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Colonial Land Tenure, Electoral Competition and Public Goods in India

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Colonial Land Tenure, Electoral Competition and Public Goods in India^{*}

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Social scientists have long emphasized the importance of institutions in nurturing economic growth and development. Douglass C. North defines institutions as the “rules of the game in a society” which limit the set of choices for individuals and argues that institutions, both formal ones such as laws and constitutions, as well as informal ones such as social norms, are important in determining the transaction costs of production and exchange, and thereby have an impact on economic growth. He goes on to discuss the mostly incremental nature of institutional change and highlights the difficulties in implementing radical institutional change. This line of argument therefore suggests that the impacts of institutions are likely to be felt for a very long time, and hence points to the need for detailed historical analysis over long periods in order to quantify the impact of institutions.¹

Two strands of analysis have dominated the recent literature in economics on the study of institutions. The first undertakes detailed analysis within a given time or place. An example is the work of Avner Greif, who uses historical documents to examine the working of a specific institution, the Maghribi traders’ coalition in the 11th century. He documents in detail the flows of information and specific institutional practices put in place to sustain economic relationships between merchants and their overseas agents. These mechanisms based on carefully built reputations greatly contributed to the success of Maghribi traders. Another example is North and Barry R. Weingast’s analysis of the

^{*} We thank Jared Diamond, James Robinson, Robert Schneider and two anonymous referees for extremely useful suggestions. Katherine Cui provided excellent research assistance.

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¹ Douglass C. North, *Institutions, Institutional Change and Economic Performance* (Cambridge, 1990).

impact of England's Glorious Revolution on the security of private rights and the consequent rapid development of capital markets. Haber, Maurer and Razo examine the evolution of property rights in Mexico over time, with a view to analyzing the institutions which enabled the Mexican economy to grow substantially despite considerable political instability.²

While such studies are useful in understanding how institutions have evolved, they do not provide a good counterfactual: how would things have been if this institution had been set up differently? The second strand of analysis, based on comparative studies which look at differences in the quality or type of institutions across different places, can be useful in this regard. To take a specific instance, Rafael La Porta, Florencio Lopez de Silanes, Andrei Shleifer and Robert Vishny conducted a comparative analysis across countries with different legal systems, and found that countries which have Common Law systems provide greater protections for minority shareholders than do countries which have legal systems based on French civil law.³

La Porta et al's study illustrates some of the benefits and costs of this methodology. A clear benefit is that it establishes a general pattern across the world, which we would not have been able to infer from studying any one case. However, it leaves open the question of causality: perhaps countries which adopted French civil law systems were inherently different in some way from those which adopted common law systems. For instance, they may have systematically different geographic characteristics, or specific pre-colonial legal systems which were more compatible with civil law. Therefore, the observed differences may be due to these underlying factors, rather than the legal system. Another possibility is that French civil law came as part of a package deal. French colonial rule might have changed many other institutions or policies in those countries, apart from the legal

² See Avner Greif, "Contract Enforceability and Economic Institutions in Early Trade: The Maghribi Traders' Coalition," *American Economic Review* 83, no. 3 (June 1993): 525–548 and "Reputation and Coalitions in Medieval Trade: Evidence on the Maghribi Traders," *Journal of Economic History* 49, no. 4 (December 1989): 857–882; Douglass C. North and Barry Weingast, "Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England," *Journal of Economic History* 49, no. 4 (December 1989): 803–832; Stephen Haber, Noel Maurer and Armando Razo, *The Politics of Property Rights: Political Instability, Credible Commitments and Economic Growth in Mexico, 1876–1929* (Cambridge, 2003).

³Rafael La Porta, Florencio Lopez de Silanes, Andrei Shleifer and Robert Vishny, "Law and Finance," *Journal of Political Economy* 106, no. 6 (1998): 1113-1155.

system. In this case, we might mistakenly conclude that the observed differences in outcomes are caused by differences in the legal system, when in fact the key variable might be the differences in other institutions, such as the tax code or credit market conditions. In either case, while establishing the general correlation is interesting, we are not able to conclude that it is indeed the legal system which is responsible for the differences in the outcomes we observe.⁴

The problems of inherent differences across areas, and of isolating specific institutions, are pervasive in comparative analyses. How can we get around them? We can try to choose areas which are similar in all other ways except for the specific institution being studied. This is not easy, given that we are in no position to assign institutions as we see fit, and have to depend on the historical record. We can go some way towards this goal by picking our cases carefully, and in addition by statistically controlling for all the other elements that might matter. The problem is that we often do not know what matters, and even when we do, we may not have any way of measuring these factors.

Another solution would be to find instances where institutions were imposed from outside in such a way that the adoption of a specific institution was not dependent on underlying area characteristics. This is the approach we adopt in our paper. We compare the land revenue systems put in place in different parts of India by British colonial administrators and argue that the choice of alternative systems had nothing to do with any special feature of the areas where they were imposed. Instead, the historical record suggests that the choice of these systems was driven by the prevailing ideology in England at the time that area was brought under British political control, as well as the idiosyncratic views and relative political power of individual colonial administrators. Furthermore, since we compare different areas within British India, the areas we study are similar in many other dimensions: obviously in the identity of the colonial power, but also in the political, administrative and legal systems both in colonial times as well as today.

⁴ The conclusions from these studies have been challenged by studies done over other time periods. Raghuram Rajan and Luigi Zingales find that Common Law countries are not leading in financial development in 1913 (“The Great Reversals: The Politics of Financial Development in the 20th Century,” *Journal of Financial Economics* 69, no. 1 (July 2003): 5–50). Further, the French legal system enabled much greater flexibility than the American system in the nineteenth century (Naomi R. Lamoreaux and Jean-Laurent Rosenthal, “Legal Regime and Contractual Flexibility: A Comparison of Business’s Organizational Choices in France and the United States during the Era of Industrialization,” *American Law and Economics Review*, 7 (Spring 2005): 28–61).

We use the terms “land revenue systems” or “land tenure systems” to refer to the arrangements made by the British administration to collect the land revenue from the cultivators of the land. Up to a first approximation, all cultivable land in British India fell under one of three alternative systems: landlord-based systems (also known as *zamindari* or *malguzari*), individual cultivator-based systems (*raiyatwari*) and village-based systems (*mahalwari*). In the landlord-based systems, the British delegated revenue-collection authority to landlords with authority over large areas. In village-based systems, the revenue collection was delegated to village bodies consisting of several people. In individual-cultivator systems, the British collected land revenue directly from the cultivator. The map in Figure 1 illustrates the geographic distribution of these systems.

