect public goods outcomes through their effect on all bureaucrats’ traits, thereby satisfying the exclusion restriction.

Second, we use an extensive set of covariates—including fixed effects for districts and a year—to control for confounds that could explain both the assignment of bureaucrats and the provision of public goods. In the previous paragraph, we reported that the degree of officer embeddedness is orthogonal to these possible confounds. Our control set includes a measure of the average education of bureaucrats that served in each district. This is the mean undergraduate degree “division” (one to three, with one being the best) of the IAS officers that served in each district.¹⁹ The demographic controls that we include are log population and log number of villages, both of which are obviously associated with the spread of goods across villages. The economic and social controls we include are the proportion of the population that is rural, the proportion of the population that are workers, the proportion of the population that are agricultural laborers (highly correlated with rural poverty—see [Lanjouw and Murgai 2009](#)), and, following [Banerjee and Somanathan \(2007\)](#), the proportion of the historically underserved scheduled caste and scheduled tribe communities. Since officers might find service unpleasant in areas where the Indian state is weak, we include a control for the murder rate, which also captures the presence of insurgent movements, especially the

¹⁸That said, and as we describe below, we control for these factors to improve the precision of our estimates.

¹⁹We do not instrument for education in a manner analogous to embeddedness since the effect of education is not the topic of this paper, and since instrumenting for two variables in a 2SLS framework is inadvisable ([Angrist and Pischke 2008](#), 64–66; [Angrist 2010](#)). We also do not focus on estimating the causal effect of bureaucrats’ formal education since IAS officers are generally very well educated. The coefficient on the education variable therefore more plausibly reflects an estimate of credentialing rather than education per se.

Communist guerrillas who are prominent in many rural areas of Central and Eastern India (the district fixed effects we employ control for most of the variation in the degree of the attractiveness of districts). Further, to control for the potentially politicized distribution of resources, we control for the proportion of time the local representatives' party was in power at the state and national levels.

The control set includes district fixed effects, which control for many of the time-invariant factors that affect bureaucratic assignment and public goods provision, such as district size (recall that the establishment division explicitly assigns more senior bureaucrats to larger districts, and so this controls for that), climate and proximity to state capitals (the latter two could affect the attractiveness of districts to bureaucrats, and public goods as well), the historical land tenure system (Iyer and Banerjee 2005), and previous control by princely states (Iyer 2010). Since districts are nested within states, the district fixed effects also control for all state-invariant confounds. Importantly, this controls for the time invariant degree to which the highest-ranked candidates in the IAS exams are able to choose their state cadres (in a robustness test, we also directly control for IAS officers' mean exam ranks). In addition to district fixed effects, we also include a year fixed effect, since we have data for two periods. This controls for the effects of country-wide shocks such as national policies on our independent and dependent variables.

To review, our empirical strategy is to estimate this system of equations:

$$L_{it} = \alpha + \lambda Z_{it} + \rho \mathbf{X}_{it} + \eta_i + \eta_t + u_{it} \quad (1)$$

$$P_{it} = \kappa + \beta L_{it} + \gamma \mathbf{X}_{it} + \delta_i + \delta_t + v_{it} \quad (2)$$

where L_{it} is our measure of IAS officers' embeddedness in the decades before 1991 and 2001, P_{it} is our measure of public goods in 1991 and 2001,²⁰ α and κ are constants, Z_{it} is the

²⁰The public goods data are as on March 1, 1991 and March 1, 2001. Since this is the case, the embeddedness measures are calculated as the averages for March 1, 1981–February 28, 1991 and March 1, 1991–February 28, 2001.

early-career instrument for the embeddedness measure, \mathbf{X}_{it} is a vector of controls, including officers' education, and the demographic, economic, social, political controls detailed previously, η_i and δ_i are district fixed effects, η_t and δ_t are time fixed effects, u_{it} and v_{it} are normally distributed error terms, i indexes districts and t indexes periods. The use of district fixed effects means that this specification is equivalent to modeling the change in public goods between 1991 and 2001 as a function of the change in the mean embeddedness of IAS officers between the decade before 1991 and the decade before 2001. The coefficient of interest is β , which is an estimate of the causal effect of embeddedness on public goods provisioning.

4 Results

We start our analysis of the effects of IAS officers on public goods provisioning by plotting the bivariate relationship between embeddedness and public goods in Figure 3. The plot suggests that local officers are associated with greater provisioning of high schools.

This relationship is formally investigated in Table 1 (full results are in Online Appendix Table A3). Regression 1 models the proportion of villages with high schools as a function of IAS officers' embeddedness. The coefficient on the embeddedness measure suggests that increasing the proportion of local officers by a standard deviation (.27) will increase the % of villages with high schools by 1.8 percentage points. Since an average of 13% of villages had high schools, this is equivalent to a 14% increase in the proportion of villages with high schools.

Regression 2 repeats this model, while controlling for various possible confounds that could influence public goods provisioning and the assignment of bureaucrats. The control set was discussed previously, and contains a measure of bureaucrats' education, the log of the district population, the log number of villages, the proportion of the district that is rural, the proportion of workers and agricultural laborers, the proportion of scheduled castes and tribes,

log murders per capita and the proportion of representatives in the state and national ruling coalitions. Regression 3 adds district and year fixed effects to this specification, thereby additionally controlling for unobserved district and year-specific confounds. The successive addition of controls attenuates the estimated partial correlation of embeddedness and high schools. In regression 3, with the full control set, the estimated effect of embeddedness on the proportion of villages with high schools is only statistically significant at the 10% level.

