

SOCIAL DIVISIONS AND PUBLIC GOODS PROVISION: EVIDENCE FROM COLONIAL INDIA

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Abstract

This paper explores the role of elites and social heterogeneity in affecting public expenditures by rural district councils in British India. The institutional structure of the councils was such that higher castes and classes were disproportionately represented and consequently they were able to influence public allocations in their favor. The findings indicate that as the Brahman (elite Hindu caste) population increased, the share of public expenditures on local infrastructure increased and that on education decreased. The results on per capita expenditures emphasize the distinct economic advantage enjoyed by elites, who might have preferred to allocate fewer resources to education because they had access to substitutes, or perhaps their motive was to exclude the less advantaged from the benefits of education. Broadly, the evidence highlights the difficulties and tradeoffs of decentralized provision of public goods in the presence of significant inequality between groups where certain groups exercise unequal political power. The findings also stress the need to explore the role of political inequality across groups in explaining lower public investments towards quasi-public goods like education in more diverse communities.

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1. Introduction

In recent years, the economics literature has devoted substantial attention to the role of institutions in contributing to long run economic development across countries.¹ One particular strand of this literature has broadly analyzed institutions in the context of European colonization, which created new systems of organizing property rights, of conducting trade and commerce, and of allocating public resources in different parts of the world. By investigating the historical evidence from different European colonies, researchers are trying to better understand how specific institutions develop and the significance of initial conditions in affecting that development.

This paper follows in the same tradition by focusing on local government institutions created by the British in colonial India, which provided local infrastructure, education, and other public services at the district-level.² While the emphasis on a single colony is a departure from the traditional cross-country comparisons of this literature, it decreases the bias associated with unobservable heterogeneity across colonies and allows for a more refined understanding of the different causal mechanisms at work.³ Furthermore, the focus on local public goods is particularly salient given current development policies, which universally emphasize the successful provision of public services as an important channel to increasing economic growth in developing countries.

British India is extremely interesting for a study on public goods because the society was divided into multiple castes and religions.⁴ Moreover, the hierarchical structure of Hindu castes

¹ See Engerman and Sokoloff (1997 and 2002), Acemoglu, Johnson, and Robinson (2001 and 2002), Easterly and Levine (2003), and Knack and Keefer (1995) among others.

² An Indian district is the administrative equivalent of a US county.

³ Recent studies including Banerjee and Iyer (2005) and Haber (2005) have also focused on individual countries.

⁴ Since the seminal work of Olsen (1965), the problems associated with the provision of public goods have been empirically and theoretically explored in a variety of different contexts.

aggravated existing social divisions because higher castes enjoyed far greater economic and political standing as compared to lower castes. Social inequality between castes in addition to the presence of numerous groups adversely affected the organization of the local boards.

Rural district boards were local institutions established by the British as part of the decentralizing schemes of the early 1880's. The councils allowed for a limited number of elected representatives who worked together with nominated members plus British colonial officials. However, the political structure was not intended to promote democratic local governance. Nominated members were almost always important landlords of the district and generally belonged to the higher castes, while lawyers and traders were common elected members. Only a small elite population of the district participated in the elections for board members and consequently, vast majority of the rural masses, particularly the lower castes, were politically unrepresented on the councils.

The non-official (Indian) membership of the councils represented an oligarchy of landowners, traders, and professionals (e.g. lawyers)—occupations that were often dominated by the higher castes. Thus, the higher castes and classes of society were able to influence local policy under the official authority of British officers who often chaired the councils. While colonial officers had the political power to over-ride the interests of the oligarchy, they were probably unaware of the demands of the rural population, particularly the lower castes, due to their limited interactions with these groups, potential language barriers, and time constraints. As a result, the development of district councils was heavily influenced by the inequality between castes and local political clout was added to the list of social advantages enjoyed by the higher castes.

Though elite groups could affect public allocations through their presence on district councils, tax policy was largely out of their control because the councils were not fiscally independent. Their main sources of income were additional levies on existing land revenues that were administered and collected by the provincial governments.⁵ Since elites were more likely to be tax-payers and were unable to reduce their assessments, they would presumably have focused their efforts on the councils toward tailoring public services to reflect their preferences and interests. The provision of public goods under district councils was thus quite different from that in the United States and other countries where local institutions have greater fiscal power and democratic representation. In British India different groups had radically different degrees of political influence that allowed elite groups to disproportionately influence local policy and hence public allocations in their favor. These findings accord with the vast literature on the decentralization of public goods, which underscore the importance of political voice in securing access to public resources.⁶

The evidence presented in the paper supports the view that elite groups were indirectly affecting the provision of public services. Occupational and educational patterns highlight the marked differences across groups and discussions in the district gazetteers confirm the distinct political advantage enjoyed by the landed castes and classes. To empirically analyze the

⁵ After 1858, there were three tiers of government that handled Indian affairs in British India. First, was the India Office in London supervised by the Secretary of State (a British Cabinet member) that was primarily concerned with trade and defense. Next, was the central government of India chaired by the Viceroy in Calcutta (changed to Delhi after 1911) that handled matters related to Indian finances. Third, were the provincial governments headed by governors and they were in charge of local development and welfare (Roy, 2000). Provincial governors were nominated by the British Crown and were assisted by provincial councils with nominated Indian members. After the Morley-Minto Reforms of 1909 some members were elected to the councils. However, provincial governors were not held accountable to these legislative bodies.

⁶ See Bardhan and Mookherjee (2003), Besley and Burgess (2002), Foster and Rosenzweig (2004), Betancourt and Gleason (2000) among others that have explored the effects of democracy on the local provision of public goods in the contemporary Indian context. Banerjee and Somanathan (2005) propose that groups might have more or less access to public resources depending on their political voice and argue that the Schedule Tribes of India have poor access to public goods in post-independent India because of their lack of strong political leadership. In other contexts, Margo (1990) highlights the disenfranchisement of blacks in the American South to account for lower per pupil spending in black schools in the early twentieth century.

determinants of local public spending, I assembled a historical dataset on 168 Indian districts constructed from the colonial censuses and Indian district gazetteers for 1901 and 1911. The main findings indicate that as the Brahman (traditional elite Hindu caste) population of the district increases, a larger share of expenditures is allocated to local infrastructure—also known as civil works. Population shares of lower castes and aboriginal tribes, the two economically and politically marginalized groups, do not appear to explain any of the variation in expenditure shares and this is consistent with the view that they were not included in the local decision-making process.

A key variable that emerges as significant in the empirical analysis is the caste and religious fragmentation index (CRFI) based on the ethnic-linguistic fragmentation index, which has received tremendous attention in the burgeoning literature on ethnic heterogeneity and economic performance.⁷ Interestingly, the signs on the CRFI coefficients are similar to the Brahman coefficients—negative for the share of education spending and positive for the civil works spending share. While traditional interpretations of fragmentation indices have emphasized problems of collective action related to heterogeneous preferences across groups, I interpret CRFI as reflecting how the effects of unequal political power among groups were more pronounced in more heterogeneous districts whereby elite groups were able to exercise disproportionate influence on local policy. This interpretation accords with the coefficients on CRFI and Brahmans sharing the same sign for civil works and education.

The next set of results on expenditures per capita suggests that Brahmans were at a distinct economic advantage with regard to public resources. The coefficient on Brahmans is positive and statistically significant for total district board expenditures per capita as well as for

⁷ See Alesina, Baqir and Easterly (1999), Goldin and Katz (1999), Poterba (1997) and Vigdor (2004), Barr (2003), Dayton-Johnson (2000), Khwaja (2000), and Miguel and Gugerty (2004). Alesina and La Ferrara (2004) provide an excellent review of the broader ethnic fragmentation and economic performance literature to date.

education and civil works. Though a large proportion of public revenues were derived from additional taxes (‘cesses’) on land revenue decided at the province level, the district Brahman population share is positively correlated with per capita income from ‘cesses’. This is related to the extent to which Brahmans occupied areas that were assessed at higher values. Another related explanation is that Brahmans were able to raise additional revenues in the form of private endowments towards schools and roads as their population share increased. The findings on levels also confirm that Brahmans allocated larger public resources towards infrastructure as compared to education—the positive coefficient on education is smaller than on civil works. I discuss the role of various factors that might explain the tradeoff between roads versus schools for elites in section 5.

Overall, I interpret the evidence as reflecting how elites, particularly landed elites, were able to use their unequal political power to shape local policy to reflect their preferences. These findings call attention to the potential difficulties of decentralizing public services in an extremely unequal and fragmented society where elites enjoy disproportionate economic resources and political influence. The analysis incorporates the role of elite capture and social heterogeneity in affecting public allocations, and highlights how initial conditions of caste inequality influenced the political structure of councils and their subsequent allocation of public resources.

The rest of the paper is organized as follows: the next section provides a brief overview of social structures in colonial India; section 3 outlines the institutional background of district councils; section 4 describes the data and lays out the empirical methodology; section 5 discusses the results; and section 6 concludes.

2. Social Structure

Colonial Indian society was divided into multiple groups along both caste and religious lines. Hindus represented 70% of the population of British India in 1901, while Muslims were the dominant religious minority and comprised almost 21% of the population. Buddhists accounted for 3% as did the aboriginal tribes. Christians, Jains, Sikhs, and Parsis made up the rest of the population. In addition to the religious divisions, Hindus were internally fragmented into numerous castes (*jatis*) that were endogamous⁸ groups of people that followed similar social customs and were sometimes linked through common occupations.

A distinguishing feature of the Hindu caste system was the social hierarchy between different castes and the particularly low socio-economic position occupied by the lower castes who were also referred to as ‘untouchables’ or depressed classes in this period. Strong rules of ceremonial purity governed communal interactions between castes and there was a firm belief in the ‘impurity’ of the lower castes, which was linked to their traditional occupations of tanning leather, cleaning human waste, and working with dead animals. As a result, these groups suffered substantial discrimination—they were segregated and forced to live in certain parts of the village; they often worked as laborers or village menials; they were relatively unrepresented in political affairs; and were often barred from entering public venues like temples and schools. While British administrators did attempt to advance the social position of these groups, the reforms were generally insubstantial and often weakly implemented.⁹

⁸ Endogamy refers to the practice of individuals of one group marrying within the same group. Within individual castes, the sub-castes often formed the endogamous unit.

⁹ Ghurye (1961) provides various examples of this in chapters 8 & 9. Here, I summarize one of the examples pertaining to discrimination in government schools. As early as 1856, a court case was filed in the district of Dharwar of Bombay where a lower caste boy was denied admission to the government school. In 1858 the courts released the following press-note “Although the Governor-in-Council does not contemplate the introduction of low caste pupils into schools, the expenses of which are shared with Government by local contributors and patrons who object to such a measure, he reserves to himself the full right to refusing the support of Government to any partially aided school in which the benefits of education are withheld from any class of persons on account of caste or race, and further resolved that all schools maintained at the sole cost of Government shall be open to all classes of its subjects without distinction.” This stated policy was not seriously implemented. Schools that relied on government

Occupational data from the province of Madras substantiates these claims of inequality between castes. Table 1 shows that almost 80% of lower castes in 1911 are laborers of some sort and less than 10% are cultivating landowners. These groups are completely unrepresented among lawyers, doctors, and public administrators—the literate and professional occupations. In comparison, almost 65% of Brahmans are landowners, either cultivating or non-cultivating, while the rest are engaged in trade, law, medicine, public administration, and religious practices (priests). While the data are representative of Madras, similar caste differences in occupations were present in other provinces as well.

In addition to lower castes, the aboriginal tribes are another marginalized group of this period. These tribes formed less than 3% of the population in 1901 and were found in large numbers in central and eastern India. They were geographically segregated and economically impoverished. Due to their poverty, segregation, and high levels of illiteracy, they had limited avenues to interact with district officers and thus participate in local political affairs. While the aboriginal tribes and lower castes were largely disenfranchised during this time, religious minorities like Muslims and Sikhs along with elite Hindu castes were able to secure a stronger political voice in the British colonial environment.¹⁰ Thus, Indian society was divided into many heterogeneous and unequal groups, and this inequality affected the political organization of district councils as discussed below.

3. Institutional background

This section outlines the characteristics of public provision of local services in rural

aid continued to receive grants regardless of their policy towards lower castes (Nurullah & Naik, 1951). It was not until 1923 that a government resolution was passed stipulating that government grants would be unavailable to any schools that denied admission to the lower castes.