The central question of our study is: Do areas under landlord-based systems develop differently compared to areas which were under other land tenure systems? We answer this question by comparing outcomes in the two types of areas in the post-colonial period which is more than a hundred years after these systems were put in place.⁵ As it turns out, the land revenue system we study was actually abolished in the early 1950s, along with many other vestiges of colonial rule; in fact, agricultural income is subjected to almost no taxes in India today. Nevertheless, the differences in historical land tenure systems could have potentially started these areas off on very different paths. This is the possibility that we investigate in our comparative study. Our study is therefore in the spirit of Stanley Engerman and Kenneth Sokoloff’s comparative study of New World countries, where they find that initial levels of inequality caused by specific institutional arrangements caused them to have very different development paths. In particular, areas with greater initial inequality tended to have lower investments in public education and other infrastructure.⁶

Our results are also in the spirit of what Engerman and Sokoloff find. Areas in India which were historically under the control of big landlords (and consequently had much higher levels of historical land inequality) tend to have lower levels of investment in schools, electricity and roads even as late as 1991. In related work, we have also documented that in the post-Independence period, the adoption of new agricultural technologies was much slower in the areas formerly controlled by landlords, and thus these areas end up with lower agricultural productivity--despite the

⁵ India became independent in 1947.

⁶ Stanley L. Engerman and Kenneth L. Sokoloff, “Colonialism, inequality and the long-run paths to development,” NBER Working Paper, no. 11057 (2005).

fact that these are inherently more fertile areas and actually had higher productivity levels in the colonial period.⁷

Engerman and Sokoloff suggest that this deficit in investment has to do with the fact that the elites in these areas feared that such investments might end up undermining their authority. They demonstrate that areas with higher inequality extended suffrage to a smaller proportion of their population and the extension of the franchise to larger sections of society came later in these places. In particular, these more unequal societies typically had literacy requirements for voting, which significantly reduced the incentives of the elites to invest in large-scale public education. Thus, historical patterns of inequality continue to affect long-term outcomes by changing the nature of the political system and the pattern of democratization.⁸

In this paper, we investigate whether this hypothesis of political capture by the elites can explain our observed differences across landlord and non-landlord areas. Since the contemporary electoral rules are identical everywhere in post-Independence India, we cannot expect to see any variation in this regard. It is however possible that the still elites retain power by restricting access to the political system, or by capturing the democratic process. We therefore focus on participation rates in elections as well as some standard measures of electoral competition, such as the number of candidates in elections or the winning margins, recognizing that these are outcomes of the electoral process rather than a description of the conditions under which the elections took place, which would be our ideal data. We find that non-landlord areas have higher electoral participation rates compared to non-landlord areas, but the difference in public goods provision cannot be fully explained by this. In terms of electoral competition, landlord areas look very similar to non-landlord areas in measures such as the number of people contesting the election or average vote margins.⁹

⁷ Abhijit Banerjee and Lakshmi Iyer, “History, institutions and economic performance: the legacy of colonial land tenure systems in India,” *American Economic Review* 95(4), 1190–1213.

⁸ Stanley L. Engerman and Kenneth L. Sokoloff, “The evolution of suffrage institutions in the New World,” NBER Working Paper, no. 8512 (2001).

⁹ Our method is consistent with contemporary research in this area. See, for example, Daron Acemoglu, Maria Angelica Bautista, James A. Robinson and Pablo Querubin, “Economic and political inequality in development: the case of Cundinamarca, Colombia,” Working paper (2007); Abhijit Banerjee and Rohini Somanathan, “The Political Economy of Public Goods: Some Evidence from India,” *Journal of Development Economics* 82, no. 2 (2007): 287–314.

Before going into the details of our analysis, we first describe how the British came to implement different land tenure systems in different parts of India and explain in some detail the sense in which the institutions of land tenure were “imposed” on these areas.

The British empire in India lasted for nearly 200 years. The British first arrived as traders in 1613, when the English East India Company received a permit from the Mughal emperor, Jahangir, to build a factory at Surat. The East India Company won major military battles at Plassey in 1757 and Buxar in 1764, as a result of which they obtained revenue collection rights in the modern states of Bengal and Bihar (formerly Bengal Presidency) in 1765. At the same time, the British obtained four districts, known as the Northern Circars, in southern India as a grant from the Mughal emperor. Over the next century, the East India Company acquired several new territories. Large parts of the kingdom of Mysore were annexed after the Mysore wars (1792-1801) in the south, and Bombay Presidency and parts of Gujarat in the west after conquering the Marathas in 1817-18. Many areas of the North-West Provinces were ceded by the Nawab of Oudh for non-payment of debts in 1801-03, Punjab was conquered after the Sikh wars of 1846 and 1849, and Oudh itself was annexed by the British in 1856 after accusing the ruler of misrule.

In the Sepoy Mutiny of 1857, Indian troops in many parts of north India revolted against their British officers. The revolt was soon suppressed, but the British Crown decided to bring the administration of India under its direct control, and the rule of the East India Company came to an end in 1858. The British then put an end to any further annexation of territory, with the result that there remained a large number of princely states in different parts of the country, all of whom were under British political control but had autonomy in administrative matters. The British left India in 1947 when the Indian empire was partitioned into India and Pakistan. Large parts of former Bengal Presidency and Panjab Province are now in Bangladesh and Pakistan respectively.¹⁰

¹⁰ Bangladesh, formerly East Pakistan, became an independent nation in 1975. For a comparison of long-term economic outcomes between directly-ruled British areas and indirectly-ruled areas, see Lakshmi Iyer, “The Long-Term Impact of Colonial Rule: Evidence from India,” Harvard Business School Working Paper, no. 05-041 (2005).

Land revenue or land tax was the major source of government revenue for the British empire in India, as it had been for all previous governments. In 1841, land revenue constituted 60% of total British government revenue, though this proportion decreased over time as the British developed additional tax resources. Not surprisingly, land revenue and its collection was the most important issue in policy debates during this period.

In the early years, the British put in place a landlord-based system in most areas, to a substantial extent because relying on landlords to do all the revenue collection work spared the British the effort and expense of setting up a large administrative machinery. In these areas, the revenue liability for a village or a group of villages lay with a single landlord, who was free to set the revenue terms for the peasants under his jurisdiction and to dispossess any peasants who did not pay the landlord what they owed him. Whatever remained after paying the British revenue demand was for him to keep. These revenue collecting rights could be bequeathed, as well as bought and sold. In this sense, the landlord effectively had property rights on the land. In some of these areas, the British declared the landlords' revenue commitments to the government to be fixed in perpetuity (the Permanent Settlement of 1793). In other areas, a temporary settlement was implemented whereby the revenue was fixed for a certain number of years, after which it was subject to revision.¹¹

In some cases, the presence of a landlord class before the British took over was probably one of the factors leading to the landlord system being favored. For instance, the historian Tapan Raychaudhuri says, "... in terms of rights and obligations, there was a clear line of continuity in the zamindari system of Bengal between the pre- and the post-Permanent Settlement era." This was not a general feature. For instance, it was decided to have a landlord-based system in the Central Provinces, even though there was no pre-existing landlord class, as B. H. Baden-Powell states: "In the Central Provinces we find an almost wholly artificial tenure, created by our revenue-system and by the policy of the Government of the day." Even in Bengal, several scholars have pointed out that these landlords were really local chieftains, and not the large farmers that the British had thought them to be.¹²

¹¹ Some measures for protecting the rights of tenants and sub-proprietors were introduced in later years. For details on the exact delineation of rights, as well as descriptions of sub-tenures, see Dharma Kumar, ed., *The Cambridge Economic History of India Vol. 2* (Cambridge, 1982), Chapters I and II.