In regression 4 of Table 1, we present the results of our preferred 2SLS specification. The first column shows the results of the first stage regressions for bureaucrats' embeddedness, with the embeddedness of new recruits—defined as those in their first 5 years of service (as discussed later, the results are robust to defining new recruits as those in the first 4 years of service)—is used to estimate overall embeddedness. Importantly, the embeddedness of early-career officers is positively associated with the embeddedness of all officers to a statistically significant degree, even after controlling for confounds and district and year fixed effects. The first stage F -statistic for embeddedness is well above 10, which is the conventional threshold for a strong instrument.

The last column presents the results of the second stage regression. The coefficient on embeddedness suggests that increasing the proportion of local IAS officers' from the mean by a standard deviation (.27) increases the proportion of villages with high schools by 0.6 percentage points or 4.6%. For a district with the median number of villages, the effect of a one standard deviation increase in local officers is equivalent to an additional 8.2 high schools per decade, or just under one a year. Since the mean district added an average of four high schools a year in 1971–2001, this is a level of increased output within the reach of the average bureaucrat.

Our use of an instrumental variables strategy means that the estimated causal effect of embeddedness is a local average treatment effect (LATE). In other words, our estimate is particularly indicative of the effect of early-career officers' embeddedness. Although the effects of the embeddedness of late-career IAS officers' might, in principle, be different from

the estimates we have presented here, we do not have clear priors on how this might affect the thrust of our results. Early-career local IAS officers might do more for their districts than late-career officers, since they are closer to their roots. But the reverse might be possible, too, if IAS officers later in their careers wish to give back to their communities as they are closer to retirement.

The main result presented here suggests that embedded officers increase the proportion of villages with high schools to a statistically and substantively significant degree, and that bureaucratic leadership thus matters for development outcomes.

4.1 Robustness checks

Our preferred 2SLS results, which suggest that embeddedness has a positive causal impact on the proportion of villages with high schools, hold up to four robustness tests of our identification strategy, the use of the lagged dependent variable, the use of alternative measures of public goods, and the use of a placebo test.²¹ These tests are summarized in Table 2 (full results presented in Online Appendix Table A4).

We start with four robustness tests of our identification strategy. Recall that we identify the causal effect of IAS officers' embeddedness by leveraging the fact that officers' initial assignments to districts are plausibly random. The fact that the highest ranked officers are able to choose their states is not a problem, since our empirical strategy leverages within-state (in fact, within-district) variation,²² and since we control for bureaucrats' education. To further address this concern, we also control for the mean exam rank of the IAS officers assigned to each district (regression 1). As expected, the estimated effect of embeddedness on public goods is unchanged.

In a second robustness test of our identification strategy, we estimate the reduced-form effect of the embeddedness of early-career bureaucrats on high schools (regression 2). Consistent with our main results, bureaucrats' embeddedness significantly increases the provision

²¹In addition, in the next section, we show that the results are robust to controlling for literacy rates.

²²Recall that districts are nested within states.

of high schools. In the third robustness test of our identification strategy, we redefine early-career bureaucrats as those within four, instead of five (both numbers are arbitrary), years of starting as IAS officers. Regression 3 presents the results from this strategy, and suggests that doing so strengthens our results.

While we cannot rule out the possibility of unobserved variable bias in the 2SLS model, we can calculate the sensitivity of our main result to this bias using the procedure described by [Altonji, Elder and Taber 2005](#). In the 2SLS model, explaining the entire estimated effect of embeddedness on development due to unobservables would require selection due to these factors to be 5.9 times stronger than selection on the observables that we control for. This seems highly unlikely.²³

Note that since our panel only covers two time periods, concerns of Nickell bias ([Nickell 1981](#)) prevent us from including a lagged dependent variable along with district fixed effects. In regression 4, we substitute the district fixed effects in our preferred specification with a lagged dependent variable and state fixed effects. Doing so slightly attenuates the estimated relationship between embeddedness and high schools, although it remains significant at the 10% level.

In regression 5, we examine the effects of bureaucrats on an alternative measure of public goods: the proportion of villages with health care centers. Although this variable is inconsistently measured across states—which is why we do not use it in the main analysis—embeddedness continues to have a positive effect on this outcome. In regression 6, we present a placebo test for the effects of bureaucrats, by examining the effects of embeddedness on phones, which are not controlled by the district administration. As expected, the proportion of local officers does not affect access to phones to a statistically significant degree.

²³In [Altonji, Elder and Taber \(2005\)](#), the main results were considered robust since selection on unobservables would have to be 1.4–3.5 times selection on observables to overturn the results.

4.2 Mechanism: Accountability

Although the focus of the paper has been on determining the overall causal effect of embeddedness on public goods, our theory suggests that the effect of embeddedness should particularly large in districts with conditions that favor accountability. Following the literature, we note that literacy and newspaper circulation are associated with enhanced accountability (Besley, Pande and Rao 2005; Besley and Burgess 2002; Strömberg 2004). Our theory therefore implies that in districts with high literacy and newspaper circulation, the positive effects of embeddedness should outweigh the negative effects of elite capture. Literacy and newspaper circulation might empower citizens to demand more public goods (for example, through making people more aware of their rights) and to more effectively do so (for example, by providing them with information on bureaucratic performance). Indeed, the accountability literature uses direct evidence from the Indian case to argue that newspapers and literacy empower people to hold government accountable (Besley, Pande and Rao 2005; Besley and Burgess 2002).