¹⁰ The lower caste leaders were able to secure some measure of mandated political representation a couple decades prior to Indian independence. However, in my particular years of study (1901 and 1911), these groups lacked a strong political presence.

British India and discusses potential factors that might affect the distribution of local resources.¹¹

District councils were established in the early 1880's as part of a broader push towards more representative local governments introduced by Viceroy Lord Ripon through the 1882 Resolution of Local Self-Government. The resolution called for the establishment of rural district boards, sub-district boards (where possible), and urban municipalities with up to a two-third majority of non-official members that were either elected or nominated by British district officers. Where possible, the original resolution emphasized the importance of elected non-official members and board chairmen. Many provincial governors expressed trepidation about non-officials (Indians) serving as chairmen and therefore the district magistrate (British) often served as the council chairman. Provincial governments were given substantial leeway in interpreting the resolution and developing district councils to suit local conditions. In most provinces, district boards were given all the funds and responsibility of rural provision with no power or money handed to the lower sub-district boards.¹² Therefore, the analysis is directed towards rural district councils that were in charge of public provision for almost ninety percent of the rural population.¹³

3.1 Political Structure

¹¹ During the colonial period (1757-1947), the East India Company and the British Crown directly controlled approximately two-thirds of the Indian sub-continent. The remaining territories were under the rule of various native kings who recognized the British as the dominant political force in the area and deferred to them with regards to defense and foreign policy, while managing their own internal and local affairs. Since the native states developed their own local policies for public provision, this paper focuses on the territories that were under the direct purview of the British i.e. British India.

¹² Despite a nominal existence, the sub-district boards (where created) served as an electoral college for the district board with members of the sub-district boards electing half of its members to the district board. Members to the sub-district boards were partly nominated and partly elected. However suffrage was only available to a very narrow group of the population often selected by the village headmen. Official documents have suggested that the elections were not widely popular and candidates would often win uncontested. The electorate represented "anything from ten to two per thousand of the rural population (page 130, Cross 1922)."

¹³ The role of urban municipalities is excluded in the present analysis—these bodies were primarily responsible for the provision of sanitation and public works to urban towns. They also contributed a small sum of money towards education spending, however district boards were responsible for bulk of the education spending at the local level.

Other than districts in the Central Provinces, district magistrates (British) often chaired the councils and were supported by vice-chairmen who conducted the daily workings of the board. They were also assisted in local policy-making by both elected and nominated members (Indians). Despite the presence of non-official members, historians have argued that official control over these bodies was very strong and the elective principle was not widely implemented.¹⁴ Nominated members were almost always important landlords, while traders and lawyers accounted for many of the elected members.¹⁵ Often, suffrage was available only to a narrow subset of the population, either “rate payers” or men considered “fit to vote” by local government officers.¹⁶ Many provincial documents allude to “representatives of trades and professions” and village headmen among non-official members.¹⁷ Thus, the acts of local self-government were not enacted with the view of introducing democratic self-government with equal representation of all groups. The political structure largely represented an oligarchy of landed elites and higher castes along with British chairmen.

Table 2 presents data on the composition of district boards in Bengal. The first half of the table shows the distribution of occupations represented on the Bengal district councils in 1888—landlords, lawyers, and government servants (clerks) dominate this list. When we look at the distribution of Hindu castes in these occupations for Bengal (second half of table 2), we can see that Brahmans and other higher castes are overwhelmingly represented in these occupations. For example, Brahmans are less than 4% of the province population but they account for 30% of government officers, lawyers, and landowners. Brahmans and other higher castes represent over 80% of lawyers and almost 75% of landowners (or rent receivers). In comparison, only 7% of

¹⁴ See Chand (1947), Cross (1922), Gopal (1953), Tinker (1968).

¹⁵ In subsequent decades, nominated members were often minority group leaders.

¹⁶ Tinker (1968), page 77.

¹⁷ See Gopal (1953), page 97.

landowners belong to the lower castes. These marginalized groups are also relatively unrepresented among government clerks, officers, and lawyers. The occupational differences across groups confirm that lower castes were generally unrepresented on district councils. Among religious minorities, Muslim leaders were represented where Muslims formed large shares of the population, though the gazetteers claim that it was frequently difficult to ensure proportional representation because of the insufficient numbers of educated Muslims.¹⁸

Anecdotal evidence from individual districts also confirms that higher castes and classes were the common council members. The Balasore district gazetteer states: “It is reported that the District Board is a most useful institution which works very satisfactorily. It is said that it represents the best and more educated classes of the district and that influential gentlemen of high standing are anxious to belong to it (Balasore District Gazetteer, 1904).” The ‘more educated classes’ were again Brahmans and other dominant landowning castes of the district. Discussions in the Saran district gazetteer attest that the council had 26 board members: 6 British government officials, 10 elected, and 10 nominated members.¹⁹ Among these members government clerks represented 27% of the council, cultivators 23%, landholding classes 20%, and lawyers 15%. The higher castes of Saran represented over 80% of the district council although they were only a quarter of the population. While this evidence is from Bengal, similar political patterns are present in other provinces as well. For example, table 1 based on data from Madras illustrates that lower castes were completely unrepresented among lawyers, landowners, and government clerks—the common board members.

Due to the unique political structure, different groups had varying degrees of influence over local policy. Landowners, lawyers, and educated castes like Brahmans were council

¹⁸ Discussions in the Bengal district gazetteers refer to this. Muslims in Bengal did not occupy a strong economic position but the British tried to secure some Muslim leaders to serve on the councils.

¹⁹ Some of the officials included the civil surgeon, district engineer, education inspector and district magistrate.

members along with some Muslim leaders. However official British control of the councils was very strong, which probably limited the ability of non-official members to completely dictate local policy. Decisions went through the district chairman, who had the power to constrain the influence of elites and act on behalf of the more marginalized groups of society who lacked a political voice. However, district officers interacted largely with landed elites among the native population and anecdotal evidence suggests that these officials often looked to “men of good family, the landed gentry, for a lead in local affairs.”²⁰ Moreover, these officers were extremely busy and had limited opportunities to interact with the rural masses.²¹

3.2 District Council Expenditures

District councils were entrusted with the provision of education particularly at the primary level, civil works, and medical services. Over 80% of total spending was allocated between civil works and education; medical services accounted for another 10%; administration 3%; veterinary and other minor services specific to individual provinces made up the rest. The following discussion focuses on civil works and education because the two categories together represent the dominant share of district board expenditures.

Although 80% of expenditures were allocated between schools and roads, there was substantial variation in spending across the two categories with the higher share frequently allocated to local infrastructure. Given the severity of famines in the late nineteenth century, the British government had come under political attack for failing to transport grain to remote parts of the country where large numbers of the population died of hunger. Consequently, civil works expenditures tended to exceed education spending—in my sample, the share of civil works

²⁰ Tinker (1968), page 60.

²¹ An autobiography of an Indian district officer (Carstairs 1912) describes how officers had to discuss various matters with the landowning classes, often pertaining to revenue collection, etc. and had only limited interactions with the rest of the district population on brief district tours.

spending was 48% on average as compared to 27% for education. However, this trend began to reverse by the second decade of the twentieth century.

Civil works encompassed all public services pertaining to the local infrastructure of the district. Under this expenditure category the boards maintained all local roads, built additional roads where necessary, repaired bridges, and maintained district guesthouses. Spending on projects above certain thresholds often required approval from the Public Works Department at the provincial level. This probably reduced the number of large-scale infrastructure projects undertaken by the district council and one might hypothesize that the expensive projects were perhaps difficult to organize and more contentious. Discussions in the district gazetteers suggest that the councils often performed the more mundane duties of maintaining and constructing roads. Prior to the councils, local landowners were responsible for road maintenance.

The councils performed two key functions with regard to the provision of education—they directly managed a few schools known as board schools of high quality and provided subsidies known as grant-in-aids to schools that were privately managed by Indians or missionary societies.²² These latter types of schools were called aided schools and represented a large proportion of primary schools. A significant share of district council expenditures were directed towards primary schools but the councils were constantly criticized for promoting secondary education that received substantial provincial revenues at the expense of primary schools that were largely supported by local sources of income.²³ Another charge levied against the district councils was their reluctance to support education of the poorer classes, in particular

²² The board schools were considered superior because they employed more trained teachers as compared to the privately managed schools that received public aid.

²³ Calculations based on detailed education data from the Bengal District Gazetteers indicate that on average the boards spent 60% of their education expenditures on primary schools, another 15% on middle schools, and less than 2% on high schools. The rest of the expenditures were allocated to indirect categories like scholarships, buildings, and other miscellaneous spending.

the lower castes.²⁴ This critique reinforces the low social position of the lower castes and also raises questions regarding the nature of education as a public good.

As mentioned earlier, the lower castes were often discriminated in public schools. The following description of public schools in the nineteenth century illustrates this discrimination: “schools maintained at public cost, are practically closed to such impure castes... Both teachers and pupils in the schools make it most difficult for low-caste boys to sit in the class room.”²⁵ To a certain degree, the public schools were excludable to the lower castes. Though missionaries became particularly active in promoting education among the lower castes, they met with limited success as evidenced by the low levels of literacy among lower castes (see table 3).

The 1911 literacy estimates shown in table 3 illustrate the marked human capital differences between groups. Brahmans have the highest literacy rate among the Hindu population followed by other higher castes.²⁶ Brahman literacy ranges from 12% in the United Provinces to 40% in Bengal, while lower castes have below average literacy rates varying from as high as 3% in Bengal to as low as 0.3% in the United Provinces. In fact, Srinivas (1996) has argued that the new opportunities introduced by the British through western education “had the twin effect of increasing the cultural and ideological divide between the high and low castes, as well as making the new opportunities doubly desirable. In the first place, they were well paid and prestigious, and in the second, only the high castes had access to them.” The excludable nature of public schools in this period suggests that smaller proportions of students were supported by public schools either because certain groups were excluded or perhaps because these same groups had a lower demand for education due to higher opportunity costs, poverty, and discrimination.

²⁴ Progress of Education in India, 1902-1907 Fifth Quinquennial Review.

²⁵ Ghurye (1961), page 11.

²⁶ The castes were assigned to the other higher caste category based on the social precedence tables of 1901.

To a certain degree education was a quasi-public good as compared to local roads where systematic exclusion of other groups was inherently more difficult. Another important difference between the two public services was the availability of substitutes. While there were no substitutes available for local roads and bridges, certain social groups had access to religious schools that were largely supported by private resources. Muslims, the former rulers of the Indian sub-continent, were often reluctant to educate their boys at the government or aided schools and preferred the religious Koran schools or *Maktabs* as a substitute for primary schooling and *Madrasas* for higher learning.

Hindu higher castes also had access to private Sanskrit *toles* but these religious schools were probably not as highly desired by Brahmans who were likely to prefer public schools that afforded them career opportunities in the British administrative offices.²⁷ Apart from district board schools, there were urban public schools supported by municipal funds and a few schools managed by provincial governments.²⁸ Schools under the control of the provincial governments were of the highest quality and Chaudhary (2006) shows that the variation in these schools, even at the primary level, is largely explained by the Brahman population share. The number of urban public schools per capita is also significantly correlated with the fraction of Brahmans as are the small number of religious schools in Bengal.²⁹ Given the variety of schools available (provincial, municipal, aided, unaided, and private religious), there was probably some heterogeneity within the Brahman population with regard to their preferences for different schools. Richer and more educated Brahmans might have preferred English-medium urban municipal schools, while

²⁷ District board schools were of a higher quality and followed the curriculum laid out by the provincial departments of public instruction that allowed students to advance more easily to high schools and colleges from where these pupils could vie for government positions in the British administrative offices.

²⁸ There were also privately managed schools, aided schools, which were partially supported by public revenues and privately managed unaided schools that received no public subsidies but still came under the public education system. See Chaudhary (2006) for an overview of the education system of this period.

²⁹ These results are based on data from 42 districts of Bengal and are available in a separate data appendix.

landowning Brahmans might have been content with district board schools. Due to this heterogeneity, provincial government and municipal schools served as substitutes to district board schools for certain Brahmans.

The particular characteristics of schools and roads suggest that elite preferences and the effects of social divisions might vary across the two public goods. Given the political composition of district boards, there was considerable overlap between landowning classes, higher castes, and political elites. These groups might have well preferred to reduce the share of educational expenses for different reasons: Muslims had access to private religious schools; Brahmans plus other Hindu higher castes also had access to other public schools and might have wanted to limit the number of schools available to other groups particularly the lower castes; and landowning castes (often higher castes) might have preferred increased spending on roads if improved roads increased land rents. Landowners might have also been reluctant to provide education for lower castes who were more likely to be landless laborers. I discuss these issues in more detail in section 5.2.