¹² Tapan Raychaudhuri, "The mid-eighteenth-century background," in Dharma Kumar, ed., *The Cambridge Economic History of India Vol. 2* (Cambridge, 1982), 13; B.H. Baden-Powell, *The Land-Systems of British India*,

Over time, there was a shift towards establishing other types of land revenue systems. Two major changes in land revenue policy (described in detail below) set important precedents for areas conquered in later years. The trend was also supported by changing views in Britain. In the 1790s, under the shadow of the French revolution across the Channel, the British elites were inclined to side with the landlords. In the 1820s, with peasant-power long defeated and half forgotten, British elites were more inclined to be sympathetic to the utilitarians and others who were arguing for dealing directly with peasants.¹³

The first major shift away from landlord-based systems was in Madras Presidency, where the administrators Captain Alexander Read and Sir Thomas Munro began advocating for the establishment of an individual cultivator system in the late 1890s. Under this *raiyatwari* system, the revenue settlement would be made directly with the individual *raiyat* or cultivator. In these areas, an extensive cadastral survey¹⁴ of the land was done and a detailed record-of-rights was prepared, which served as the legal title to the land for the cultivator. Unlike the Permanent Settlement areas, the revenue commitment was not fixed; it was usually calculated as the money value of a share of the estimated average annual output. This share typically varied from place to place, was different for different soil types, and was adjusted periodically in response to changes in the productivity of the land.

Munro strongly supported this individual cultivator system, claiming that this would raise agricultural productivity by improving cultivator incentives, that the cultivators would be less subject to arbitrary expropriation than under a landlord, that they would have a measure of insurance (via

Volume III (Oxford, 1892), 455; Ratnalekha Ray, *Change in Bengal Agrarian Society 1760–1850* (Delhi, 1979); Tirthankar Roy, *The Economic History of India 1857–1947* (New Delhi, 2000), 38.

¹³ For a good discussion of the role of ideology and economic doctrines in the formation of the land revenue systems, see Ranajit Guha, *A Rule of Property for Bengal: An Essay on the Idea of Permanent Settlement* (Paris, 1963); Eric Stokes, *The English Utilitarians and India* (Oxford, 1959); Eric Stokes, “The land revenue systems of the North-Western Provinces and Bombay Deccan 1830-80: Ideology and the official mind,” in *The Peasant and the Raj: Studies in Agrarian Society and Peasant Rebellion in Colonial India* (Cambridge, 1978).

¹⁴ A cadastral survey refers to a detailed survey of the land, noting geographical features as well as ownership boundaries. This is usually carried out in order to assess ownership as well as to provide a basis for taxation. Such a survey was never carried out in many Permanent Settlement areas, since the British, being assured of a fixed revenue from the landlords, did not need such detailed information.

government revenue remissions in bad times), that the government would be assured of its revenue (since small peasants are less able to resist paying their dues), and that this was the mode of land tenure prevailing in South India from ancient times. These arguments were not based on any real evidence; as Nilmani Mukherjee writes, “Making all allowance for the zeal of Munro as a champion of the ryotwari system, it cannot be denied that he was rather dogmatic in relating his favourite system to the socio-economic conditions of the Ceded Districts.”¹⁵

Munro’s views were strongly opposed by the Madras Board of Revenue, which used more or less the same arguments (in reverse, of course) for favoring landlords. The Board argued that large landlords would have the capacity to invest more and therefore productivity would be higher, the peasants’ long-term relationship with the landlord would result in less expropriation than the short-term one with a government official, a big landlord would provide insurance for small farmers, a steady revenue would be assured because the landlords would be wealthy and could make up an occasional shortfall from their own resources, and that this was the mode of tenure prevailing from ancient times!¹⁶

The Board of Revenue initially overruled Munro. Starting in 1811, all the villages were put under village-level landlords with ten-year renewable leases. However, Munro traveled to London and managed to convince the Court of Directors of the East India Company of the merits of the individual-based *raiyyatwari* system, who then ordered the Madras Board of Revenue to implement this policy all over the province after 1820 upon the expiration of the landlord leases. This important precedent influenced the system in many other places. For instance, the governor of the recently formed Bombay Presidency, Lord Elphinstone, had been a supporter of Munro during the debate in Madras, and implemented the individual cultivator system in that province in the 1820s.

At about the same time, a similar precedent was established in northern India. Landlord systems with short-term leases were initially implemented in the North-West Provinces, and there was considerable debate as to whether or not there should be a landlord-based Permanent Settlement along the lines of that prevailing in Bengal. In 1819, Holt Mackenzie, the Secretary of the Board of Revenue, wrote a famous Minute which claimed that historically every village had had a proprietary village body, and felt that no Settlement should be declared in perpetuity which did not give proper

¹⁵ Nilmani Mukherjee, *The Ryotwari system in Madras 1792–1827* (Calcutta, 1962), 25.

¹⁶ Nilmani Mukherjee, *The Ryotwari system in Madras 1792–1827* (Calcutta, 1962).

recognition to such customary rights. This became the basis for Regulation VII of 1822, which laid the basis for village-level settlements known as the *mahawari* system. However, the previous actions could not always be undone, and in several places the previously appointed landlords retained their positions. For instance, the Aligarh settlement officer writes, “So far indeed had the action of our first officials sanctioned the usurpations of the Talukdars, that among other cases they granted to Raja Bhagwant Singh a lease for life of the whole of the pargana Mursan for Rs.80,000 leaving the old communities entirely at his mercy ...” This incomplete change of regime is the reason that many districts classified as predominantly village-based nevertheless had a substantial portion of their area under landlord control. For instance, the district of Allahabad was part of the North-West Provinces which was put under the village-based system, yet nearly two-thirds of all revenue estates were under the control of landlords.¹⁷

In the village-based system, village bodies that jointly owned the village were responsible for the land revenue. These bodies could be in charge of varying areas, from part of a village to several villages. The composition of the village body also varied from place to place. In some areas it was a single person or family and hence very much like the Bengal landlord system (*zamindari*), while in other areas, the village bodies had a large number of members with each person being responsible for a fixed share of the revenue. This share was either determined by ancestry (the *pattidari* system), or based on actual possession of the land (the *bhaiachara* system), the latter being very much like the individual-based *raiyyatwari* system. The revenue rates in these areas were determined on fairly ad-hoc grounds, based on a diverse set of factors including “an examination of rents recorded in the *jamabandis*, the rates which were actually paid by the various classes of tenants and the rates which were considered fair on each class of soil [...] These estimates are based primarily on soils, and secondly on consideration of the caste of the tenant, capabilities of irrigation, command of manure

¹⁷ For a detailed description of land revenue policy in northern India, see Babu Ram Misra, *Land revenue policy in the United Provinces under British rule* (Benares, 1942). W.H. Smith, *Final Report on the Revision of Settlement in the District of Aligarh* (Allahabad, 1882), 114. Large landlords were often referred to as *talukdars* rather than *zamindars*. In Oudh province, *talukdars* were a special class of very large landlords, who had been issued formal grants by the British which “guaranteed an indefeasible, heritable and transferable superior title in every village in their estates” (A.F. Millett, *Report on the Settlement of the Land Revenue of the Sultanpur District* (Lucknow, 1873), 68).