In regressions 1 and 2 of Table 3 (full results are in Online Appendix Table A5), we interact our measure of embeddedness with predetermined, 1971 measures of literacy (from the census) and newspaper circulation (from Besley and Burgess 2002; unfortunately, this measure only varies at the state level). To account for the endogeneity of embeddedness, we instrument for the interaction terms using the interaction of the instrument for embeddedness with our measures for 1971 literacy and newspaper circulation.²⁴ This exercise does not yield the causal effects of literacy or newspaper circulation or the causal effects of their interactions with embeddedness. Rather, it simply examines the heterogeneity in the causal effect of embeddedness on development outcomes in districts with varying levels of predetermined literacy and newspaper circulation.²⁵ Consistent with the theory, the regressions suggest that

²⁴Since our specifications include district fixed effects, the uninteracted effects of predetermined literacy and newspaper circulation “drop out” of the regression. The interaction terms remain.

²⁵In principle, one could attempt to estimate the causal effects of literacy and newspaper circulation as well. However, employing 2SLS for this exercise would require us to instrument for more than one endogenous term (embeddedness *and* literacy or newspaper circulation), which is not recommended (Angrist and Pischke

embeddedness has a statistically significant and positive effect on high school construction in districts with high literacy and newspaper circulation. Figure 4 plots the marginal effects of these interaction terms, suggesting that embeddedness has no discernible effect on high schools at low levels of literacy (that is, in the 47% of observations with literacy rates below 20%) and also those with low levels of newspaper circulation (approximately 66% of districts have high enough newspaper circulation for locally embedded officers to positively impact the proportion of villages with high schools).

An alternative interpretation of these results is that rather than ensuring greater accountability, literacy and newspaper circulation are simply markers of citizens' preference for high schools. In other words, the causal effect of embeddedness on the proportion of villages with high schools in districts with high literacy and newspaper circulation could reflect a preference for high schools over other goods. To explore this possibility, we turn to data from the 2006 World Values Survey conducted in India. In an imperfect test for the preference hypothesis, we examine whether more educated people (our proxy for literacy) and those who read newspapers in the past week (our proxy of vernacular newspaper circulation) place an increased emphasis on education (for this analysis, the dependent variable is a dummy for whether respondents think that inadequate education is the most serious problem in the country), while controlling for respondent age, gender, income and state fixed effects. As we can see in Online Appendix Table A6, the degree to which people think that education is an urgent issue does not vary by people's education or exposure to the media. This suggests that it is unlikely that citizen preferences explain the heterogeneous treatment effects that we have uncovered.

4.3 Alternative mechanisms

In the theory section, we discussed alternative mechanisms by which embeddedness might work to improve public goods provisioning. We are able to test two of them here. First,

[2008](#), 64–66; [Angrist 2010](#)).

locally-embedded officers might enjoy a technological advantage, insofar as they might perform well since they speak the local language. We test this possibility in regression 3 of Table 3, by controlling for the proportion of IAS officers that speak the state language. Following our main specification, we instrument for this term using the proportion of early-career IAS officers that speak the state language. If embeddedness works through giving officers who speak the same language as locals an advantage in the provision of public goods, controlling for same language should attenuate the magnitude and statistical significance of the coefficient on embeddedness. However, the estimated positive effect of embeddedness slightly increases with this addition, suggesting that embeddedness does not work through language.²⁶

Embeddedness could also work by arming bureaucrats with the political ties with which to perform well, for instance by making it more likely they will be in the same caste as political leaders. If this is the case, controlling for the degree to which bureaucrats are politically connected should attenuate the estimated effect of embeddedness. In an imperfect test of this possibility, we control for the instrumented proportion of bureaucrats that serve as assistants, secretaries or advisers to state or central ministers at some point in their career (this test is imperfect since the measure of connectedness is not predetermined; see regression 4). While the estimated effect of political connectedness is positive and significant (the elasticity of high schools with respect to political connectedness is double that of embeddedness), the coefficient on embeddedness is essentially unchanged, suggesting that embeddedness works through a mechanism other than political connections.

5 Conclusions

In the ninth book of *War and Peace*, Tolstoy argues that “‘great men’ are nothing but labels attached to events; ... they have the least possible connection with events themselves”

²⁶Since Hindi is spoken in multiple North Indian states, these states are assigned many officers who speak the local language but are not from the state. Outside of the North, the embeddedness and language variables are collinear.

(Tolstoy (1869) 2005, 671). In short, individuals have no effect upon history. The opinion was an unusual one at the time, when historiography emphasized the decisive importance of “great men,” but has since become a common one within the social sciences. At around the same time, however, Karl Marx advanced a more nuanced view of the importance of leadership, arguing that “men make their own history, but they do not make it just as they please ... but under circumstances directly encountered, given and transmitted from the past” (Marx (1852) 2008, 15). Our investigation of the effects of IAS bureaucrats on public goods provision in India provides more support for Marx than for Tolstoy. It suggests that bureaucrats matter, and that their embeddedness helps explain variation in development outcomes. Further, the context in which bureaucrats serve—specifically whether they serve under conditions that favor accountability—influences their efficacy.

The contingent effect of embedded bureaucrats helps explain the split conventional wisdom on the impact of embeddedness on performance. While we found that local bureaucrats, on average, performed better than outsiders, this effect was concentrated in districts that had high literacy and newspaper circulation. On the other hand, and as the designers of the IAS and the Imperial Chinese Civil Service might have feared, the effect of local bureaucrats becomes attenuated, and eventually zero, in districts with low levels of literacy and newspaper circulation. We argue that this suggests that locally embedded bureaucrats perform better when they serve in districts where they can be held accountable. Interestingly, since India used to have lower levels of literacy and newspaper circulation, these findings suggest that the IAS might have been right to have been suspicious of embeddedness in the past.