3.3 District Council Revenues

The expenditures on local services were largely supported by income from land cesses (additional levies upon the land revenue)³⁰ and provincial grants. With regards to land cesses, the rates of taxation varied across provinces (on average 6%) though they were uniform for districts within provinces.³¹ Since the cesses were administered by revenue collection authorities, the district boards had no financial autonomy to raise revenues by increasing the rates of taxation.

³⁰ Taxes on land were the main source of income for the imperial government. The revenue demand on land was fixed in cash and the amount did not vary annually according to the agricultural output produced.

³¹ The land cess here refers to what were also known as the 'local cesses'. They were initially introduced in the 1870's as a means to support the provision of local roads and were also used to provide income to fund public services under the district boards. Cesses were generally levied at one anna in the rupee—roughly 6.25%—for many provinces.

The district board budget was often included in the provincial budget further limiting their fiscal independence.

The basis of assessment for land cesses was either the land revenue or the annual value. In the Permanent Settlement areas of Bengal, Bihar, Orissa, and parts of Madras, the annual value was used and this was defined as “rent paid by the tenant to the landlord.”³² The annual values were based on rental surveys that were frequently outdated and not always consistently administered. In non Permanent Settlement areas, the assessment was on the land revenue, except in the United Provinces where it was based on double the land revenue.³³

Revenues from land cesses constituted the largest share of district board income (on average 50% across provinces). Though landowners and tenants bore an unequal share of the cost of public goods, they could not reduce their contributions by opting for poor or inadequate provision.³⁴ It was in the interests of the landed elite to influence public allocations towards programs or investments that reflected their preferences. If increased local expenditures on roads increased rents on land, then landowners might have preferred to allocate more money towards civil works. Many of the landowning classes consisted of Brahmans as well as other dominant castes.³⁵ As highlighted in table 1, almost 65% of Brahmans in Madras were landowners. In comparison, almost 80% of lower castes were laborers and less than 10% were cultivating landowners. The higher castes were at a distinct economic advantage in terms of landownership. Moreover, if higher castes lived in districts that had higher land assessments perhaps because the

³² See Chand (1947) page 118. Chapter 4 of this book has more details on land cesses. The Permanent Settlement of 1793 was a contract between the English East India Company and the landlords of Bengal (as well as Bihar and Orissa) whereby the revenue demand on land was fixed in cash for perpetuity. See Cambridge Economic History of India-Volume II (1983) for more details.

³³ The land revenue amounts were reassessed infrequently and were generally the same for 30 to 40 years.

³⁴ Technically, landowners were allowed to recover part of the cost of the cess from tenants.

³⁵ I borrow the term dominant caste from Srinivas (1996) and use it loosely here to refer to both local landowning castes that were largely the higher castes during this period. Data on caste and occupation from 1901 and 1911 support the view that higher castes were much more likely to be landowners as compared to other groups. Raw correlations between the share of higher castes and share of landlords are as high as 0.9 in the United Provinces.

land was more agriculturally productive, then areas with larger proportions of higher castes would generate higher cesses per capita despite the uniform tax rates.

Another important source of revenues included contributions from provincial governments in the form of grants (approximately 25% of total income). Beginning in 1905, these grants were increased and were often targeted towards primary education.³⁶ Tolls on roads and ferries contributed another 10% to district board income, while school fees, income from cattle pounds, and private contributions (endowments for schools and hospitals) made up the rest of the revenues.³⁷ It was often claimed that board revenues were insufficient to support public expenditures because the district boards were financially constrained and lacked the fiscal ability to increase their revenue base.

The particular structure of revenues and lack of fiscal independence of the district councils suggests that social divisions are unlikely to affect the absolute level of expenditures and are more likely to affect the composition of spending across different public services i.e. the shares of spending.³⁸ That said, it is possible that population shares of elites could be correlated with absolute levels of expenditure if elites contributed private income towards local services in the form of endowments or if elites lived in districts that generated higher cesses per capita.

3.4 Mechanisms

The unique characteristics of rural public provision outlined above support some of the hypotheses developed in the economics literature pertaining to collective action problems in more diverse communities. In addition, this particular setting also offers alternate hypotheses on

³⁶ The empirical analysis shows the share of education spending increased from 1901 to 1911. However, there do not appear to be any differential effects across districts.

³⁷ The school fees were generally nominal. Furthermore, there is no evidence that the tolls on roads and bridges were disproportionately set at higher rates so as to exclude certain groups from using these services. Neither school fees nor tolls appear to be systematically correlated with the demographic characteristics of the districts in my sample.

³⁸ Alesina et al (1997) and Besley et al (2004) have made similar arguments for looking at shares in the context of local budgets that are not decided by local governments.

the role of elites and political inequality in affecting the allocation of public resources.

Since certain social groups were unequally represented on councils, we would expect the variation in the population shares of groups like the Brahmans, higher castes, and perhaps Muslims to explain some of the variation in the distribution of district board expenditures. While we might have priors regarding the particular public service that is more valued by elite groups, it is largely an empirical question as to which public goods elites are more likely to value. Given the overlap between certain occupations and social groups, the economic structure of the district—population supported by professional employment (lawyers, doctors, etc.), commercial pursuits, agriculture, etc.—is also likely to affect public allocations.

Recent theories developed in the ethnic fragmentation literature suggest that areas with a higher degree of diversity are less successful in providing public goods because of heterogeneous preferences across groups that impede agreement on provision and worsen traditional collective action problems.³⁹ Other explanations of these patterns suggest that groups are more likely to fund public services when they are direct beneficiaries of provision and there might be under provision of public goods when the perceived benefits diverge along ethnic lines.⁴⁰ In the context of Indian district councils, different preferences among Brahmans, other higher castes, and Muslims (groups well represented on boards) could undermine the ability of the non-official members to effectively express their collective demands to the district board chairman. This suggests that greater caste and religious fragmentation might negatively impact the share of spending allocated to public goods like education that were more divisive in nature as compared to local infrastructure, where the more expensive and also perhaps more contentious projects often required approval from higher government authorities, which probably hampered their

³⁹ See Alesina et al (1999).

⁴⁰ See Vigdor (2004).

development by district boards.

Another mutually nonexclusive explanation that can also account for an association between the level of fragmentation and public expenditure compositions is that greater caste and religious diversity could increase the ability of political elites to influence the local policy-making process. If elites were united in their preferences, then the presence of numerous other groups with different preferences could undermine the collective ability of the non-elite groups to constrain the influence of elites on local councils in more diverse communities. In some sense, one can still think of this as a collective action problem but among the non-elite populations. This particular interpretation of the traditional index of diversity suggests that the composition of public spending in more heterogeneous areas would reflect the preferences of political elites as proxied by the population share of Brahmans, other higher castes, and landowners.

The particular nature of education in this period suggests that certain groups might have been excluded from public schools due to cultural norms. The exclusion, formal or informal, of groups from public schooling can be directly tested by exploring the determinants of per pupil district council education expenditures—we would expect Brahmans, with the highest literacy rate and largest student enrollment, to explain a significant portion of the variation in per pupil expenditures, though it is not completely evident if we would expect a positive sign on the Brahman coefficient given the boards were not fiscally independent and were unable to raise revenues as needed. Similarly, it is not clear a priori what sign to expect on the coefficients for the share of lower castes and aboriginal tribes. Missionaries were particularly active in promoting education among these marginalized groups, particularly in areas where they formed large shares of the population. Though missionary groups might have successfully set up publicly aided schools in these districts, the extremely low literacy rates for lower castes and

tribes highlight that they met with limited success. The poor literacy record also supports the idea of exclusion but the presence of missionary schools could offset the observed negative effects of exclusion on the coefficient for lower castes and tribes.

The goal of the empirical analysis is to understand the role of elites and social divisions in affecting the composition of public allocations across colonial Indian districts. Given these variables are likely to be correlated with other factors that might affect public expenditures, the empirical analysis controls for a wide variety of factors that are likely to influence both the underlying population structure as well as public spending.

4. Data and Empirical Methodology

4.1 Data

For the empirical analysis, I assembled a new district-level dataset that merges data from the Indian district gazetteers to the colonial censuses of 1901 and 1911. This dataset contains information on all the districts in Assam, Bengal, Bombay, Central Provinces and Berar, Madras, and United Provinces (see attached map of India). These provinces account for 85% of the population of British India in 1901. (As mentioned earlier, the analysis focuses on the districts of British India because district boards were not created in the native states.) Rural boards were created in all but a few districts of Assam, Bengal, Madras, and the urban cities of Bombay, Calcutta, and Madras. After excluding these districts, the sample consists of 168 districts.

From the statistical tables of the district gazetteers, I extracted data on district council financial expenditures and income (where available), schools, income tax revenues, and land tax collections. Though gazetteers are available for the last two decades of the nineteenth century, their statistics are generally incomplete. Therefore, I began the analysis in 1901 when uniform

statistics were available for all the districts in the sample. The panel was restricted to the 1901 and 1911 cross-sections to maintain consistency with the decennial censuses.

The census data were used to construct population, demographic, and occupational variables at the district-level. Since there are concerns pertaining to the accuracy of the finer occupational categories enumerated in the colonial censuses, I constructed broad occupational types—agriculture, commerce, industry, and professions—to minimize measurement error. I used the colonial caste censuses to construct the population shares of Brahmans, other higher castes, and lower castes as well as the index of caste and religious diversity.

The colonial caste censuses have generated substantial interest among anthropologists, historians, and sociologists on British interpretations of caste, and the subsequent impact of these censuses on the Hindu caste system itself.⁴¹ The two relevant critiques for my analysis pertain to the misreporting of castes, which raise concerns about measurement error. First, it has been suggested that certain castes might have changed their name to overstate their caste and enumerate themselves as higher castes. If significant numbers of castes were successful in enumerating themselves as higher castes, we might expect the population shares of castes enumerated as higher castes in one census to increase substantially in the following census. However, province population shares for *Brahmans* and other castes that were enumerated as higher castes in 1901 are stable between 1901 and 1911.⁴² Anecdotal evidence of misreporting of names also appears to be stronger after the 1901 census.⁴³ This suggests that measurement error

⁴¹ See Cohn (1990), Dirks (2001), Gupta (2000) and Srinivas (1996). These authors generally argue that the censuses strengthened awareness of caste because the data categorized individuals into castes and all castes into a hierarchical social order.

⁴² The sample average for Brahmans is 4.9% in 1901 and 4.6% in 1911, for Kayasths is 1.3% in 1901 and 1% in 1911, and for Rajputs is 3.2% in 1901 and 3.1% in 1911 across Assam, Bengal, Central Provinces and United Provinces. While these comparisons are relatively crude because they ignore changes in fertility and mortality rates, they are still informative about non-random caste misreporting.

⁴³ The 1901 census was the first census to arrange castes in social ranks as per local opinion of the time. Both instances of castes assuming new names and caste petitions to census officials arguing for higher ranks appear to

from this type of misreporting is probably small and is likely to attenuate the coefficients on Brahmans and other higher castes towards zero.

The second problem of caste misreporting is related to census enumerators eliciting correct responses to questions of caste identity because individuals would refer to their sub-caste or linguistic group or occupation. Given the large number of castes enumerated in each province, I followed Banerjee and Somanathan (2005) with regard to the construction of the fragmentation index and restricted the data to Hindu castes with population shares greater than 1% of the province population in 1901.⁴⁴ This ensures that minor castes that were more likely to be incorrectly enumerated were not counted as separate social groups.

Using the 1901 census data, I constructed a Herfindahl-based fragmentation index similar to the ethnic-linguistic fractionalization indices used in the literature. In this particular context, the measure of caste and religious fragmentation (CRFI) was defined as $CRFI = 1 - \sum s_i^2$, where s_i is the population share of each caste or religious group in 1901.⁴⁵ As discussed above, I restricted the caste data to Hindu castes with population shares greater than 1% of the province population in 1901. The religious population shares of Muslims, Christians, aboriginal tribes, Buddhists, Sikhs, and Jains were also included as additional groups in the fragmentation index. The small numbers of Parsis were combined in the other category along with minor castes that did not constitute 1% of the province population. CRFI treats individual caste and religious groups as

have increased following the 1901 census. Dirks (2001) highlights that though there were some caste petitions filed by middle castes for the 1901 caste rankings, the number of petitions received after the 1901 census were unprecedented and it was decided that the 1911 caste census would just enumerate castes and not tabulate any social ranks. The 1911 census commissioner reported that “hundreds of petitions were received from different caste organizations, their weight alone amounting to one and a half maund (about 120 pounds), claiming changes in nomenclature, demanding a higher place in the order of precedence, and emphasizing affiliation to one of the three twice-born varnas (Dirks, page 223).”