&c, all of which points received attention.”¹⁸ Except in the areas under the Permanent Settlement, the amount of revenue actually paid was often less than the stated revenue liability, due to remissions being granted in times of bad harvests and other hardships. Our focus here is not on the actual revenue paid or the revenue rates which prevailed at various points of time, but on the allocation of revenue and control rights in land.

There was one further change to land revenue policy, in the province of Oudh. This region was annexed by the British in 1856 and merged with the North-West Provinces to form the United Provinces (state of Uttar Pradesh today). Since the North-West Provinces had a village-based revenue system, it was proposed to extend the same to Oudh, with the Governor-General Lord Dalhousie declaring explicitly that the “...desire and intention of the Government is to deal with the actual occupants of the soil, that is, with village zamindars or with the proprietary coparcenaries, which are believed to exist in Oudh, and not to suffer the interposition of middlemen as Talukdars, farmers of the revenue and such like.”¹⁹ A cadastral survey that would form the basis of this settlement was under way when the Sepoy Mutiny (which eventually turned into a full-scale war of independence in many parts of North India) broke out in 1857. After the mutiny was subdued, the British felt that having the large landlords on their side would be politically advantageous. There was thus a reversal of policy and several landlords whose land had been taken away under the village-based settlement had the land given back to them, and in 1859 they were declared to have a permanent, hereditary and transferable proprietary right. Districts that used to be a part of Oudh thus came to have a larger area under landlord control than the other districts of Uttar Pradesh. There were no major policy changes after this point, and our classification of areas into different types of systems is based on the system prevailing in these areas in the 1870s and 1880s, after all of these policy changes had been implemented.

The historical record thus suggests that of the many factors that affected the choice of the land revenue system in a particular area, most were unrelated to the actual characteristics of the area itself. Places conquered by the British in earlier periods tended to get landlord systems because of the prevailing ideology in England, and the ideas of individual administrators also brought about significant changes. Places conquered later tended to follow either the ideologies of their

¹⁸ F.W. Porter, *Final Settlement Report of the Allahabad District* (Allahabad, 1878), 108.

¹⁹ Babu Ram Misra, *Land revenue policy in the United Provinces under British rule* (Benares, 1942), 100.

administrators (e.g. Bombay Presidency) or the system adopted in nearby provinces, until the reversal of policy in Oudh. For instance, when Berar was ceded to the British for non-payment of debts in 1853, it was put under an individual-based system because neighboring Bombay had been organized under this system. Punjab province was put under a village-based system because it was next to the North-West Provinces. In particular, a striking fact is that none of the areas that were conquered by the British between 1820 and 1855 have a wholly landlord-based system. Areas conquered either before or after that period are much more likely to have a landlord type system. This makes the comparison of areas conquered in the two time periods (1820-1855) and either before or after that, a particularly clean way to capture the landlord/non-landlord divide. Moreover, to the extent that the choice of the system actually responded to local conditions, the tendency was to set up non-landlord systems in the least prosperous areas. For example, the areas where landlord defaults were excessive were sometimes changed to other forms of settlement. Therefore, areas that ended up with non-landlord systems are more likely to be inherently less productive, or at least were less productive in colonial times. It has also been argued that landlord areas were usually highly fertile areas which created enough rent to support a landlord-tenant-laborer hierarchy.²⁰

Many contemporary accounts support our idea that the initial choice of the land revenue system had little to do with the specific features of the area. The settlement officer of Rae Bareilly district in the North-West Provinces recounts, “Nearly all the zamindars are of modern growth...in almost every *pargana* there were numerous villages without proprietors. All these were granted away by Government, very frequently on the most slender grounds, such as for instance to a farmer who, without a shadow of claim to proprietary right, had paid his rent to Government for 12 or 15 years regularly. The policy of the day was to get rid of such Government rights, to create *zamindars* if they could not be found.” An official in Karnal district of Panjab writes, “I think there can be but little doubt that, till the English rule, individual property in land, in the sense in which we understand it, was unknown in the Tract.” In Sirsa district, the British “created for the first time in each village a proprietary status, framed on the model of that in vogue in the settled districts of the North-Western

²⁰ Tirthankar Roy, *The Economic History of India 1857–1947* (New Delhi, 2000), 38.

Provinces, dividing off the agriculturists into proprietors and tenants in a somewhat arbitrary manner.”²¹

By the 1860s, the land tenure systems were firmly in place in all parts of British India, and there were no major changes in land policy during the colonial period. In particular, the British maintained the Permanent Settlement of Bengal, which had fixed the landlords’ rents in perpetuity in 1793, even though the revenue they obtained declined significantly in real terms by the twentieth century. After Independence in 1947, almost all states passed legislation in the early 1950’s formally abolishing landlords and other intermediaries between the government and the cultivator. Several other laws have also been passed regarding tenancy reform, ceiling on land holdings, and land consolidation measures by different states at different times.²²

Do landlord areas develop differently? We examine this broad question by focusing on the availability of schools, electricity and roads across districts of India. Such infrastructure facilities typically have a public good character, in the sense that their utilization by one person does not reduce their availability for others. While such facilities could be provided by private agents, it is the case in India that these are usually provided by the government or state-owned agencies.

²¹ J.F. Macandrew, *Report of the Settlement Operations of the Rai Bareilly District* (Lucknow, 1872); Denzil Charles Jelf Ibbetson, *Report on the Revision of Settlement of the Panipat Tahsil and Karnal Parganah of the Karnal District, 1872–1880* (Allahabad, 1883), 96; J. Wilson, *Final Report on the Revision of Settlement of the Sirsa District in the Punjab, 1879–83* (Calcutta, 1884).

²² For a good review of these laws and their impact on state-level poverty rates, see Timothy Besley and Robin Burgess, “Land reforms, poverty reduction and growth: evidence from India,” *Quarterly Journal of Economics* 115(2), 341–388. This paper classifies all land reforms into four categories: abolition of intermediaries between the state and the cultivator (landlords would be one such intermediary), tenancy reforms to provide greater security of tenure to tenants, ceilings on land ownership and land consolidation legislation. They find that the first two types of reforms lead to greater poverty reduction, suggesting that landlord-based systems were leading to greater poverty levels. Using their database of land reforms, we find that states dominated by landlord-based systems are much more likely to focus their efforts on passing land reform legislation: such states enacted an average of 6.5 land reform measures in the period between 1957 and 1992, while non-landlord states had an average of 3.5.