This paper extends the empirical literature on the effects of political leadership by showing that, at least in some countries, development outcomes are influenced not only by politicians but also by unelected bureaucrats. This reinforces the central role that effective bureaucracies play in some theories of development (Evans 1995). This emphasis is particularly relevant in India, where the role of bureaucrats has received little attention in the extensive literature on subnational variation in public goods (see Vaishnav and Khosla 2016 for a recent plea to

rectify this).

Do these findings extend to other contexts and outcomes? Certainly many other countries have bureaucracies that seek to balance the costs and benefits of hiring locals, with the Chinese Communist Party being a notable contemporary example. Many also share the factors that we have identified as important to the positive impact of embeddedness, including high levels of literacy and newspaper circulation.²⁷ If anything, the autonomous and highly formalized structure of the IAS would tend to work against the effect of embeddedness, by lessening the degree of contact between IAS officers and local society, and thereby forestalling the “short route” to accountability. That said, our findings might be contingent on the fact that the public goods that we examine—educational and healthcare infrastructure—are easily observed. Embeddedness might be less like to have positive effects on the production of goods that are more difficult to observe, such as the quality of instruction or healthcare.

The paper has potential policy relevance for the way bureaucracies are organized. We find that while the embeddedness of bureaucrats has a conditional positive effect on public goods, many traditional bureaucracies, including the IAS, structure their recruitment and assignment processes on the basis that a lack of local ties is desirable. If confirmed in other work, our findings might suggest the desirability of changes in the way bureaucrats are recruited and assigned.

Our work implies that the effects of bureaucratic embeddedness, and bureaucratic personality more generally, are complex and contingent on the characteristics of areas. This suggests that future work on embeddedness should move beyond examining whether embeddedness has net positive or negative effects, to understanding the circumstances in which these effects hold.

²⁷The literacy rate at which the estimated effect of embeddedness is positive, 20%, is lower than the literacy rates of practically all countries today, though high relative to most countries in the 19th century.

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References

- Acemoglu, Daron, Simon Johnson and James A. Robinson. 2001. “The Colonial Origins of Comparative Development: An Empirical Investigation.” *The American Economic Review* 91(5):1369–1401.
- Ahlquist, John S and Margaret Levi. 2011. “Leadership: What it means, what it does, and what we want to know about it.” *Annual Review of Political Science* 14:1–24.
- Ahmad, Junaid Kamal, Shantayanan Devarajan, Stuti Khemani and Shekhar Shah. 2005. “Decentralization and service delivery.” *World Bank Policy Research Working Paper* (3603).
- Altonji, Joseph G, Todd E Elder and Christopher R Taber. 2005. “Selection on Observed and Unobserved Variables: Assessing the Effectiveness of Catholic Schools.” *Journal of Political Economy* 113(1).
- Andhra Pradesh. 2014. “I.A.S. – Probationers of 2013 batch – Provisional Allotment to the A.P. Cadre – Posting for undergoing practical training in Districts – Orders – Issued.” G.O.Rt.No: 2409.
- Angrist, Joshua D. 2010. *Multiple Endogenous Variables—Now What?!* At <http://www.mostlyharmlesseconometrics.com/2010/02/multiple-endogenous-variables-what-now/>. Accessed September 30, 2014.

- Angrist, Joshua D. and Jörn-Steffen Pischke. 2008. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton, N.J.: Princeton University Press.
- Arora, Ramesh Kumar and Rajni Goyal. 1995. *Indian public administration: institutions and issues*. New Age International.
- Banerjee, Abhijit and Rohini Somanathan. 2007. "The political economy of public goods: Some evidence from India." *Journal of development Economics* 82(2):287–314.
- Beik, William. 1985. *Absolutism and society in seventeenth-century France: State power and provincial aristocracy in Languedoc*. Cambridge University Press.
- Bertrand, Marianne, Robin Burgess, Arunish Chawla and Guo Xu. 2015. Determinants and Consequences of Bureaucrat Effectiveness: Evidence from the Indian Administrative Service. Technical report University of Chicago, LSE, IAS, LSE.
- Besley, Timothy, Jose G Montalvo and Marta Reynal-Querol. 2011. "Do Educated Leaders Matter?" *The Economic Journal* 121(554):F205–227.
- Besley, Timothy and Robin Burgess. 2002. "The political economy of government responsiveness: Theory and evidence from India." *Quarterly Journal of Economics* pp. 1415–1451.
- Besley, Timothy, Rohini Pande and Vijayendra Rao. 2005. "Political selection and the quality of government: Evidence from South India."
- Bhattacharyya, Kaustav. 2012. Communities of Practice facilitating learning and innovation in the Indian Administrative Services-A qualitative investigative study PhD thesis City University London.
- Blair, Harry. 2000. "Participation and accountability at the periphery: Democratic local governance in six countries." *World Development* 28(1):21–39.

- Butler, Daniel M and David E Broockman. 2011. “Do politicians racially discriminate against constituents? A field experiment on state legislators.” *American Journal of Political Science* 55(3):463–477.
- Callen, Michael, Saad Gulzar, Ali Hasanain, Yasir Khan and Arman Rezaee. 2014. “Personalities and Public Sector Performance: Evidence from a Health Experiment in Pakistan.” .
- Carpenter, Daniel. 2001. “The Forging of Bureaucratic Autonomy: Networks, Reputations and Policy Innovation in Executive Agencies, 1862-1928.”.
- Chatterji, Saubhadra and Moushumi Das Gupta. 2015. “What happens when top bureaucrats visit their first posting locations.” *Hindustan Times* .
- Chattopadhyay, Raghavendra and Esther Duflo. 2004. “Women as policy makers: Evidence from a randomized policy experiment in India.” *Econometrica* 72(5):1409–1443.
- Chaudhary, Latika. 2009. “Determinants of primary schooling in British India.” *Journal of Economic history* 69(1):269.
- Clots-Figueras, Irma. 2012. “Are female leaders good for education?” *American Economic Journal: Applied Economics* 4(1):212–244.
- Das, Sisir K. 2001. *Public office, private interest: Bureaucracy and corruption in India*. Oxford University Press.
- De Magalhaes, Leandro. 2015. “Incumbency effects in a comparative perspective: Evidence from Brazilian mayoral elections.” *Political Analysis* 23(1):113–126.
- District, Mandya. 2016a. “Mandya: District Administration.” http://www.mandya.nic.in/dist_admin_functions.asp.
- District, Sanrur. 2016b. “Role of DC’s ADC’s etc.” <http://sangrur.nic.in/html/dcrole.html>.