⁴⁴ For this enumeration, all provinces that had unique social precedence tables in 1901 were treated as a single province. This includes Assam, Bengal, Bombay, Central Provinces, Berar, Madras and United Provinces.

⁴⁵ For the districts that were re-organized between 1901 and 1911, I reweigh the 1901 caste data according to the area used to form the re-organized district. This applies only to the four districts of Berar. I follow the same procedure for districts that were created after 1901—Drug in Central Provinces and Chittor, Guntur, and Ramnad in Madras.

internally homogeneous and can be interpreted as the probability that two randomly drawn individuals from the district belong to different caste or religious groups.⁴⁶ Finally, CRFI is a symmetric measure of fragmentation because it assigns equal weights to all groups.

I also constructed the share of Brahmans, higher castes (of twice-born rank), and lower castes using the 1901 data. The 1901 provincial censuses contain social precedence tables, which indicate the specific castes enumerated in the higher and lower categories based on local opinion of the time.⁴⁷ Table 4 presents summary statistics on the variables used in the empirical analysis. Brahmans, the highest caste of Hindus, average 5% of the district population, while the lower castes account for over 18%. The mean CRFI is quite high and indicates that the probability of selecting two random people in a district belonging to different castes or religions is 78%. There is substantial variation across provinces in the mean CRFI. Districts in the United Provinces are more fragmented with an average CRFI of 0.88 as compared to 0.64 for Bengal districts. The data on expenditures is very interesting because although 80% of public expenditures across districts are accounted for by education and civil works, there is tremendous variation in the composition of expenditures. The range of civil works spending is from 1 to 83% and of education from 1 to 57%. While some of this variation represents across province differences in demand for public investments, there are substantial differences within provinces as well. For example, in the United Provinces (1901) spending shares range from 11% to 41% for education and 25% to 80% for civil works.

⁴⁶ Many castes were further divided into sub-castes and there were groups within Muslims as well. However, CRFI does not incorporate the sub-divisions within groups due to data limitations and also because it is not readily discernable whether these smaller groups were as distinct from each other as different castes and religions.

⁴⁷ The data appendix that is available upon request outlines the caste tables for each province and describes the specific groups that are included in the other higher and lower castes. The castes that are included in lower castes are very similar to the castes included in Scheduled Caste lists in post-independence India. The following website provides caste lists by state that are included under SCs in the 1950 constitution of India (<http://www.dalitawaz.com/sclist.asp>). I double checked castes in the social precedence tables across these lists to ensure that the census groups were capturing similar castes.

4.2 Empirical Methodology

In the empirical analysis I estimate reduced form equations such as (1), with expenditure shares and expenditures per capita on education and civil works as dependent variables.

$$Y_{ipt} = \alpha + \beta \text{ShareBrahman}_{ip} + \gamma \text{ShareLowerCastes}_{ip} + \eta \text{ShareReligion}_{ipt} + \theta \text{CRFI}_{ip} + \delta X_{ipt} + \lambda_t + \delta_p + \varepsilon_{ipt} \quad (1)$$

Here i represents the district, p represents the province and t represents the year. CRFI, the fraction of Brahmans and lower castes were calculated using the 1901 cross-section. Since these variables do not vary within a district over time, I clustered the standard errors to account for the non-independence of errors within districts. Share Religion includes Muslims and aboriginal tribes, X includes a set of district controls, λ_t is a dummy for the 1911 cross-section, δ_p are province dummies, and ε_{ipt} is the district-specific error term.

The literature highlights two main identification problems with this type of reduced-form framework—reverse causality and omitted variables bias. The first issue of reverse causality, i.e. the provision of public goods affecting the underlying population structure of districts is not particularly problematic for my analysis because of low migration rates (across districts) during this time.⁴⁸ Furthermore, information was not readily available either on the quantity or quality of public services to entice individuals to relocate across districts in response to public services. Literacy rates were extremely low and newspapers were not common in rural villages. In fact many villagers were not even aware of the existence of district councils that provided local services.⁴⁹ Thus, even if individuals were moving, it was not in response to better local services.

However, the second issue of omitted variables is very important because there are many factors that are likely to affect both public expenditures and district population structures. If these variables are omitted from the regression, then this might bias the coefficient on the

⁴⁸ Census of 1901 and 1911. Migration rates in independent India have also been quite low.

⁴⁹ Tiebout sorting is a bigger problem for contemporary analysis in developed countries with relatively low migration costs as compared to historical analyses.

population shares of different social groups and CRFI. For example, if richer districts have more homogeneous populations but also favor certain types of public investments, such as roads, then failure to control for income would lead to bias in the fragmentation coefficient. I approach the problem of omitted variables by controlling for a variety of district observables that might affect the composition of public expenditures. Including a rich array of controls is likely to reduce omitted variables bias significantly, although I recognize that it is not possible to control for *all* factors that might influence public allocations and population structures.

To ensure that economic and population variables are not capturing differential costs of providing local services, I control for district geography which is likely to affect the costs of provision. To control for geography, I include province dummies and break bigger provinces into smaller geographic areas. In addition, I also include the normal rainfall of the district and a dummy for coastal districts. Both these variable do not vary across the two cross-sections. The normal rainfall data were obtained from the 1911 census volumes and are based on long term annual averages. Finally, I control for population density to account for geography as well as potential economies of scale in public provision.

The level of development is relevant to the demand for public services, for example more rural districts might have stronger demands for local roads versus schools. To account for these differences, I include both the rural population share and number of towns per capita to capture development. In addition, I include the log of total population to control for district size, which can also impact public allocation decisions. The income and wealth of the district are very important factors vis-à-vis the ability of a community to provide public goods. I use two different variables to proxy for the average income of the district—income tax revenues and land tax revenues.

Income taxes in this period were generally collected from government employees and other workers who were part of the formal sector of the economy where incomes were documented. These taxes were collected from a very small share of the population and only capture the higher tail of the formal income distribution because they were only applicable on high income earners. Admittedly, income tax revenues are a crude proxy, but they are the only available data for constructing a measure of district income. In comparison, the land tax revenues capture the British assessment of the land value of the district.⁵⁰ The land tax was fixed in cash and did not vary according to the annual agricultural output produced. In the Permanent Settlement areas, the revenue amounts were fixed in 1793 and so are extremely rough measures of land value 100 years later. However, in other areas, the tax amounts were based on detailed cadastral surveys conducted by the British. The reassessments generally occurred every thirty years and were not revised in the decade under study.

Besides income, the market economy of an area is also likely to affect the development of public services. Districts with more traders might prefer better roads to primary schools, while doctors and lawyers might prefer to allocate more resources to schools and dispensaries. Furthermore, the district occupational structure is probably correlated with the fragmentation index because caste structures had ties to occupation as well. For this reason, I control for the population share supported by agriculture, industrial occupations, commerce, and professional employment. The agricultural population includes landowners, tenants, and laborers; the industrial population includes individuals supported by ‘the preparation and supply of material

⁵⁰ The land tax revenues include the cesses for the Central Provinces where the two series were reported together under one head. For United Provinces, the land tax revenues are the assessments due for each district applicable to the 1901-11 decade and are not the actual revenues collected by the district. Unfortunately, the United Provinces district gazetteers do not provide data on the revenues collected.

substances’;⁵¹ the commercial population includes tradesmen and shopkeepers ranging from bankers to grocers; and professions includes priests, teachers, lawyers, engineers, doctors, etc. In alternate specifications, I also control for occupational fragmentation and the ratio of landowners to laborers as a proxy for economic inequality.

The design of district councils and structure of castes varied by province and therefore, I include province fixed effects to control for all time invariant provincial characteristics. As mentioned earlier, I split some of the larger provinces into smaller areas so that we are comparing similar districts. For the six districts that encompass the Sind division of Bombay Presidency, I include a separate province dummy because this area was extremely distinct from the rest of Bombay.⁵² I also include separate province dummies for Bengal Proper and Bihar plus Orissa. Overall there are nine province dummies.⁵³ Finally, I control for all temporal patterns that affect districts in the same manner by including a year dummy, λ_t , for the 1911 cross-section.

5. Results and Implications

5.1 Results

The results focus on expenditures allocated to the two major public goods, education and civil works, that together account for almost 80% of public expenditures. Table 5 presents results on district board expenditure shares as the dependent variable. There are three specifications for each type of public good: the first includes the main social groups along with the fragmentation index and geographic controls (rainfall, coastal dummy, and population density); the second

⁵¹ This quote from the 1901 Assam Census Report describes this category aptly: “The class is a very wide one, and though it includes persons like printers, stationers, opticians, and others who represent a comparatively advanced stage in the economic development of a country, it also includes people like weavers, and spinners, who are only the wives of the ordinary cultivators, fishermen, buffalo-keepers, wood-cutters, sawyers, and a large number of persons of this sort, who would find a place in the most primitive community (Census of India, 1901. Volume IV – Assam, Part 1 – Report, page 166).”

⁵² Sind was annexed in 1843, had a predominantly Muslim population (average 70%) and geographically large parts of this region were arid. Most parts of Bombay presidency were annexed in 1818. Sind finally became an independent province in 1935.

⁵³ Assam, Bengal Proper, Bihar & Orissa, Bombay, Central Provinces, Berar, Madras, United Provinces, and Sind.

includes additional development and income variables (share of rural population, towns per capita, income tax revenues per capita, and land revenues per capita); and the third specification includes the full set of covariates.

From table 5, we can see that the expenditure share on education decreases as the fraction of Brahmans increases, while the share of expenditures on civil works increases with the Brahman population. In the context of the sample, if the proportion of Brahmans increases by one standard deviation, the education share decreases by 1.2 percentage points (specification 3) and the civil works share increases by 2.8 percentage points, though the former coefficient is not very precisely estimated. While the results focus on fraction Brahman, the findings are robust to other descriptions of upper castes for example, the fraction of all higher castes (Brahman plus other Hindu higher castes).⁵⁴

Interestingly, the coefficients on CRFI follow the same pattern and are also statistically significant. We can interpret the coefficient on the caste and religious fragmentation index as the change when a district moves from complete homogeneity (CRFI = 0) to complete heterogeneity (CRFI = 1). In the context of my sample the coefficients suggest that when CRFI increases by one standard deviation, the expenditure share on education decreases by 2.6 percentage points (specification 3), and the share on civil works increases by 2.8 percentage points (specification 6). The magnitude of these coefficients on Brahmans and CRFI are not small given that district councils were quite bureaucratic under the official control of British district chairmen.⁵⁵

Districts with more towns per capita appear to allocate lower shares of public

⁵⁴ In fact for the share regressions, the coefficient on higher castes is statistically significant for education as well.

⁵⁵ Tinker (1968) has argued that non-official district board members had limited influence on the decisions made by these boards because of the official presence of the district magistrate who often served as chairman of the board and had the authority to overrule non-official members. However, my results suggest that Brahmans and other rural elite still had some influence over board decisions. Anecdotal evidence from the Bengal district gazetteers supports the view that the rural elite were anxious to become members on the local councils and district magistrates worked well with these elected members.

expenditures to education, which is not too surprising since urban towns had municipal boards who managed their own public schools. Though not shown in this table, neither of the income variables appear to explain the variation in expenditure shares, while the coastal dummy emerges as significant among the geographic controls—districts along the coast are negatively correlated with the share of civil works spending. The occupation structure seems to affect the share of public spending—districts with populations engaged in more industrial and professional occupations are positively correlated with education as compared to more commercial districts. Overall these findings indicate that variation in expenditure shares on education and roads are largely explained by the Brahman population, CRFI, and the occupational structure of the district. Coefficients on social groups like the lower castes and aboriginal tribes are small in magnitude and statistically insignificant, which is consistent with the view that their population size was not particularly influential on public spending decisions.