Furthermore, these are constitutionally under the control of state governments rather than the federal government. These are therefore subject to political economy pressures arising from local conditions or local histories. These are also important infrastructure variables, which are likely to increase the welfare of the residents, as well as provide a good basis for future economic growth.

We obtained data at the district-level from the Indian census of 1991 (a district is an administrative unit below the state level in India). For each district, we compute the fraction of villages which are supplied with a primary school, high school, power for domestic use and paved roads. We thus have four measures of infrastructure for each district. These measures vary a lot across districts: 18 districts have primary schools in less than half of their villages; on the other hand, there are 37 districts where primary schools are present in more than 95% of villages; similarly the percentage of villages supplied with paved roads varies across districts from 10% to 100%. These differences persist despite explicit commitments by the Indian state to equalize access to infrastructure.²³

We see striking differences in public goods provision between landlord-based areas and areas with individual cultivator systems. For instance, only 77% of villages in landlord areas were provided with primary schools in 1991, compared to 91% of villages in individual-cultivator areas (Table 1, Panel A, Columns 1 and 2). The differences in other public goods are even bigger: in landlord-based areas, only 8% of villages had high schools, 31% had paved roads and 54% had electricity. In contrast, 22% of villages in the individual-cultivator areas had access to a high school, 58% had paved roads and 86% had electricity.

²³ The Census provides information on a wider range of infrastructure provision; this information is used in Abhijit Banerjee and Rohini Somanathan, “The political economy of public goods: Some evidence from India,” *Journal of Development Economics* 82, no. 2: 287–314; Abhijit Banerjee, Lakshmi Iyer and Rohini Somanathan, “History, social divisions and public goods in rural India,” *Journal of the European Economic Association* 3, no. 2-3: 639–647. Data on public goods provision is available for earlier periods as well. Banerjee and Iyer (2005) document differences across landlord and non-landlord areas for 1981. In this paper, we focus on 1991 data for two reasons. First, this emphasizes the long-lasting impact of differing historical circumstances. Second, the electoral data we use to test the specific hypothesis of political capture by elites is available on a consistent basis after 1977.

Including the village-based areas into the analysis reinforces this finding. For these areas, we construct a continuous variable, which measures how much of the district was historically not under the control of landlords (“non-landlord proportion”). We illustrate here the computation for one district. The Settlement Report for Allahabad district documents the different types of land tenures prevailing in the district as follows: out of 5679 revenue estates, 3760 are classified as *zamindari* (i.e. under landlord control), 478 as *pattidari*, 1216 as *imperfect pattidari* and 225 as *bhaiyachara* (all different types of village-based systems). Hence we calculate the non-landlord proportion to be 0.34. Districts which were completely under landlord control are assigned a non-landlord proportion of zero, while districts which were wholly under the individual cultivator system are assigned a value of one.²⁴

There is a strong positive relationship between the non-landlord proportion and the availability of public goods. In Figure 2, the y-axis shows the measure of public goods provision as the fraction of villages in the district having that public good. These are graphed against the non-landlord proportion on the x-axis. In particular, areas with intermediate levels of non-landlord control have public good levels in between those of purely landlord areas (non-landlord proportion=0) and purely individual cultivator areas (non-landlord proportion=1). Consistent with the lack of provision of schools, we see that landlord areas lag behind in educational attainment as well: they have significantly lower literacy levels in 1991, but also in earlier periods such as 1961 (Figure 3). Table 1

²⁴ Revenue estates could consist of parts of villages, or more than one village. In Allahabad district, each village had 1.4 revenue estates on average. We obtained district-level Land Settlement Reports for several districts of Uttar Pradesh, Madhya Pradesh and Punjab; these Settlement Reports were compiled by British administrators in the 1870’s and 1880’s. We computed the “non-landlord proportion” as the proportion of villages, estates or land area (whichever was reported) not under the revenue liability of landlords. For Bombay Presidency, Bengal Presidency, Orissa, Berar and districts for which we do not have district-level settlement reports: Non-landlord measure is assigned as zero or one based on historical accounts of the dominant land tenure system in the district. Sources of information included B.H. Baden-Powell, *The Land-Systems of British India* (Oxford, 1892); Rai M. N. Gupta, *Land system of Bengal* (Calcutta, 1940); Dharma Kumar, ed., *The Cambridge Economic History of India Vol. 2* (Cambridge, 1982); Babu Ram Misra, *Land Revenue Policy in the United Provinces under British Rule* (Benares, 1942); Nilmani Mukherjee, *The Ryotwari System in Madras 1792–1827* (Calcutta, 1962); Govindlal Dalsukhbhai Patel, *The Land Problem of Re-organized Bombay State* (Bombay, 1957). We obtained the non-landlord proportion for districts of Madras Presidency, as well as district-level maps for all provinces from B.H.Baden-Powell, *The Land-Systems of British India* (Oxford, 1892). These maps were matched up to modern district boundaries using maps from <http://www.mapsofindia.com>.

documents that, in 1961, landlord areas had an average literacy rate of 21%, while individual-cultivator areas had a literacy rate of 29%. We should note that early levels of literacy might be particularly important in influencing citizens' participation in the political process, and especially, in preventing elite dominance through electoral institutions.

How strong are these relationships? Given the fairly wide variation in outcomes across areas, it could happen purely by chance that non-landlord areas have higher levels of access to roads than landlord areas. We can rule out this possibility by performing a statistical test based on the following thought experiment. Suppose we were to assign paved roads to areas in a purely random fashion, what is the probability that we would observe a slope of 0.28 when these outcomes are graphed against the non-landlord proportion? It turns out that this probability is less than 5%; in fact, it is close to zero. This is the idea behind statistical tests of significance: Column (5) of Table 1 documents that, for each of the variables in Figure 2, the probability of obtaining the observed slope purely by chance is less than 5% (this is the standard threshold for tests of significance).²⁵

Another way to assess the strength of the relationship with historical land tenure is to compute how much of the variation in these outcomes is explained by the non-landlord proportion. This turns out to be 7% for primary schools, 17% for high schools, 28% for power and 21% for roads. The interpretation is that fully one-fifth of the cross-district variation observed in the provision of roads can be attributed to differences in colonial land tenure.

Are these differences really attributable to the historical land tenure system, or to other characteristics of these areas which also happen to be correlated with the land tenure system? For instance, we know that the landlord areas tend to have higher population densities. Perhaps the reason these areas show fewer villages with schools is that it is not necessary to supply schools to each village in densely populated areas. We also know that places conquered earlier are more likely to be landlord areas--do they lag behind in public goods because of a longer period of British colonial rule, rather than differences in the land tenure system?