- Easterly, William and Ross Levine. 1997. "Africa's growth tragedy: policies and ethnic divisions." *The Quarterly Journal of Economics* pp. 1203–1250.
- Evans, Peter B. 1995. *Embedded autonomy: states and industrial transformation*. Cambridge University Press.
- Ferguson, John-Paul and Sharique Hasan. 2013. "Specialization and career dynamics evidence from the Indian administrative service." *Administrative Science Quarterly* p. 0001839213486759.
- Franck, Raphael and Ilia Rainer. 2012. "Does the Leader's Ethnicity Matter? Ethnic Favoritism, Education, and Health in Sub-Saharan Africa." *American Political Science Review* 106:294–325.
- Goodnow, Henry Frank. 1964. *The Civil Service of Pakistan. Bureaucracy in a New Nation*. New Haven & London.
- Government of Orissa. 2000. "Resolution No. 1." General Administration Department.
- Granovetter, Mark. 1985. "Economic action and social structure: the problem of embeddedness." *American journal of sociology* pp. 481–510.
- Great Britain. 1854. *Report on the Organization of the Permanent Civil Service*. Her Majesty's Stationery Office.
- Hanushek, Eric A and Steven G Rivkin. 2012. "The distribution of teacher quality and implications for policy." *Annual Review of Economics* 4(1):131–157.
- Hayo, Bernd and Florian Neumeier. 2012. "Leaders' impact on public spending priorities: The case of the German Laender." *Kyklos* 65(4):480–511.
- Huber, John D and Charles R Shipan. 2002. *Deliberate discretion?: The institutional foundations of bureaucratic autonomy*. Cambridge University Press.

- Humphreys, Macartan, William A Masters and Martin E Sandbu. 2006. "The role of leaders in democratic deliberations: results from a field experiment in Sao Tome and Principe." *World Politics* 58(04):583–622.
- Indian Ministry of Home Affairs. 2010. "Guidelines of Transfer/Postings of IAS/IPS Officers of Joint AGMU Cadre."
- Iyer, Lakshmi. 2010. "Direct versus indirect colonial rule in India: Long-term consequences." *The Review of Economics and Statistics* 92(4):693–713.
- Iyer, Lakshmi and Abhijit Banerjee. 2005. "History, Institutions, and Economic Performance: The Legacy of Colonial Land Tenure Systems in India." *American Economic Review* 95(3):1190–1213.
- Iyer, Lakshmi and Anandi Mani. 2012. "Traveling agents: political change and bureaucratic turnover in India." *Review of Economics and Statistics* 94(3):723–739.
- Johnson, Tim. 2014. "Service after Serving: Does Veterans' Preference Diminish the Quality of the US Federal Service?" *Journal of Public Administration Research and Theory* .
- Jones, Benjamin F and Benjamin A Olken. 2005. "Do leaders matter? National leadership and growth since World War II." *The Quarterly Journal of Economics* pp. 835–864.
- Kasara, Kimuli. 2007. "Tax me if you can: Ethnic geography, democracy, and the taxation of agriculture in Africa." *American Political Science Review* 101(01):159–172.
- Kaufman, Herbert. 1967. *The forest ranger: A study in administrative behavior*. Resources for the Future.
- Keefer, Philip and Stuti Khemani. 2009. "When do legislators pass on pork? The role of political parties in determining legislator effort." *American Political Science Review* 103(01):99–112.