The analysis on shares highlights the problem of substitution raised by Banerjee and Somanathan (2001, 2005) because different shares have to sum to one. If the spending share is higher for one particular public good, it has to be lower for something else. The substitution reflects the trade-off across the two public goods. In my context, the substitution is interesting because it occurs along the excludable and nonexcludable dimension of public goods. As discussed earlier, caste norms made it difficult for lower castes to attend public schools and thus these schools were to a large extent excludable to these groups. This raises questions of whether schools were less excludable than roads. In the past, lower castes were not allowed to walk through certain parts of the village but customs of this nature had considerably weakened under British rule suggesting that roads were not as excludable as public schools. A direct test of possible exclusion is to analyze per capita, in particular per pupil expenditures for education,

which I turn to next.

Table 6 presents results on expenditure levels per capita for education, civil works, and total expenditures.⁵⁶ These findings highlight that Brahmans were at a distinct economic advantage in terms of access to public resources—as the proportion of Brahmans increases by one standard deviation, education spending increases by Rs. 4 (specification 3), civil works spending increases by Rs. 12 (specification 6), and total expenditures increase by Rs. 19 (specification 9). These results can be explained in the context of public revenues—in certain provinces (Bengal Proper, Central Provinces, Berar, and Madras), the Brahman population is positively correlated with revenues generated from land cesses, which represent over 50% of total revenues. Therefore in these areas Brahmans are getting more from land cesses because the assessment is on a higher valued land base (not higher rates). A substantial part of this effect is also picked up by the land tax variable, which was the assessment base in non Permanent settlement areas. The coefficient on land tax is statistically significant in all the specifications. If the assessments were only based on land tax, then the fraction of Brahmans would perhaps not be precisely estimated because the main effect would be picked up by the land tax. However, the assessments were based on land tax in some areas and on rental values in other areas.

The findings on levels raise interesting issues about the nature of public finance in this period. Though tax rates for land cesses were uniform within provinces and the cesses themselves were collected by higher levels of government, the local assessment base was not uniformly distributed between areas. As a result, districts with larger shares of Brahmans received larger land cesses because their land was assessed at a higher value—not only were Brahmans occupying higher value land, they were also able to get more in public revenues from their land. This reveals an inherent inequity in the local taxation system because although

⁵⁶ The per-capita expenditures are constructed as per 1000 of the population.

districts were charged the same tax rate, areas with higher assessed values would generate more local income from land cesses. Moreover, areas with lower assessed values would have to be charged higher tax rates to match the income from higher assessment areas. While this public finance system was designed and introduced by the British, areas populated by large shares of Brahmans were direct beneficiaries of the system and consequently had larger public expenditures per capita.

Although the main effects driving the positive coefficient on Brahmans are related to land cesses, private endowments also offer another possible channel through which Brahmans could increase total expenditures. It is very probable that as the share of Brahmans increased, they were more likely to make private contributions in the form of endowments for schools, etc. However, data on endowments is not available to quantitatively verify the claim. Since private endowments constitute less than 10% of total revenues, they would explain only a small part of the increase in expenditures relative to cesses.

The Brahman coefficients for education and civil works per capita also provide an explanation for the patterns observed on expenditure shares in table 5. Though the Brahman coefficient is positively correlated with both school and road expenditures per capita, the magnitude of the coefficient is more than double for roads as compared to schools. As the Brahman population increases, expenditures per capita rise for both public goods but not to the same extent. Thus, the findings on shares are picking up this differential increase as a positive and negative sign on roads and schools respectively because of the presence of substitution among shares. The analysis on shares and levels confirms that elites prefer higher spending on local infrastructure as compared to education.

While CRFI was statistically significant in the share regressions, the CRFI coefficient is

small in magnitude and statistically insignificant across the different specifications on per capita expenditures in table 6. This result is not too surprising given that district boards were not fiscally independent and a dominant share of their income was from land cesses managed by revenue collection authorities at the province level. The presence of many heterogeneous and unequal groups could not affect the revenues raised in the community because the revenues were not raised through taxes decided at the local level as is the case in other contexts where social heterogeneity has emerged as an important explanation for lower per capita expenditures on public services. For example, Goldin and Katz (1999) argue that homogeneity along income, race, and religious lines encouraged the expansion of secondary schools in the US from 1910 to 1940 because of greater ‘social capital’ within these areas, which enabled them to raise public revenues for secondary education. In colonial India, the degree of heterogeneity did not affect the total expenditures (levels), but the composition of public spending (shares) for a certain level of expenditures.

I began the discussion on levels by suggesting that the per capita analysis was a potential test of exclusion of certain groups from public services. While the per capita results do confirm that education expenditures per capita increase with the Brahman population, a more direct test of exclusion would be to analyze education expenditures per pupil because this variable captures expenditures for the relevant population of students as opposed to the entire population. And, table 7 presents these results. We can see from this table that as the proportion of Brahmans increases by one standard deviation, per pupil spending decreases on average by 10%. This suggests that as the share of Brahmans increases, there are more pupils going to school but public spending is not increasing in the same proportion as the number of students.

There are two explanations that can account for the negative association between per pupil spending and fraction Brahman. First, there might be economies of scale in the provision of schools. In this period, teacher salary was the largest category of expenditures for primary schools and generally one teacher would instruct pupils in many different grades.⁵⁷ Once the largest cost of instruction was covered, the burden of an additional student would only require new teaching materials (slate, chalk, etc.) for the student. Second, Brahmans might have been unable to raise additional public revenues to meet the increased demands because of fiscal constraints, or because those Brahmans that valued education more heavily were attending provincial government schools or urban municipal schools. Chaudhary (2006) shows that the variation in these schools is largely explained by the Brahman population. Thus, the availability of alternate schools and heterogeneity in demand for different schools within Brahmans can also explain the observed negative relationship in table 7. What these results do highlight is that CRFI and population shares of lower castes cannot explain any of the variation in per pupil expenditures. Social groups like the lower castes or aboriginal tribes did not matter for per pupil expenditures and this is consistent with them being excluded, formally and informally, from public schools.

5.2 Implications

All the evidence, thus far, supports the view that Brahmans and other elites were indirectly shaping public provision in British India. The bias in their favor comes through in a variety of ways—first, these groups are able to influence local policy. As the Brahman population increases, the share of education spending decreased as compared to local infrastructure. Coefficients on the heterogeneity index (CRFI) follow a similar pattern—more

⁵⁷ See Quinquennial Review: Progress of Education (1897-1902, 1902-1907, and 1907-1912) for descriptions and pictures of rural schools in British India.

diverse districts allocate smaller shares of public expenditures to schools. The results on per capita expenditures emphasize that Brahmans were at a distinct economic advantage and prefer larger public spending on roads as compared to schools. Finally, the variation in per pupil education expenditures is also largely explained by the Brahman population share, which suggests that perhaps other groups were excluded from public schools or had a low demand for public schooling.

The interpretations on expenditure levels confirm that Brahmans had unequal public expenditures relative to other groups. However, the overall evidence from expenditure shares is more difficult to interpret and I explore a variety of explanations below to account for the findings on shares. From table 5, we know that the share of Brahmans, the level of fragmentation, and occupational structure are important determinants of public allocations between schools and civil works. Though a large share of district revenues were decided at more centralized levels of government, there might still be concern that the results on shares just reflect variation in the different revenue sources across districts. For example, if particular sources of revenue could only be allocated to particular expenditure categories, then it might be the case that heterogeneous districts have larger shares of civil works spending because, for example, tolls on local roads form a larger proportion of their income. To test for this, table 8 presents results using a sub-sample of districts that reported revenues including total revenues, revenues from tolls on roads and ferries, school fees, land cesses, and contributions (this includes both provincial and private contributions).⁵⁸ These results suggest that there is clearly some variation in expenditure shares driven by specific revenue sources—income from local tolls and contributions is positively correlated with the share of civil works spending, while income from

⁵⁸ Revenues from education largely refer to school fees. Income from contributions includes both provincial and private contributions. The descriptions of the income categories for many provinces are vague and it is not clear whether contributions include endowments for schools or whether that is included in education income.

education is positively correlated with education shares. Given the multi-collinearity between land cesses and the fraction of Brahmans mentioned earlier, it is not surprising that the Brahman coefficient is imprecisely estimated in these specifications. More importantly controlling for total revenues along with specific income sources does not alter the results on CRFI.

Although the level of heterogeneity as captured by CRFI appears to be significantly correlated with expenditure shares, it is unclear how to interpret this variable. Dominant interpretations of this index in the context of public goods provision have emphasized the higher costs of organizing collective action in more heterogeneous societies where the presence of numerous groups with different preferences can undermine the ability of a community to reach an effective consensus about what is to be done. However, another possible explanation is related to the notion that greater diversity in the population is often associated with greater social inequality, where certain groups enjoy disproportionate shares of economic resources and political influence. In this context, elites could use their unequal political influence to affect public allocations in their favor. The unique political structure of colonial district boards allows me to empirically distinguish between these alternative interpretations.

Given the differences in the levels of political representation across groups, I can infer with reasonable certainty the populations that could influence local policy on the district councils. Historians like Tinker (1968) have argued that “the mass of peasants, and of course the minorities and depressed classes were virtually unrepresented” on the boards, while landlords, lawyers, and higher castes were disproportionately represented. Many of the gazetteers also provide evidence to support this contention. For example, Howrah district board (an extremely fragmented district of Bengal) had 13 members of which 7 were lawyers, 5 were government servants, and one was a landlord. Discussions in the Hooghly district gazetteer (another

extremely diverse district) state the following about the composition of the district board: “landholding classes predominate among the members representing 37% of the total number, while pleaders [lawyers] account for 29.6%.” As discussed in section 3, Brahmans and other higher castes were disproportionately represented in these occupations. Apart from high caste Hindus, Muslims were often included as board members in districts where they formed large shares of the population. For example in the relatively homogeneous district of Dinajpur in Bengal where Muslims accounted for almost half of the population, they represented 36% of the district board.

Due to the political inequality between groups, I can construct an alternate fragmentation index that only captures divisions among groups who participated in setting local policy. If collective action problems are the underlying mechanism from greater diversity to lower shares of education spending, then we expect these effects to be significant and larger in magnitude for these alternate measures of fragmentation. Though collective action problems could in principle be heightened in more heterogeneous districts, it is not obvious why they would be more severe for the provision of schools rather than for roads and bridges. However, this could potentially be related to the particular nature of public goods. Certain public services are more homogeneous in nature, making them easier to supply, while generating fewer issues for policy-makers to disagree upon. One can argue in this context that the supply of public schools might require more decisions (location, construction of buildings, appropriate salaries, necessary equipment, grants, etc.) than the maintenance of a local road. This could potentially explain why we observe the effects of fragmentation reducing the shares of education spending.

To distinguish between the two potential interpretations of CRFI, I construct two alternate measures of fragmentation, and tables 9A and 9B present the results. For the first

alternate index, I restrict the sample to Brahmans plus all the individual castes enumerated under higher castes as well as Muslims, Christians, Buddhists, Jains, and Sikhs.⁵⁹ The second alternate index is similar to the first, except it treats all the individual higher castes (other than Brahmans) as one group.⁶⁰ For the alternate indices, I first calculate the sum of all the politically relevant groups and construct the population share of each caste or religious group using this sum as the denominator as opposed to the district population. The logic here is that we want the alternate index to reflect the share of each caste or religious group relative to the population of the politically relevant groups and not relative to the entire district population. The mean value of the indices is smaller than CRFI suggesting that politically influential populations are less fragmented than the overall district population.

As tables 9A and 9B illustrate, the coefficients on the alternate fragmentation measures are small in magnitude and generally insignificant. This suggests that bargaining problems or collective action failures among decision-makers are perhaps not as important in understanding the effects of fragmentation observed in table 5. Instead, fragmentation in the entire population is what seems to matter and I interpret these effects in the context of political inequality, whereby political elites are able to disproportionately influence local policy in more heterogeneous communities. Lower castes formed a larger proportion of the population in fragmented districts, and consequently there was an especially unequal distribution of political power in favor of the higher castes and classes who were well represented on the councils.⁶¹ Elites thus had more leeway to shape local policy to reflect their preferences on education and civil works. As seen in

⁵⁹ Sikhs, Jains, Buddhists and Christians represented a fairly small share of the population. As a robustness check, I estimated alternate indices without these groups and the results were unchanged.

⁶⁰ In results not reported here, I estimated fragmentation indices among all individual higher castes and Muslims; Brahmans and Muslims; and individual higher castes plus all religious groups. The results on these indices were statistically insignificant.