We conduct two further analyses to establish that it is indeed the land tenure system and not these other factors which are responsible for these differences. First, we use multiple regression techniques to compute the difference between landlord and non-landlord areas after accounting for

²⁵ A rigorous treatment of statistical testing of hypotheses can be found in Jeffrey R. Wooldridge, *Introductory Econometrics: A Modern Approach* (Cincinnati, 2002), Chapter 4.

the effects of geographical variables (average rainfall levels, maximum and minimum temperatures, whether the district is on the coast), demographic characteristics (population density, percentages of Muslims, Sikhs and Christians, percentages of Scheduled Castes and Scheduled Tribes²⁶ in the population) and the number of years of British rule. These differences are reported in Column (6). We see that the differences between landlord and non-landlord areas are only slightly smaller than in Column (5), suggesting that geographic or demographic characteristics are not driving the observed differences across different systems of land tenure. While addition of these variables helps to explain more of the variation in public goods outcomes, colonial land tenure remains the single most important predictor. For instance, colonial land tenure explains 21% of the observed variation in provision of roads; adding geographic and demographic variables as well as the length of British rule improves this figure to 57% which is an improvement of 36 percentage points. This means that variation in road provision accounted for by colonial land tenure is two-thirds of the variation accounted for by all the geographic and demographic variables together.²⁷

Second, we show that the levels of public goods provision show the same non-linear relationship with historical dates of conquest as the land tenure variable. Here we exploit the changes in British land policy discussed earlier, in particular the fact that areas conquered after 1820 and before 1856 are much more likely to have non-landlord systems than areas conquered earlier or later. The solid line in Figure 4 graphs the non-landlord proportion against the date of British land revenue control (which is almost always the date of British conquest). As the historical narrative indicates, there is a sharp increase in the non-landlord proportion for areas conquered after 1820 and before 1856. The dashed line in Figure 4 shows the fraction of villages which are provided with paved roads. see that this has a very similar and highly non-linear relationship with the date of British land revenue control i.e. places conquered after 1820 and before 1856 are better provided with roads than areas conquered just before or after these dates. This supports our contention that it is indeed the land

²⁶ These are groups which have been historically disadvantaged. Scheduled Castes refers to communities which were traditionally at the bottom of the Hindu caste hierarchy, while Scheduled Tribes have been largely outside the Hindu caste system. The Constitution of India provides for several affirmative action programs for these groups.

²⁷ We get similar results for the other variables. As explained earlier, colonial land tenure alone accounts for 7% of the variation in primary schools, 17% in high schools and 28% in provision of power. Addition of geographic and demographic variables raises the total explained variation to 26%, 43% and 48% respectively.

tenure system which is responsible for these differences, rather than some other effect of a longer period of British rule, or other steady trends over time. We do not know of any other major institutional changes which followed a similar non-linear time path.

Why do areas with different colonial land tenure systems show such different development paths many years into the future, even after the original institutions have been formally dismantled? Previous work on analyzing the impact of landlord-based land tenure systems in India has focused on the discrepancy between the owner and the cultivator of the land, or the differential incentive of the colonial state to invest in the Permanent Settlement areas because they would not obtain increased revenue as a result. These explanations are obsolete, because the formal landlord systems have been dismantled, and the Indian state no longer obtains significant revenue from agriculture. However, it could be that the land distribution and hence the income distribution in the landlord areas continues to be more unequal than in the non-landlord areas. If the landlord areas have only very rich people and very poor people, the demand for public schooling may be lower, since the rich might send their children to private schools and the children of the poor might not go to school. By contrast, the non-landlord areas have a bigger population of those who are rich enough to want to send their children to school but too poor to afford private schooling.²⁸

There are two reasons why current economic inequality is probably not the driving mechanism here. First, the differences in land distribution and income inequality in the current period are quite small, in part because of the extensive land reforms undertaken after Independence. The Gini

²⁸ Stokes argues that such a discrepancy leads to lower drive and productivity in agriculture. Eric Stokes, “Dynamism and Enervation in North Indian Agriculture: the Historical Dimension,” in Eric Stokes, ed., *The Peasant and the Raj: Studies in Agrarian Society and Peasant Rebellion in Colonial India* (Cambridge, 1978). Bhaduri argues that the layers of moneylenders between the landlord and the cultivator had lower incentives to invest in productive assets, since that would lower their interest income from lending to peasants in the longer term. Amit Bhaduri, “The Evolution of Land Relations in Eastern Indian under British Rule,” *Indian Economic and Social History Review* 15, no. 1 (1976). The latter view is challenged by Tirthankar Roy, *The Economic History of India 1857–1947* (New Delhi, 2000), 91–95. On the government investment view, see Amiya K. Bagchi, “Reflections on Patterns of Regional Growth in India under British Rule,” *Bengal Past and Present* 95, no. 1 (1976): 247–89.

coefficient²⁹ for rural income inequality in 1987 was 0.264 for landlord areas and 0.285 for individual-cultivator areas i.e. the areas formerly under landlord control actually had a slightly more equal income distribution than the latter by 1987. Second, the fact that the pattern of demand for public goods is different does not explain why these areas do worse in almost every dimension of public good access. One would have expected that if the problem is that these areas put less weight on getting certain public goods, they would have thrown their energy into getting others. In particular, one would have thought that even if rich farmers had no incentives to lobby for schools, they would put a higher priority on roads, since they have more use for markets.³⁰

The hypothesis we consider in this paper is whether the relative backwardness of these areas have something to do with how the political system operates in these areas. In particular, is it the case that elected representatives in these areas do not have sufficient incentives to deliver public goods? This could be due to the reasons suggested by Engerman and Sokoloff---that the politicians in the landlord dominated areas do not face effective electoral competition and hence have no incentives to deliver public goods. Alternately it could be that the voters are less aware of their political rights in the landlord areas and therefore less able to claim what is owed to them. This is quite plausible, since we know that the landlord areas have lower literacy rates, and literacy and voter participation have been found to be positively related in many countries. We investigate these hypotheses by examining some standard measures of electoral participation and competition. All measures are computed using electoral data from state legislative elections of the 1980s.³¹

²⁹ The Gini coefficient is a widely used measure of income or asset inequality. This measure takes the value of 0 in the case of perfect equality (i.e. everybody having the same income), and 1 in the case of perfect inequality (i.e. one person in society having all the income). Higher values of the Gini coefficient represent a more unequal distribution of income or assets. The Gini coefficient can also be computed as the average difference in income for any two randomly selected individuals in the society, divided by the overall average income level. See Corrado Gini, "Measurement of Inequality and Incomes," *Economic Journal* 31 (1921): 124–126.

³⁰ For a study documenting these differences for a very wide range of public goods, see Abhijit Banerjee, Lakshmi Iyer and Rohini Somanathan, "History, social divisions and public goods in rural India," *Journal of the European Economic Association* 3, no. 2-3: 639–647.

³¹ For a detailed review of the evidence on literacy, income and turnout, see Rohini Pande, "Understanding political corruption in low income countries," KSG Faculty Research Working Paper RWP07-020 (2007).