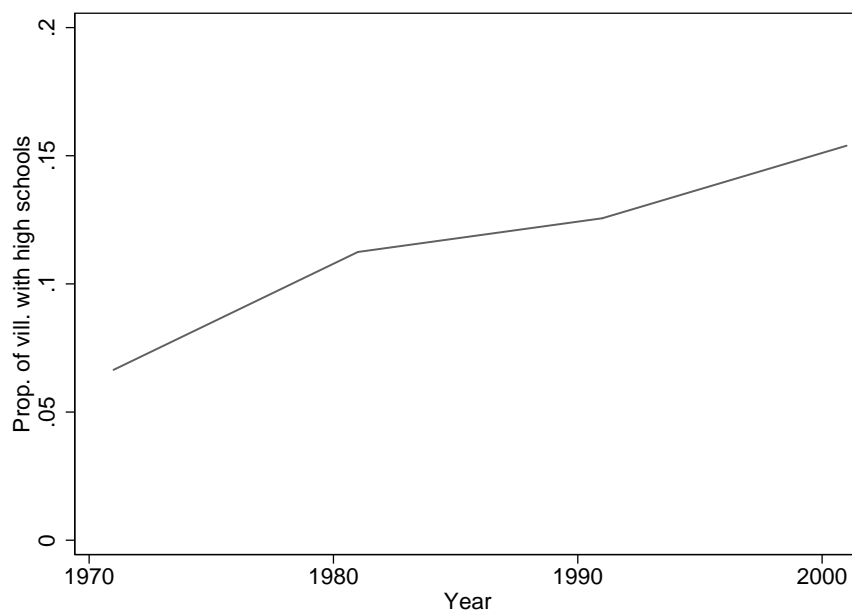
- Keiser, Lael R, Vicky M Wilkins, Kenneth J Meier and Catherine A Holland. 2002. "Lipstick and logarithms: Gender, institutional context, and representative bureaucracy." *American Political Science Review* 96(03):553–564.
- Kingdon, Geeta Gandhi. 2007. "The progress of school education in India." *Oxford Review of Economic Policy* 23(2):168–195.
- Kingsley, John Donald. 1944. *Representative bureaucracy*. The Antioch Press.
- Kohli, Atul. 2004. *State-directed development: political power and industrialization in the global periphery*. Cambridge University Press.
- Krislov, Samuel. 2012. *Representative bureaucracy*. Quid Pro Books.
- Kruks-Wisner, Gabrielle. forthcoming. *Active Citizenship: Claim-Making and the Pursuit of Social Welfare in Rural India*. Cambridge University Press.
- Lanjouw, Peter and Rinku Murgai. 2009. "Poverty decline, agricultural wages, and nonfarm employment in rural India: 1983–2004." *Agricultural Economics* 40(2):243–263.
- Lee, Alexander. 2016. *Incumbency, Parties, and Legislatures: Theory and Evidence from India*. Working Paper.
- Lewis, David E. 2007. "Testing Pendleton's Premise: Do Political Appointees Make Worse Bureaucrats?" *Journal of Politics* 69(4):1073–1088.
- Mangla, Akshay. 2015. "Bureaucratic Norms and State Capacity in India." *Asian Survey* 55(5):882–908.
- Marx, Karl. (1852) 2008. *The 18th Brumaire of Louis Bonaparte*. Wildside Press.
- McCulloch, Neil and Edmund Malesky. 2014. What determines the quality of subnational economic governance? Comparing Indonesia and Vietnam. In *Regional Dynamics in a Decentralized Indonesia*. Vol. 501 Institute of Southeast Asian Studies p. 208.

- Meier, Kenneth J, Robert D Wrinkle and Jerry L Polinard. 1999. "Representative bureaucracy and distributional equity: Addressing the hard question." *The Journal of Politics* 61(04):1025–1039.
- Meier, Kenneth John and Lloyd G Nigro. 1976. "Representative bureaucracy and policy preferences: A study in the attitudes of federal executives." *Public Administration Review* pp. 458–469.
- Miyazaki, Ichisada. 1976. *China's examination hell: The civil service examinations of imperial China*. Yale University Press.
- Moessinger, Marc-Daniel. 2012. Do personal characteristics of finance ministers affect the development of public debt? Technical report ZEW Discussion Papers.
- Muralidharan, Karthik and Nishith Prakash. 2013. Cycling to school: increasing secondary school enrollment for girls in India. Technical report National Bureau of Economic Research.
- Nickell, Stephen. 1981. "Biases in dynamic models with fixed effects." *Econometrica: Journal of the Econometric Society* pp. 1417–1426.
- North, Douglass Cecil. 1981. *Structure and change in economic history*. New York: Norton.
- Pepinsky, Tom, Jan Pierskalla and Audrey Sacks. 2016. "Bureaucracy and Service Delivery." *Unpublished paper* .
- Potter, David C. 1996. *India's political administrators: from ICS to IAS*. Oxford University Press.
- Prasad, Bishwanath. 1968. *The Indian Administrative Service*. S. Chand.
- Siddhu, Gaurav. 2011. "Who makes it to secondary school? Determinants of transition to secondary schools in rural India." *International Journal of Educational Development* 31(4):394–401.

- Strömberg, David. 2004. "Radio's impact on public spending." *The Quarterly Journal of Economics* pp. 189–221.
- Taub, Richard P. 1969. *Bureaucrats under stress: administrators and administration in an Indian state*. University of California Press.
- Tendler, Judith et al. 1997. *Good government in the tropics*. Johns Hopkins University Press.
- Tolstoy, Leo. (1869) 2005. *War and Peace*. Penguin Books.
- Tsai, Lily L. 2007. "Solidary groups, informal accountability, and local public goods provision in rural China." *American Political Science Review* 101(02):355–372.
- Vaishnav, Milan. 2017. *When Crime Pays: Money and Muscle in Indian Politics*. Yale University Press.
- Vaishnav, Milan and Saksham Khosla. 2016. The Indian Administrative Service Meets Big Data. Technical report Carnegie Endowment for International Peace.
- Weber, Max. 2009. *The theory of social and economic organization*. Simon and Schuster.
- Whalley, Alexander. 2010. Elected versus appointed policymakers: evidence from city treasurers. Technical report National Bureau of Economic Research.

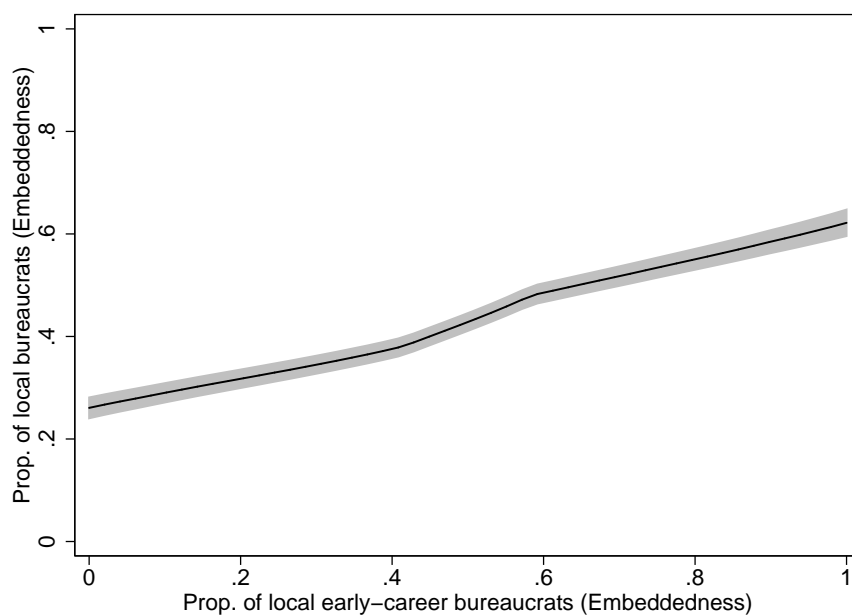
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Figure 1: Trends in proportion of villages with high schools, 1971–2001