⁶¹ Except for the four districts of Berar, the correlation between CRFI and fraction of lower castes are positive for all provinces with a full sample average of 0.3.

table 5, the results on the coefficients for the share of Brahmans appear to support this contention because the coefficient is positive and significant for the share of civil works spending.

This particular interpretation of CRFI incorporates notions of both economic and political inequality. A substantial portion of the unequal political presence of higher castes was related to their economic strength in terms of educational attainment and landownership. Discussions in section 3 noted the striking differences in landownership and literacy between the higher and lower castes. Though it is extremely difficult to disentangle economic and political inequality, table 10 presents results including different measures of economic inequality and occupational fragmentation. Given the occupational controls were significant in explaining the variation in expenditure shares on education, these specifications break up the agricultural population into landowners and laborers. There is a large intermediate group of cultivating and non-cultivating agricultural tenants, whose proprietary rights probably fall in between the landed and the landless. And, these tenants represent the dominant share of the omitted occupational category. The detailed agricultural variables and other measures of economic inequality were constructed from the 1901 census and do not vary across the two cross-sections.⁶²

Specifications 1 and 4 focus on the detailed agricultural breakdown. Including both the fraction Brahman and fraction landowners together introduces significant multi-collinearity because the two variables are extremely positively correlated with correlations as high as 0.9 and 0.7 in Berar and the United Provinces respectively. The signs on the coefficients for landowners mirror those on Brahman, and they trade statistical significance between education and civil works. Occupational fragmentation captures the degree of economic heterogeneity (landowners, laborers, tenants, commerce, industry, professions, and others are the categories included in the

⁶² The 1911 breakdown of landowners, tenants, and laborers is not analogous to the 1901 categories. Therefore, the present analysis does not include the 1911 data.

measure). Occupational fragmentation is also negatively correlated with the share of education spending, while the ratio of landowners to laborers is positively correlated with the expenditure shares on local infrastructure.

The ratio of landowners to laborers and landowners to laborers plus tenants are intended to proxy for some measure of economic inequality—a lower value of this ratio would suggest that there are fewer landowners relative to laborers signaling greater inequality. Thus, the positive sign on landowner to laborers indicates that as inequality decreases the share of civil works spending increases. Ideally, one would prefer a gini coefficient or a 90-10 differential of income or landownership to capture inequality, but it is not possible to construct either of those variables due to data constraints. Interestingly, including these additional economic controls does not change the results on CRFI though the magnitudes are lower in some specifications. However, this could be related to the nature of the proxies for economic inequality, which are perhaps too crude to capture the full extent of inequality. Overall, the evidence from table 10 confirms that economic factors are also important for the composition of district board spending.

The concept of elites, as captured by Brahmans, incorporates both economic and political dominance. In fact, the higher levels of landownership among Brahmans definitely contributed to their ability to affect local policy. Table 11 includes interactions between the fraction of landowners and the fraction of Brahmans, which suggest that the elite status of Brahmans, in this context, is largely driven by landownership. This finding is consistent for both levels and shares of expenditures. Neither the fraction of Brahmans nor the fraction of landowners alone is able to explain the variation in public expenditures—it is the combination of landed Brahmans that is successful in explaining the variation in expenditures and the coefficients on the interaction term

are extremely striking. Thus, elites organized along the same economic lines of landownership were the most successful in politically influencing district board spending.

Why local infrastructure?

All the evidence, thus far, on public expenditure shares and levels collectively confirms that areas with larger proportions of landed elites prefer spending more on local infrastructure versus education. The opposite signs on the Brahman coefficient for expenditure shares on civil works and education substantiate the same result. And, the signs on the CRFI coefficient in the share regressions are also positive for local infrastructure and negative for education, which I interpret as reflecting the preferences of the elite who were able to dominate local policy in more heterogeneous districts. This naturally leads to the question—why did elites prefer increased spending on local infrastructure? The preferences of the elites are somewhat of a paradox. They prefer to spend a larger fraction on roads, which are the pure public goods in the usual sense of nonexcludable and nonrival, while lowering the share of education spending, the excludable public service. However, one can resolve the paradox by exploring the difference between the incidence of education and the incidence of civil works.

Since elites (Brahmans and other higher castes) were often landowners, if the incidence of improved roads was on land rents, then elites would favor roads. This is also related to the ability of elites to extract disproportionate rents from local infrastructure expenditures. Most infrastructure projects that required special expertise were managed by the District Engineers and the repairs were contracted out. The Saran district gazetteer of Bengal discusses this at length—“The upkeep of all the main roads and all original construction work on village roads requiring engineering knowledge are in the hands of the district engineer, who is assisted by an Overseer for each of the three subdivisions, these again being subdivided into six sections each in charge

of a Sub-Overseer. Besides this staff, each Local Board has one Sub-Overseer of its own for employment on the village roads under its control. Repairs are usually carried out by contractors.”⁶³ If local landowners were the contractors or in the position to influence who received the contracts, then these opportunities would create the potential to extract rents, which would directly benefit the landed classes. Before district boards were established, landowners maintained local roads and so it is extremely likely that they would have continued with road maintenance under the district boards as well.

The ability to extract rents from local infrastructure projects has been noted in recent work on Indonesia that has found evidence of corruption in road construction projects.⁶⁴ If significant corruption was present in local infrastructure spending, we might expect civil works expenditures to be unrelated to local infrastructure outcomes. For a sample of 41 districts in Bengal, I collected data on the total road mileage maintained by district councils along with the miles of metalled and unmetalled roads. The small sample size precludes a robust analysis, but the raw correlation between civil works expenditures per capita and total road mileage per district area is 0.3 and the bivariate regression coefficient is statistically significant at the 5% level. Interestingly, the proportion of metalled roads (a measure of road quality) is strongly correlated with the fraction of Brahmans, with a bivariate regression coefficient of 2.1 that is statistically significant at the 1% level. Thus, expenditures were higher in areas with more roads per square mile and the quality of roads was also higher in districts with larger Brahman populations. This evidence, though limited, is not supportive of substantial corruption by elites, though they would clearly have benefited from receiving contracts to maintain roads.

Brahman landowners might have also preferred to spend less on education to formally

⁶³ Saran District Gazetteer (1904), page 110.

⁶⁴ See Olken (2005).

exclude other groups. For example, if education could increase the bargaining power of rural laborers (often lower castes) because of greater job prospects, then it would be in the incentive of landowners to provide schools only for a small subset of the population. Moreover, Brahmans that valued education very heavily had access to substitutes like government and urban municipal schools with the former schools leading in quality over the district board schools. A small subset of Brahmans also attended the private religious schools. Thus, there was significant heterogeneity among Brahmans in the demand for the excludable public good education, while the formal public good, local infrastructure, disproportionately benefited the landed Brahmans, the group that emerged as extremely influential on public goods provision.

While I have interpreted the results as reflecting some form of exclusion, formal and informal, of certain segments of the population from public schools, it is also feasible that the lower castes and poorer classes more generally had a lower demand for schooling, particularly in areas with high populations of elites due to discrimination, etc. Discussions in the Bilaspur district gazetteer suggest that lower castes were often reluctant to send their children to school. “The people as a whole cannot be said to be very anxious for education and official pressure has frequently to be brought to bear on parents. The Chamars [lower caste] who form so large a proportion of the population are least anxious for it; and the other castes are not keen on the attendance of Chamar boys at the public schools, so that local opposition has not infrequently to be broken down.”⁶⁵

The numerous problems of educating lower castes have also been noted by colonial historians. “The caste Hindus strongly objected to the admission of Harijan⁶⁶ boys in the common schools, either on account of religious feeling or for fear of physical and moral

⁶⁵ See Bilaspur District Gazetteer (1905), page 247.

⁶⁶ Harijans was a commonly used term coined by Mahatma Gandhi to address the ‘untouchables.’ It literally means people of God.

contagion. Secondly, the desire for education hardly existed among the Harijans who had lived under the most abject social conditions for centuries. It was, therefore, an extremely difficult task even to persuade them to receive education. Thirdly, it was very difficult to secure suitable teachers. There were no educated persons among the Harijans who could be taken up as teachers, while the caste Hindus who had hardly any sympathy for these unfortunate classes did not generally succeed as teachers of Harijan pupils.”⁶⁷ Even if elites did not want to exclude lower castes from schools, they might have opted for lower education spending because they were unable to solve the problems associated with educating the lower castes.

However, it is unclear whether one can accurately infer demand among lower castes, given their history of discrimination in schools and other public venues. In addition this was not a time when governments viewed education as a service that should be equally provided to the entire population. Even if elites were not systematically trying to exclude lower castes or other groups from schooling, they might have under-valued the societal benefits of public provision and only felt the need to provide a limited number of schools to serve their children.

6. Conclusion

Overall, the evidence presented in this paper highlights the difficulties and tradeoffs of decentralized provision of public goods in the presence of inequality between groups. Since landed elites influenced local policy, they disregarded the spillovers from providing education to all groups within the population. This led to an under provision of primary education in more heterogeneous districts—in Chaudhary (2006) I show in more detail how primary education suffered in this period. While the British recognized the need to improve the low levels of schooling, particularly among lower castes, their attempts were limited to provincial grants to district boards that did not translate into better outcomes. As policy-makers, the British tried to

⁶⁷ Nurullah and Naik (1951), page 420.

implement western-style institutions of decentralized local councils without fiscal independence and adequate representation of all groups. Though these councils were heavily controlled by district officers, these same officials interacted with the higher castes and classes of society and were probably more aware of their preferences as compared to those of the more marginalized groups. Therefore, in areas with high levels of social inequality these institutions did not function as well as they might have in a more equal society.

In comparison to areas under direct British control (i.e. British India), native states of colonial India, like Baroda, were able to achieve higher levels of schooling for large segments of the populace through centralized provision of schools under the leadership of the Gaekwar of Baroda who was successful in implementing compulsory education in his state decades before compulsory schooling laws were passed in British India. Iyer (2005) finds systematic differences in the provision of public goods in post-independence India between British districts that were under direct British rule versus native states, where local kings and rulers decided public allocations. My results suggest that the decentralized provision of public goods under colonial district councils, in a context where rural elites exercised greatly disproportionate influence on local policy, might be a possible explanation for those observed differences.

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TABLE 1: CASTE AND OCCUPATION (Census of 1911 - Madras)¹

	Cultivating landowners & tenants	Non- cultivating landowners & tenants	Priests	Traders	Lawyers, doctors & teachers	Public Administrators	Others (includes artizans & other workmen)
<i>Brahman</i>²							
<i>Tamil</i>	19.6%	33.2%	12.2%	9.9%	6.2%	6.3%	12.6%
<i>Telugu</i>	32.9%	38.6%	10.8%	0.0%	5.0%	4.6%	8.2%
<i>Malayalam</i>	7.1%	48.3%	26.9%	0.0%	2.9%	0.0%	14.8%
<i>Canarese</i>	71.3%	14.1%	6.0%	0.0%	0.0%	0.0%	8.6%
<i>Oriya</i>	42.0%	18.4%	8.6%	8.9%	0.0%	0.0%	22.2%
Average	34.6%	30.5%	12.9%	3.8%	2.8%	2.2%	13.3%
				Others (raisers of livestock, milkmen & herdsmen)	Types of Laborers		
	Laborers	Leather Workers	Cultivating landowners & tenants	Field, wood cutters, etc.	Agricultural	Unspecified	
Lower Castes							
<i>Chakkiliyan</i>	72.7%	22.3%	1.8%	3.3%	46.8%	0.0%	25.9%
<i>Holeya</i>	88.3%	0.0%	2.8%	8.9%	79.7%	0.0%	8.6%
<i>Madiga</i>	66.1%	17.4%	7.5%	9.0%	66.1%	0.0%	0.0%
<i>Mala</i>	79.1%	0.0%	11.9%	9.1%	0.0%	79.1%	0.0%
Average	76.5%	9.9%	6.0%	7.6%	48.2%	19.8%	8.6%

1- Source: Census of India, 1911 Volume , Madras Part I - Report. Calculations based on Occupation Subsidiary Table VIII - Pg. 245-246. These data provide the occupational distribution of selected castes. The castes are assigned to lower castes based on social precedence tables in Madras, Part I - Report, 1901.

2 - The data are separately provided for the different linguistic sub-groups of *Brahmans* in Madras.