The evidence for this political capture hypothesis is mixed. We find that landlord areas have somewhat lower voter turnout in state elections--59% as against 61% in the individual cultivator areas--which is consistent with our hypothesis (Figure 5). However, elections in landlord areas do not appear to be less competitive. In fact, by some measures, they are actually more competitive. Elections in landlord areas typically have about 20% more candidates and consequently, the vote share of the winner is smaller by 3 percentage points. Moreover the vote difference between the winner and the runner-up is about 2 percentage points lower and incumbent parties are 1% less likely to win in these areas. Figure 6 shows the graphs for these variables, and Panel B of Table 1 provides numerical comparisons.

Are these electoral variables related to other differences noted earlier, such as the difference in literacy rates? Figure 7A shows that electoral turnout is positively related to literacy rates, a result consistent with results from other countries. However, the measures of electoral competition appear to be negatively related to literacy rates. Areas with higher literacy tend to have fewer candidates contesting elections, higher vote shares for the winner and a higher probability of incumbent re-election (Figures 7B-7D).³² There are two ways to interpret this. First, it could be that these measures of electoral competition do not capture the degree of elite control over politics, which is what we set out to capture. Second, perhaps our interpretation that more candidates in an election equals more competition may be incorrect in a setting where the average number of candidates exceeds 7. Higher literacy rates may reflect greater discerning power among voters, which discourages non-viable candidates from running for election.

Two further pieces of evidence lead us to conclude that the differences we document in the operation of the political system are not the reason why landlord areas lag behind non-landlord areas. First, unlike the differences in the provision of schools, power and roads, the differences in the measures of electoral competitiveness are not very large, and some of them are not statistically

Electoral data on post-1977 elections was obtained from the website of the Election Commission of India (<http://www.eci.gov.in>). Matching of state electoral constituencies to administrative districts was based on information collected from the websites of individual State Election Commissions. Our results currently exclude the states of Karnataka and Uttarakhand, for which we were not able to match up electoral constituencies to administrative districts.

³² These relationships are fairly strong, in the sense that the coefficients on literacy rates are statistically significant at the 5% level.

significant (see notations in Column 5). This finding is reinforced when we control for the effects of geographic and demographic variables (Column 6), though voter turnout still remains significantly higher in non-landlord areas.

Second, while the differences in measures of political participation and competition are correlated with levels of public goods provision, they are not large enough to statistically account for the differences in public goods provision. As we might expect, districts which had higher voter turnout also have a higher provision of public goods. Figure 8A shows this relationship for paved roads. Less expectedly, a higher winner vote share, which typically is assumed to signify less competitive elections, also seems to be associated with better public good provision (Figure 8B). Figure 8C shows that areas with higher initial literacy also have more roads in later periods. However, we find that there continues to be a strong positive relationship between the provision of paved roads and the non-landlord proportion, after controlling for the effects of electoral turnout, vote share of the winning candidate, and literacy (Figure 8D). We find very similar results for the other public goods. Only for primary goods do we find that early literacy and electoral variables explain the whole of the landlord/non-landlord difference.³³

What can we conclude from this comparative analysis across districts of India? The most important result is that there are large differences in the development trajectories of areas which had different land tenure systems under British colonial rule. In particular, areas which were put under the control of landlords lag behind in the provision of public goods such as schools and roads compared to areas in which control rights in land were given to small cultivators. Further, these differences are

³³ The relationships shown in Figures 8A and 8C are statistically significant, even after we control for geographic variables, demographic characteristics and the length of British colonial rule. Similar relationships exist for the other measures of infrastructure (primary schools, high schools and power); for these, the relationship with the winner's vote share is also statistically significant. These results are not shown in the interests of space, but are available from the authors upon request. The y-axis in Figure 8D is the residual obtained after a regression of paved roads on electoral turnout, vote share of the winning candidate and literacy. The x-axis represents the residuals obtained from a regression of the non-landlord proportion on these same variables. The slope of the line in Figure 8D is 0.20, slightly less than the 0.25 obtained in Column (6) of Table 1. Similarly, the slope is 0.01 for primary schools, 0.06 for high schools and 0.11 for power; these compare to the earlier figures of 0.07, 0.11 and 0.21.

discernible even four decades after the end of colonial rule, and three decades after the landlord-based land tenure systems were officially abolished. We verify that these are not simply the effects of different geographic or demographic conditions. Nor can they be ascribed to other colonial institutions, since they track closely the non-linear changes in land policy over time (Figure 4). The other main contribution of this analysis is to identify the effect of a specific institution here, rather than the effect of a collection of institutions which came with British colonial rule. The fact that all the districts in our area had the same colonial power, and the same political and administrative institutions today, highlights the long-lasting effects of land tenure institutions.³⁴

We considered two possible explanations for our findings: economic inequality and political participation. The former is not very different across these two types of areas today, mainly because formerly landlord-controlled areas have put considerable efforts into enacting land reforms as a means to reduce economic inequality. Political participation and literacy levels are lower in landlord areas and this is correlated with a lower level of infrastructure provision. However, these variables cannot fully explain the public goods differences across landlord and non-landlord areas.

This result is important because it tells us that any explanation of these long-lasting effects of history has to look beyond these two obvious factors. There are a number of other political channels which we are unable to capture in our empirical analysis. For instance, it could be the case that the more literate and politically conscious population in non-landlord areas is able to elect politicians of a

³⁴ Niall Ferguson identifies several distinctive features which the British empire tended to disseminate, which set it apart from other colonial powers; his list includes English forms of land tenure, the English language, Scottish and English banking, the Common Law, Protestantism, team sports, the limited state, representative assemblies and the idea of liberty. Of this list, the English language and banking systems tend to mostly affect cities, while the other institutions in the list were not implemented differently in different parts of British India. Niall Ferguson, *Empire: The Rise and Demise of the British World Order and the Lessons for Global Power* (London, 2002), xxv. Several other papers in this issue also document the long-lasting impact of historical institutions. Daron Acemoglu, Davide Cantoni, Simon Johnson and James Robinson, “From Ancient Régime to Capitalism: The French Revolution as a Natural Experiment” find that institutional reforms introduced by Napoleon’s conquest of certain areas of Europe laid the foundation for the subsequent growth of capitalism several decades later. Nathan Nunn finds that African countries which bore the brunt of the slave trade lag behind in economic outcomes even in the twentieth century. Nathan Nunn, “Geography, History, and Institutional Change: An Examination of the Causes and Consequences Africa’s Slave Trades, 1400–2000.”

better quality. A more informed electorate might also lead to fewer candidates contesting elections, since weak candidates stand very little chance of winning. Better representatives might then deliver more public goods to these areas. Another possibility is that a history of elite control creates cynicism about the political system, leading to non-informed voting. A third possibility is that this lag in provision of public goods is a natural consequence of the policy priorities of the landlord areas, which were initially heavily focused on undoing the past such as dismantling the old land tenure institutions and ensuring equality in access to land (we document some evidence of this in footnote 22). This priority might leave fewer resources and less political capital to devote to other development policies. It is also possible that a history of elite control creates a much more polarized electorate, whose representatives are unable to work together effectively to deliver public goods.