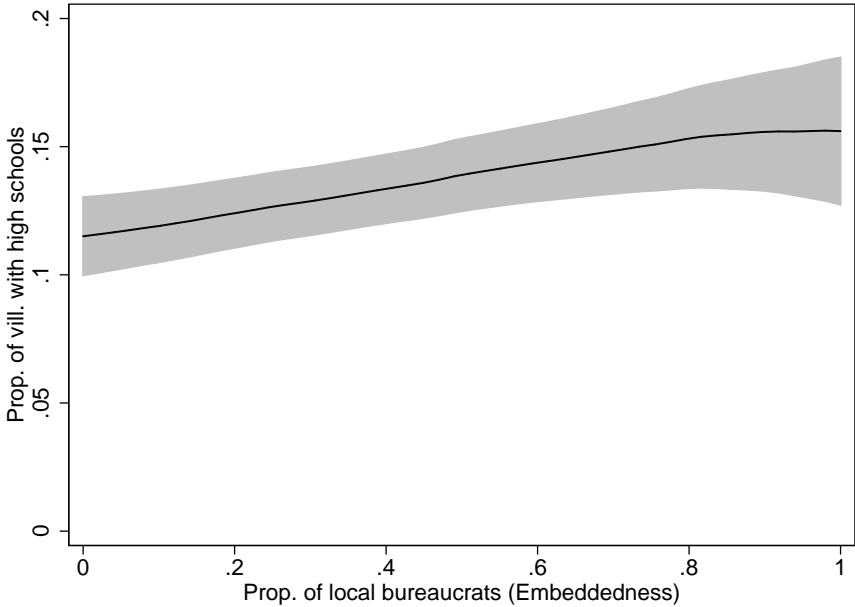
Notes: The line shows the mean proportion of villages with high schools across India's districts at each census, 1971–2001. See text for details.

Figure 2: First stage relationship between bureaucrats' embeddedness and its instrument



Notes: The local polynomial line is Epanechnikov kernel-weighted, with 95% confidence intervals. See text for details.

Figure 3: Bivariate relationship between bureaucrats' embeddedness and the proportion of villages with high schools



Notes: The local polynomial line is Epanechnikov kernel-weighted, with 95% confidence intervals. See text for details.

Table 1: The effects of bureaucrats' embeddedness on the proportion of villages with high schools

Estimator: Equation:	OLS	OLS	OLS	2SLS	
				1st stage	2nd stage
	1	2	3	4	
Prop. of local bureaucrats (Embeddedness)	0.066*** [0.025]	0.026* [0.014]	0.019* [0.011]		0.022** [0.010]
Prop. of local early-career bureaucrats (Embeddedness)				0.550*** [0.053]	
Controls?	N	Y	Y	Y	Y
District fixed effects?	N	N	Y		Y
Year fixed effect?	N	N	Y		Y
Observations	569	569	569	569	569
Adjusted R -squared	0.01	0.68	0.96		-0.38
Centered R -squared					0.39
First stage F -statistic					108

Notes: The dependent variable for all regressions is the proportion of villages with high schools. Controls are a measure of bureaucrats' education, the log of the district population, the log number of villages, the proportion of the district that is rural, the proportion of workers and agricultural laborers, the proportion of scheduled castes and tribes, log murders per capita and the proportion of representatives in the state and national ruling coalitions. Robust standard errors, clustered by district, in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See text for details.

Table 2: Robustness tests for the effects of bureaucrats' embeddedness on the proportion of villages with high schools

DV: Prop. of villages with	High sch. 1	High sch. 2	High sch. 3	High sch. 4	Health centers 5	Phones 6
Prop. of local bureaucrats (Embeddedness)	0.023** [0.011]		0.041*** [0.014]	0.018* [0.010]	0.192** [0.087]	0.020 [0.039]
Bureaucrats' exam rank	0.030 [0.194]					
Prop. of local early-career bureaucrats (Embeddedness)		0.012** [0.005]				
Lagged prop. of villages with high sch.				0.814*** [0.043]		
Controls?	Y	Y	Y	Y	Y	Y
District fixed effects?	Y	Y	Y	N	Y	Y
Year fixed effect?	Y	Y	Y	Y	Y	Y
State fixed effects?				Y		
Observations	569	569	481	550	569	569
Centered R -squared	0.38	0.38	0.36	0.95	0.77	0.80
First stage F -statistic for embeddedness	55		80	293	108	108
First stage F -statistic for exam rank	37					