TABLE 2: DISTRICT BOARD COMPOSITION

District Board Members (Bengal)*	
Elected	38%
Nominated	37%
Ex-Officio	25%

* Source: Own Calculations from Bengal District Gazetteers

Occupation - Bengal District Council Members, 1888**	
Landlords	30%
Pleaders (Lawyers)	26%
Government Servants	18%
Rural Magistrates	2%
Traders	1%
Colonial District Officials	23%

** Source: Tinker (1968), Page 54

CASTE AND OCCUPATION (Bengal Census - 1901)¹

Distribution of Actual Workers in Occupations:

	Percentage ²		
	<i>Brahman</i>	Other High Castes	Lower Castes
Province Population Average ³	3.7%	9.9%	20.4%
Officers of Government	30.1%	47.0%	1.2%
Clerks and Inspectors	26.4%	53.7%	1.6%
Clerical Service under Local B	29.5%	40.3%	1.7%
Rent Recievers (Landlords)	27.5%	47.3%	7.0%
Agents of Landed Estates	24.9%	60.0%	1.2%
Lawyers	28.4%	53.8%	2.0%

1- Source: Census of India, 1901 Volume VI - A, Bengal Part II - Tables. Calculations based on appendix to Table XVI. These data provide distribution by castes of actual workers in the occupations listed above.

2- The castes assigned to other higher castes and lower castes are based on social precedence tables in Bengal Part 1 - Report, 1901.

3-The population average for the province include all 48 districts of Bengal in 1901.

TABLE 3: LITERACY RATES (Census of 1911)¹

	Assam	Bengal Proper	Bihar & Orissa	Bombay ²	Central Provinces	Madras ²	United Provinces ²
Hindu (all)	6.5%	11.8%	4.1%	6.6%	3.3%	7.2%	3.2%
<i>Brahman</i> ³	32.4%	39.9%	16.8%	35.6%	24.2%	33.0%	11.9%
<i>Other Higher Castes</i> ^{3,4}	4.8%	31.3%	17.1%	18.1%	26.3%	17.0%	12.5%
<i>Lower Castes</i> ³	2.9%	3.0%	0.8%	1.0%	0.9%	0.9%	0.3%
Aboriginal Tribes	0.7%	0.5%	0.5%	.	0.2%	0.2%	.
Muslim	3.1%	4.1%	4.1%	4.3%	9.1%	8.7%	3.4%
Christian	18.9%	46.6%	10.3%	33.6%	24.9%	16.6%	30.0%
Buddhist	6.8%	9.1%	7.2%	.	66.7%	57.9%	12.1%
Jain	62.8%	62.5%	42.9%	31.9%	26.1%	25.7%	27.9%
Sikh	28.0%	43.9%	21.9%	.	42.2%	.	26.9%
Total Population	4.7%	7.7%	3.9%	7.0%	3.3%	7.5%	3.4%

1 - These rates are based on data from provincial volumes of the Census of India, 1911. Religious literacy rates for Assam, Bengal, Bihar & Orissa, and Central Provinces (plus Berar) include native states. I compiled provincial literacy rates for just the British territories of these provinces from the Indian Statistical Abstracts and they were very similar.

2 - Bombay includes British Districts plus Sind and Aden. Madras and UP include only the British districts.

3 - The provincial volumes (except Madras) provide literacy data for a sample of castes. The literacy rate for each caste group is an unweighted avg. of literacy rates across castes enumerated in the group. For some castes the literacy data are from certain regions of the province. This is particularly relevant for the rates for Assam, Bengal, Bihar & Orissa.

4 - Other higher castes do not include Brahmans and represent other castes of twice-born rank. In Assam the data on other higher castes reflects only the kshatriya caste.

TABLE 4: SUMMARY STATISTICS

Variable	Obs	Mean	Std. Dev	Min	Max
Census Variables					
Fraction <i>Brahman</i>	332	5%	4%	0%	24%
Fraction Lower Castes	332	18%	8%	0%	47%
Fraction Muslim	332	19%	22%	0%	90%
Fraction Aboriginal Tribes	332	4%	9%	0%	60%
Caste & Religious Fragmentation Index (CRFI)	332	0.7780	0.1579	0.1829	0.9264
Alternate Fragmentation Index ¹	332	0.5865	0.2188	0.0293	0.8132
Alternate Fragmentation Index ²	332	0.5263	0.1958	0.0293	0.7473
Fraction supported by Agriculture	332	71%	10%	37%	92%
<i>Fraction Landowners</i>	332	16%	20%	0%	80%
Fraction supported by Industry	332	13%	6%	1%	38%
Fraction supported by Commerce	332	4%	4%	0%	23%
Fraction supported by Professions	332	1%	1%	0%	4%
Total Population	332	1,187,765	712,758	178,195	4,526,422
Towns per 100,000 of Population	332	0.7237	0.5652	0.0592	3.4134
Fraction Rural	332	91%	7%	63%	99%
Normal Rainfall	332	50.62	28.09	4.05	220.00
Coastal District	332	19%	39%	0%	100%
Density of Population per Square Mile	332	389	261	27	1,850
District Gazetteer Variables					
Income Tax Collections per 1000 of Pop ³	327	50	43	3	319
Land Tax per Capita	330	1.45	1.00	0.03	6.93
Exp on Civil Works per Capita ^{4,5}	328	102	85	4	595
Exp on Education per Capita	328	51	40	2	342
Total Expenditures per Capita	328	201	129	32	811
Share of Civil Works Exp	328	48%	15%	1%	80%
Share of Education Exp	328	27%	11%	1%	57%

The sample includes districts of Assam, Bengal, Bombay, Central Provinces, Madras & United Provinces for 1901 and 1911 where district boards were created. District Boards were not created in Garo Hills, Khasi & Jaintia Hills, Lushai Hills and Naga Hills of Assam; Chittagong Hill Tracts, Angul, Darjeeling, Singhbhum & Sonthal Parganas of Bengal; & Nilgiris district of Madras.

1 - Alternate Fragmentation Index among Brahmans, Individual Higher Castes, Muslims, Christians, Sikhs, Jains and Buddhists

2 - Alternate Fragmentation Index among Brahmans, Higher Castes (One Group), Muslims, Christians, Sikhs, Jains and Buddhists

3 - Income Taxes were not collected in Amraoti, Akola, Buldana & Wun district of Berar in 1901; & missing for Ganjam (Madras) in 1911.

4 - Expenditures per capita are defined as = (Expenditures *1000)/Total Population.

5 - District Board data is missing for Godavari & Kistna in Madras for 1901; Ganjam (Madras) & Muzaffarnagar (UP) in 1911.

TABLE 5: SHARE OF DISTRICT BOARD EXPENDITURES

	Education			Civil Works		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Social Groups</i>						
Fraction Brahman	-0.2167 (0.1751)	-0.2597 (0.1826)	-0.2775 (0.1733)	0.6237 (0.2673)**	0.5833 (0.2849)**	0.6195 (0.2910)**
Fraction Muslim	-0.0808 (0.0589)	-0.0527 (0.0583)	-0.0315 (0.0568)	0.0285 (0.0872)	0.0125 (0.0871)	-0.0010 (0.0848)
Fraction Lower Castes	0.0252 (0.0718)	0.0571 (0.0694)	0.0861 (0.0709)	0.1172 (0.1021)	0.0965 (0.1000)	0.0799 (0.1017)
Fraction Tribes	0.0651 (0.0955)	0.0253 (0.1006)	0.0645 (0.1025)	-0.0536 (0.0788)	-0.0725 (0.0856)	-0.0973 (0.0837)
CRFI	-0.2247 (0.0516)***	-0.1908 (0.0524)***	-0.1682 (0.0533)***	0.2248 (0.0915)**	0.2034 (0.0971)**	0.1802 (0.0914)**
<i>Development</i>						
Fraction Rural		0.0541 (0.0906)	0.1662 (0.1091)		-0.0268 (0.1276)	-0.0707 (0.1749)
Towns per Capita		-0.0261 (0.0111)**	-0.0259 (0.0115)**		0.0089 (0.0131)	0.0087 (0.0135)
<i>Occupation</i>						
Fraction Agriculture			0.1490 (0.0892)*			-0.1256 (0.1381)
Fraction Industry			0.4071 (0.1611)**			-0.2108 (0.2170)
Fraction Commerce			-0.4264 (0.2277)*			0.3406 (0.3903)
Fraction Profession			1.7400 (0.8602)**			-1.6792 (1.3674)
Geographic Controls	Yes	Yes	Yes	Yes	Yes	Yes
Income and Size Controls	No	Yes	Yes	No	Yes	Yes
Observations	328	323	323	328	323	323
R-squared	0.64	0.69	0.71	0.59	0.56	0.56

Robust std errors clustered at district level in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

All specifications include province fixed effects and a dummy for the 1911 cross section.

TABLE 6: EXPENDITURES PER CAPITA

	Educ Exp / Capita			Civil Works Exp / Capita			Total Exp / Capita		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>Social Groups</i>									
Fraction Brahman	158.15 (74.65)**	108.06 (57.14)*	94.97 (55.18)*	364.77 (186.90)*	304.55 (182.90)*	289.47 (171.41)*	592.29 (261.39)**	486.67 (234.93)**	432.87 (217.57)**
Fraction Muslim	38.02 (42.50)	16.87 (28.85)	19.39 (29.17)	34.13 (61.08)	-10.74 (50.71)	-17.28 (52.01)	108.52 (108.72)	27.13 (73.59)	21.31 (76.13)
Fraction Lower Castes	11.03 (32.12)	-23.47 (21.46)	-20.74 (22.86)	79.50 (74.47)	11.78 (63.89)	3.23 (66.66)	59.99 (110.32)	-67.11 (85.22)	-77.27 (91.13)
Fraction Tribes	36.07 (46.58)	24.15 (32.60)	29.87 (32.61)	13.48 (49.60)	5.41 (46.01)	-10.61 (47.77)	24.58 (100.34)	27.65 (70.21)	13.69 (70.78)
CRFI	8.10 (29.75)	-16.11 (20.63)	-8.94 (22.32)	92.33 (53.03)*	37.72 (51.39)	37.45 (57.01)	147.14 (85.60)*	52.04 (70.36)	66.76 (76.87)
<i>Income</i>									
Income Tax per 1000 of Pop		0.08 (0.06)	0.10 (0.06)*		0.24 (0.11)**	0.20 (0.11)*		0.43 (0.13)***	0.39 (0.13)***
Land Tax per Capita		17.87 (5.02)***	17.07 (5.06)***		28.44 (8.43)***	29.34 (8.71)***		51.04 (12.38)***	50.79 (13.12)***
<i>Occupation</i>									
Fraction Agriculture			28.76 (18.70)			-71.15 (69.29)			-26.23 (79.59)
Fraction Industry			28.84 (41.05)			-208.42 (149.48)			-269.73 (189.07)
Fraction Commerce			-104.75 (50.38)**			114.82 (192.64)			-32.61 (223.04)
Fraction Profession			518.49 (255.17)**			-142.73 (1,216.15)			857.73 (1,481.42)
Geographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Development Controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Observations	328	323	323	328	323	323	328	323	323
R-squared	0.71	0.81	0.82	0.55	0.63	0.63	0.61	0.74	0.74

Robust std errors clustered at district level in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%
All specifications include province fixed effects and a dummy for the 1911 cross section.

TABLE 7: EDUCATION EXPENDITURES PER PUPIL

	District Board Educ Exp / Pupil		
	(1)	(2)	(3)
<u>Social Groups</u>			
Fraction Brahman	-4.3341 (2.6923)	-6.9106 (2.4820)***	-6.5227 (2.5509)**
Fraction Muslim	0.2761 (0.8917)	-0.2555 (0.8336)	-0.3472 (0.8262)
Fraction Lower Castes	0.0965 (1.2443)	-0.6051 (1.1866)	-0.8927 (1.2126)
Fraction Tribes	1.2523 (1.2869)	0.3892 (1.0713)	0.0930 (1.0516)
CRFI	0.9393 (0.8116)	0.7777 (0.6559)	0.7341 (0.6464)
<u>Geographic Controls</u>			
Coastal	-0.0991 (0.2231)	-0.0117 (0.1966)	0.0004 (0.1830)
Normal Rainfall	0.0016 (0.0025)	0.0029 (0.0031)	0.0033 (0.0029)
DensityPop per Mile	-0.0013 (0.0004)***	-0.0012 (0.0004)***	-0.0012 (0.0005)**
<u>Development</u>			
Fraction Rural		1.6611 (2.0207)	0.8963 (1.9431)
Towns per Capita		0.1556 (0.1903)	0.0955 (0.1876)
<u>Income</u>			
Income Tax per 1000 of Pop		-0.0057 (0.0025)**	-0.0063 (0.0024)***
Land Tax per Capita		0.2849 (0.0968)***	0.3127 (0.0901)***
<u>Occupation</u>			
Fraction Agriculture			-2.4875 (1.1299)**
Fraction Industry			-3.4190 (1.7820)*
Fraction Commerce			-3.4131 (3.3080)
Fraction Profession			-9.9382 (10.4057)
Constant	2.9201 (0.8712)***	1.5014 (2.0204)	4.6637 (2.2908)**
Observations	327	322	322
R-squared	0.62	0.80	0.80

Robust std errors clustered at district level in parentheses.

* significant at 10%; ** significant at 5%; *** significant at 1%

All specifications include province fixed effects and a dummy for the 1911 cross section.

TABLE 8: SHARE OF PUBLIC EXPENDITURES

	Education				Civil Works			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Social Groups</i>								
Fraction Brahman	0.0647 (0.2560)	-0.1188 (0.2350)	-0.0234 (0.2529)	-0.0482 (0.2177)	0.4123 (0.3644)	0.6556 (0.3589)*	0.5527 (0.3573)	0.5663 (0.3443)
Fraction Muslim	0.0118 (0.0644)	-0.0388 (0.0562)	-0.0215 (0.0569)	-0.0218 (0.0536)	0.0001 (0.1106)	0.0726 (0.0998)	0.0510 (0.1013)	0.0723 (0.0968)
Fraction Lower Castes	0.0916 (0.0736)	0.0680 (0.0700)	0.0793 (0.0743)	0.0777 (0.0664)	0.1549 (0.1173)	0.1879 (0.1195)	0.1760 (0.1242)	0.1627 (0.1129)
Fraction Tribes	0.0982 (0.1031)	0.0428 (0.0937)	0.0602 (0.1006)	0.0538 (0.0912)	-0.0815 (0.1027)	-0.0011 (0.0974)	-0.0234 (0.0996)	-0.0365 (0.0957)
CRFI	-0.1585 (0.0526)***	-0.2045 (0.0509)***	-0.1895 (0.0527)***	-0.1822 (0.0478)***	0.1860 (0.0808)**	0.2575 (0.0792)***	0.2416 (0.0842)***	0.2568 (0.0708)***
<i>Occupation</i>								
Fraction Agriculture	0.0187 (0.0839)	0.0743 (0.0866)	0.0580 (0.0903)	0.0706 (0.0844)	-0.1992 (0.1363)	-0.2864 (0.1523)*	-0.2687 (0.1586)*	-0.2566 (0.1445)*
Fraction Industry	0.1236 (0.1486)	0.1679 (0.1614)	0.1564 (0.1557)	0.1806 (0.1389)	-0.0681 (0.2301)	-0.1479 (0.2533)	-0.1406 (0.2510)	-0.1733 (0.2322)
Fraction Commerce	-0.5082 (0.2639)*	-0.2999 (0.2727)	-0.4395 (0.2792)	-0.3644 (0.2794)	0.1191 (0.4489)	-0.1344 (0.4617)	0.0088 (0.4578)	-0.2142 (0.4606)
Fraction Profession	2.2011 (0.9611)**	2.1687 (0.9592)**	2.0731 (0.9882)**	1.9780 (0.9057)**	-2.3198 (1.3241)*	-2.2434 (1.4049)	-2.1964 (1.4630)	-1.6108 (1.3685)
<i>Revenue Sources</i>								
Total Income per Capita	-0.0002 (0.0001)***				0.0005 (0.0001)***			
Inc Tolls Ferries per Capita		-0.0012 (0.0003)***		-0.0014 (0.0002)***		0.0012 (0.0004)***		0.0016 (0.0004)***
Inc Educ per Capita			0.0004 (0.0003)	0.0007 (0.0002)***			-0.0002 (0.0004)	-0.0000 (0.0003)
Inc Local Rates per Capita				-0.0003 (0.0001)**				0.0005 (0.0003)*
Inc Contrib per Capita				-0.0000 (0.0001)				0.0009 (0.0001)***
Development and Income Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	228	228	228	228	228	228	228	228
R-squared	0.78	0.78	0.76	0.80	0.67	0.65	0.63	0.69

Robust std errors clustered at district level in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%
All specifications include province fixed effects and a dummy for the 1911 cross section.

TABLE 9A: SHARE OF PUBLIC EXPENDITURES

	Education			Civil Works		
	(1)	(2)	(3)	(4)	(5)	(6)
CRFI (Among Brahmans, Individual Higher Castes, Muslims, Christians, Sikhs, Jains & Buddhists)	-0.1031 (0.0466)**	-0.0483 (0.0525)	-0.0240 (0.0504)	0.0431 (0.0596)	-0.0091 (0.0681)	-0.0289 (0.0658)
Other Controls	No	Yes	Yes	No	Yes	Yes
Observations	328	323	323	328	323	323
R-squared	0.62	0.68	0.70	0.57	0.55	0.56

All specifications include province fixed effects and a dummy for the 1911 cross section. Robust std errors clustered at district level in parantheses. * sig 10%; ** sig 5%; *** sig 1%.

All specficiations control for the shares of Brahmans, Lower Castes, Muslims, Aboriginal Tribes, and geographic Controls. Other Controls include income and development controls. Specifications 3 and 6 also include the occupational controls.

TABLE 9B: SHARE OF PUBLIC EXPENDITURES

	Education			Civil Works		
	(1)	(2)	(3)	(4)	(5)	(6)
CRFI (Among Brahmans, Higher Castes - Group, Muslims, Christians, Sikhs, Jains & Buddhists)	-0.0989 (0.0470)**	-0.0445 (0.0472)	-0.0292 (0.0456)	0.0439 (0.0574)	-0.0060 (0.0621)	-0.0165 (0.0617)
Other Controls	No	Yes	Yes	No	Yes	Yes
Observations	328	323	323	328	323	323
R-squared	0.62	0.67	0.70	0.57	0.55	0.56

All specifications include province fixed effects and a dummy for the 1911 cross section. Robust std errors clustered at district level in parantheses. * sig 10%; ** sig 5%; *** sig 1%.

All specficiations control for the shares of Brahmans, Lower Castes, Muslims, Aboriginal Tribes, and geographic Controls. Other Controls include income and development controls. Specifications 3 and 6 also include the occupational controls.

TABLE 10: SHARE OF PUBLIC EXPENDITURES

	Education				Civil Works			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Social Groups</i>								
Fraction Brahman	-0.2372 (0.1566)	-0.1568 (0.1595)	-0.1824 (0.1671)	-0.1966 (0.1633)	0.6045 (0.2775)**	0.5917 (0.2829)**	0.3676 (0.2737)	0.5582 (0.2804)**
Fraction Muslim	-0.0703 (0.0557)	-0.0825 (0.0552)	-0.0653 (0.0558)	-0.0726 (0.0542)	0.0226 (0.0843)	0.0246 (0.0840)	0.0009 (0.0821)	0.0253 (0.0836)
Fraction Lower Castes	0.0652 (0.0660)	0.0509 (0.0635)	0.0619 (0.0670)	0.0523 (0.0627)	0.0872 (0.0965)	0.0895 (0.0955)	0.1014 (0.0986)	0.1020 (0.0937)
Fraction Tribes	0.0170 (0.1002)	-0.0047 (0.0874)	0.0203 (0.1008)	0.0125 (0.1000)	-0.0474 (0.0833)	-0.0440 (0.0820)	-0.0618 (0.0832)	-0.0423 (0.0812)
CRFI	-0.1882 (0.0542)***	-0.1706 (0.0540)***	-0.1905 (0.0530)***	-0.1963 (0.0535)***	0.1773 (0.0875)**	0.1745 (0.0878)**	0.1871 (0.0818)**	0.1866 (0.0872)**
<i>Occupation</i>								
Fraction Landowners	-0.1262 (0.0622)**	-0.1548 (0.0572)***	-0.0908 (0.0799)	-0.1877 (0.0670)***	0.0884 (0.0901)	0.0929 (0.0896)	-0.0645 (0.1026)	0.1586 (0.1059)
Fraction Laborers	-0.0860 (0.0673)	-0.0273 (0.0732)	-0.0919 (0.0675)	-0.0616 (0.0719)	0.1884 (0.0941)**	0.1791 (0.0972)*	0.2137 (0.0950)**	0.1605 (0.0985)
Fraction Industry	0.1467 (0.1154)	0.3258 (0.1355)**	0.1441 (0.1150)	0.1375 (0.1180)	-0.0015 (0.1669)	-0.0299 (0.1846)	0.0098 (0.1631)	0.0090 (0.1707)
Fraction Commerce	-0.6450 (0.2198)***	-0.5180 (0.2166)**	-0.6481 (0.2194)***	-0.6482 (0.2193)***	0.5330 (0.3712)	0.5129 (0.3711)	0.5469 (0.3715)	0.5367 (0.3731)
Fraction Profession	1.2246 (0.8110)	1.7258 (0.8193)**	1.2723 (0.8053)	1.1537 (0.8166)	-1.1830 (1.2247)	-1.2625 (1.2695)	-1.3894 (1.1780)	-1.1020 (1.2313)
<i>Inequality Measures</i>								
Occupation Fragmentation		-0.2183 (0.0713)***				0.0346 (0.0929)		
Landowners / Laborers			-0.0010 (0.0012)				0.0041 (0.0018)**	
Landowners / (Laborers + Tenants)				0.0067 (0.0066)				-0.0077 (0.0077)
Development and Income Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	323	323	323	323	323	323	323	323
R-squared	0.71	0.72	0.71	0.71	0.57	0.57	0.58	0.57

Robust std errors clustered at district level in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.
All specifications include province fixed effects and a dummy for the 1911 cross section.

TABLE 11: PUBLIC EXPENDITURES

	Share Education	Share Civil Works	Educ Exp per Capita	Civil Works Exp per Capita	Total Expenditures per Capita
	(1)	(2)	(3)	(4)	(5)
<i><u>Social and Economic Groups</u></i>					
Fraction Brahman	-0.0911 (0.1993)	0.0293 (0.3213)	-26.6144 (45.3526)	-155.7217 (142.7962)	-115.9233 (197.8587)
Fraction Landowners	-0.0767 (0.0784)	-0.1066 (0.0947)	-54.3177 (22.2590)**	-101.4100 (82.2508)	-131.6800 (108.7202)
Fraction Brahman*Fraction Landowners	-0.5584 (0.4584)	2.1992 (0.6224)***	504.7338 (159.6523)***	1,666.2714 (533.5124)***	2,096.0093 (669.5059)***
Fraction Muslim	-0.0592 (0.0561)	-0.0210 (0.0798)	4.7435 (26.1179)	-37.1601 (44.1054)	-6.8163 (66.8178)
Fraction Lower Castes	0.0638 (0.0663)	0.0929 (0.0947)	-24.9839 (21.7689)	12.0290 (66.9752)	-72.1056 (91.2427)
Fraction Tribes	0.0272 (0.1020)	-0.0876 (0.0826)	19.9670 (31.7017)	-14.8845 (40.8026)	3.0847 (62.9685)
CRFI	-0.1921 (0.0522)***	0.1926 (0.0776)**	-12.6947 (19.2743)	47.7366 (47.6798)	75.6916 (61.8296)
<i><u>Occupation</u></i>					
Fraction Laborers	-0.0806 (0.0674)	0.1670 (0.0927)*	28.9243 (27.0220)	86.9909 (59.3443)	124.5224 (83.7846)
Fraction Industry	0.1410 (0.1157)	0.0211 (0.1647)	-4.2684 (37.4550)	-75.1607 (129.3602)	-175.5016 (173.0647)
Fraction Commerce	-0.6478 (0.2193)***	0.5442 (0.3739)	-128.5563 (50.5597)**	229.5506 (199.9375)	53.5932 (231.2460)
Fraction Profession	1.2513 (0.8029)	-1.2879 (1.1525)	418.6103 (231.8118)*	58.5924 (1,046.4373)	911.2583 (1,279.6057)
Geographic, Income and Development Controls	YES	YES	YES	YES	YES
Observations	323	323	323	323	323
R-squared	0.71	0.58	0.83	0.66	0.76

Robust std errors clustered at district level in parantheses. * significant at 10%; ** significant at 5%; *** significant at 1%
All specifications include province fixed effects and a dummy for the 1911 cross section.