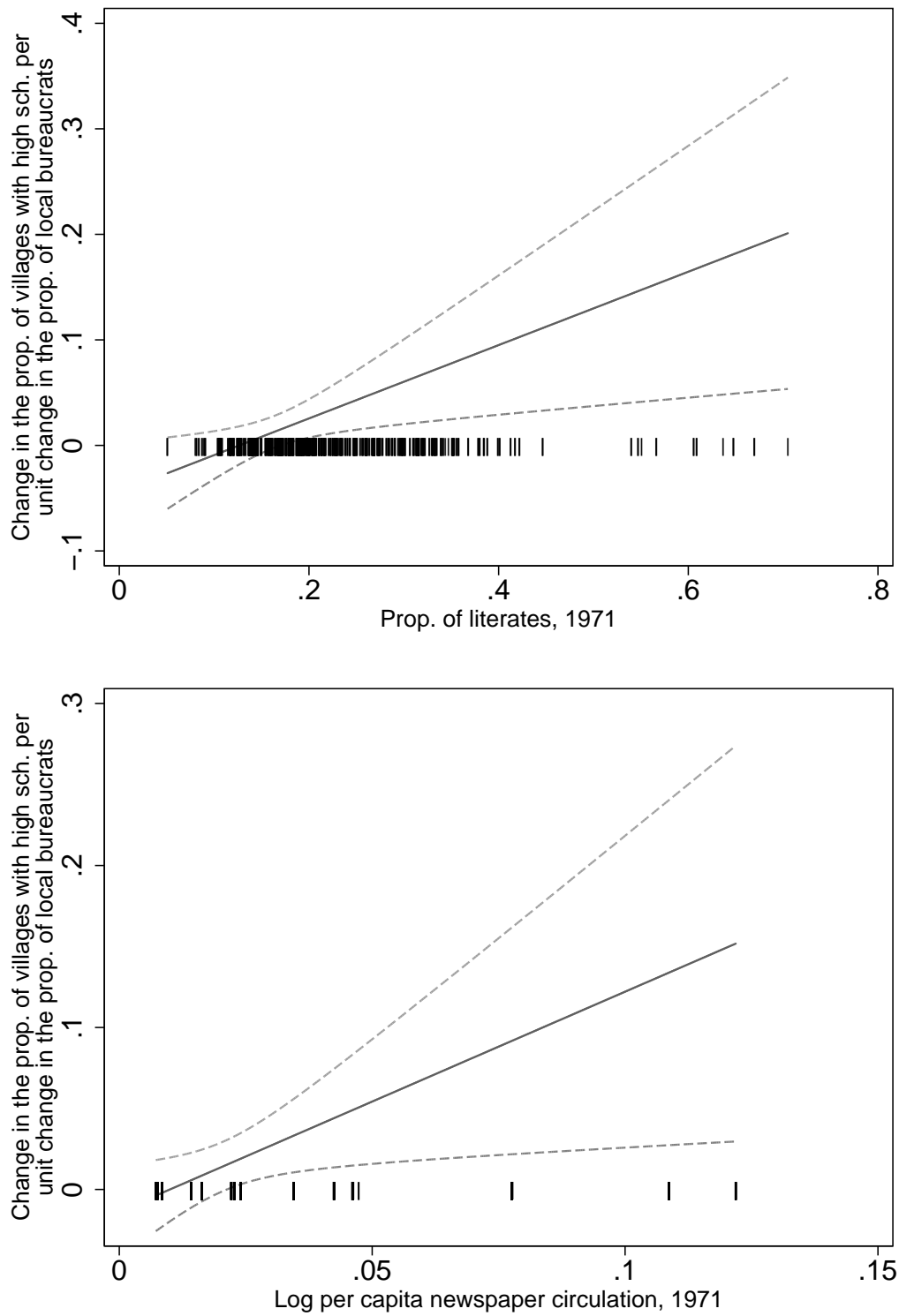
Notes: All estimators are 2SLS. In regression 3, embeddedness is instrumented with the embeddedness of bureaucrats in their first four years of service. Controls are a measure of bureaucrats' education, the log of the district population, the log number of villages, the proportion of the district that is rural, the proportion of workers and agricultural laborers, the proportion of scheduled castes and tribes, log murders per capita and the proportion of representatives in the state and national ruling coalitions. Robust standard errors, clustered by district, in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See text for details.

Table 3: Mechanisms by which bureaucrats' embeddedness affects the proportion of villages with high schools

	1	2	3	4
Prop. of local bureaucrats (Embeddedness)	-0.044 [0.028]	-0.014 [0.018]	0.030** [0.013]	0.021** [0.010]
Prop. of literates, 1971 X Embeddedness	0.348** [0.165]			
Log per capita newspaper circulation, 1971 X Embeddedness		1.357* [0.729]		
Prop. of bureaucrats that speak the state language			-0.013 [0.020]	
Prop. of bureaucrats that are politically connected				0.043** [0.018]
Controls?	Y	Y	Y	Y
District fixed effects?	Y	Y	Y	Y
Year fixed effect?	Y	Y	Y	Y
Observations	569	552	569	569
Centered R -squared	0.37	0.36	0.40	0.41
First stage F -statistic for embeddedness	61	58	57	59
First stage F -statistic for interaction term	45	33		
First stage F -statistic for same language/political connectedness			26	23

Notes: All estimators are 2SLS. Controls are a measure of bureaucrats' education, the log of the district population, the log number of villages, the proportion of the district that is rural, the proportion of workers and agricultural laborers, the proportion of scheduled castes and tribes, log murders per capita and the proportion of representatives in the state and national ruling coalitions. Robust standard errors, clustered by district, in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See text for details.

Figure 4: The effects of embeddedness on the proportion of villages with high schools as literacy and newspaper circulation vary, with 90% confidence intervals.



Notes: The coefficients used to plot the upper and lower figures are from regressions 1 and 2 of Table 3, respectively. The rug plots display the distribution of literacy and newspaper circulation in the upper and lower figures, respectively. See text for details.