In conclusion, our comparative analysis highlights the impact of a specific historical institution on long-term development outcomes. Two very plausible hypotheses about the intervening mechanisms do not have the empirical weight to explain our results. We have suggested a number of other potential hypotheses, which would benefit from a new round of comparative historical research. Such detailed research could also yield new hypotheses about the long-lasting effects of historical institutions.

Table 1: Colonial land tenure and differential paths of development

| Variable | Average for landlord areas (<i>zamindari</i>) | Average for Individual- cultivator areas (<i>raiyatwari</i>) | Difference (3)-(2) | Percentage difference (4)/(1) | Regression difference 1 | Regression difference 2 |
|--|--|--|-----------------------|-------------------------------------|----------------------------|----------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Panel A | | | | | | |
| <u>Fraction of villages provided with public goods 1991:</u> | | | | | | |
| Primary schools | 0.77 | 0.91 | 0.14 | 18% | 0.11* | 0.07* |
| High schools | 0.08 | 0.22 | 0.14 | 182% | 0.13* | 0.11* |
| Power for domestic use | 0.54 | 0.86 | 0.32 | 59% | 0.34* | 0.21* |
| Paved roads | 0.31 | 0.58 | 0.26 | 85% | 0.28* | 0.25* |
| Literacy 1961 | 0.21 | 0.29 | 0.08 | 36% | 0.07* | 0.05* |
| Panel B | | | | | | |
| <u>Electoral variables (1980s)</u> | | | | | | |
| Voter turnout | 0.591 | 0.613 | 0.022 | 3.7% | 0.049* | 0.050* |
| No. of candidates | 7.520 | 6.040 | -1.480 | -19.7% | -1.279 | -0.57 |
| Winner vote share | 0.492 | 0.519 | 0.027 | 5.5% | 0.028* | 0.018 ⁺ |
| Vote margin (as share of total votes) | 0.180 | 0.200 | 0.020 | 11.1% | 0.021 ⁺ | 0.014 |
| Probability of incumbent party winning | 0.456 | 0.446 | -0.010 | -2.2% | -0.031 | -0.026 |
| Number of districts | 81 | 69 | 150 | | 233 | 233 |

'Regression Difference 1' represents the coefficient on the non-landlord proportion obtained by running a linear regression of the dependent variable on the non-landlord proportion. This corresponds to the slope of the lines in Figures 2A-2D, 3A, 5 and 6A-6D.

'Regression Difference 2' represents the coefficient on the non-landlord proportion obtained by running a linear regression of the dependent variable on the non-landlord proportion, after controlling for the effects of geographic factors (rainfall, maximum and minimum temperatures, being a coastal area), demographic factors (population density, percentage of Muslims, percentage of Christians, percentage of Sikhs, percentage of population belonging to the Scheduled Castes and the Scheduled Tribes which are historically disadvantaged communities), and the total number of years of British colonial rule.

* indicates that the estimated difference is statistically significant at 5% level of significance.

+ indicates that the estimated difference is statistically significant at 10% level of significance.

Figure 1: Historical land tenure systems in India

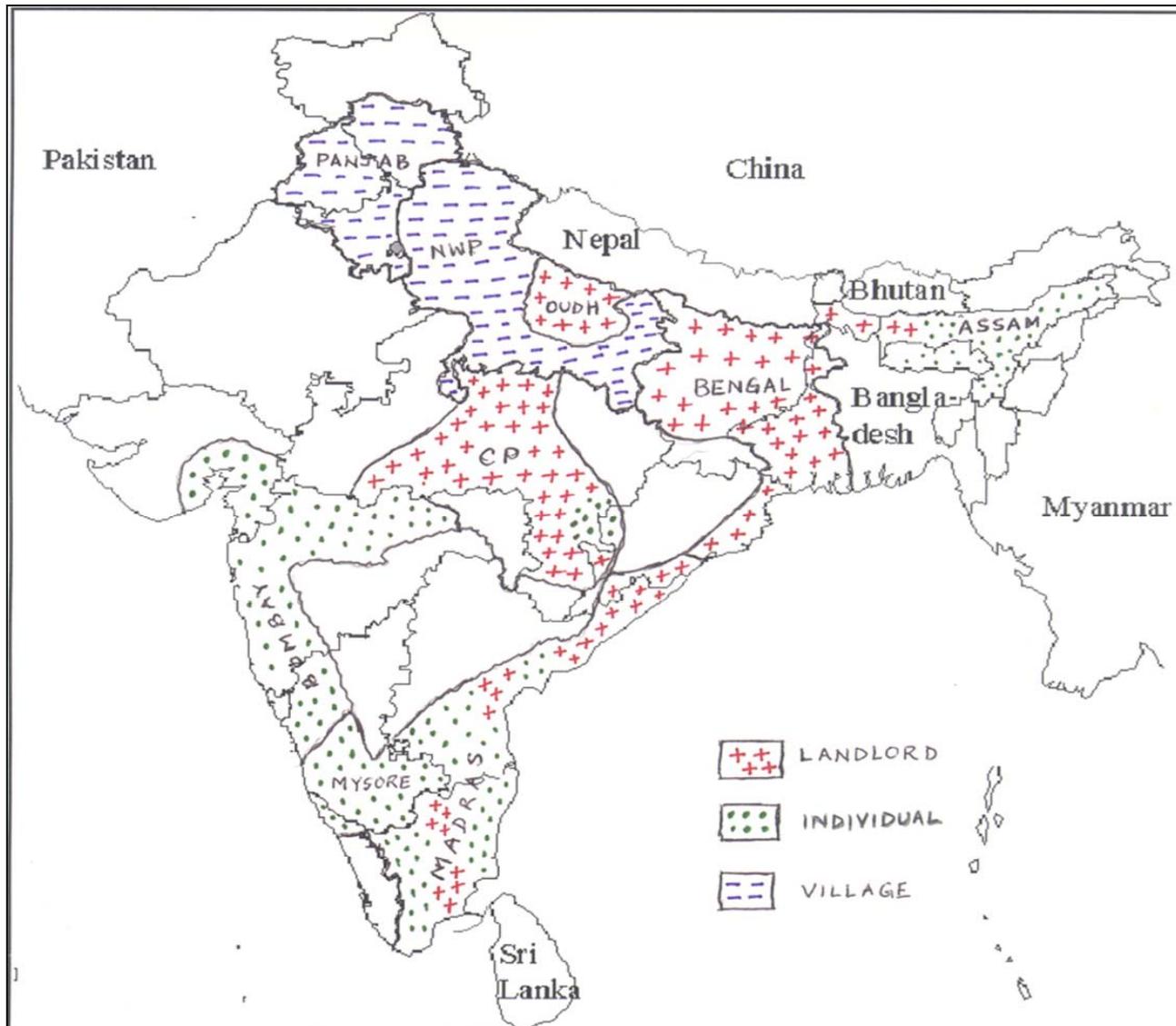


Figure 2: Land tenure and public goods

India districts, 1991

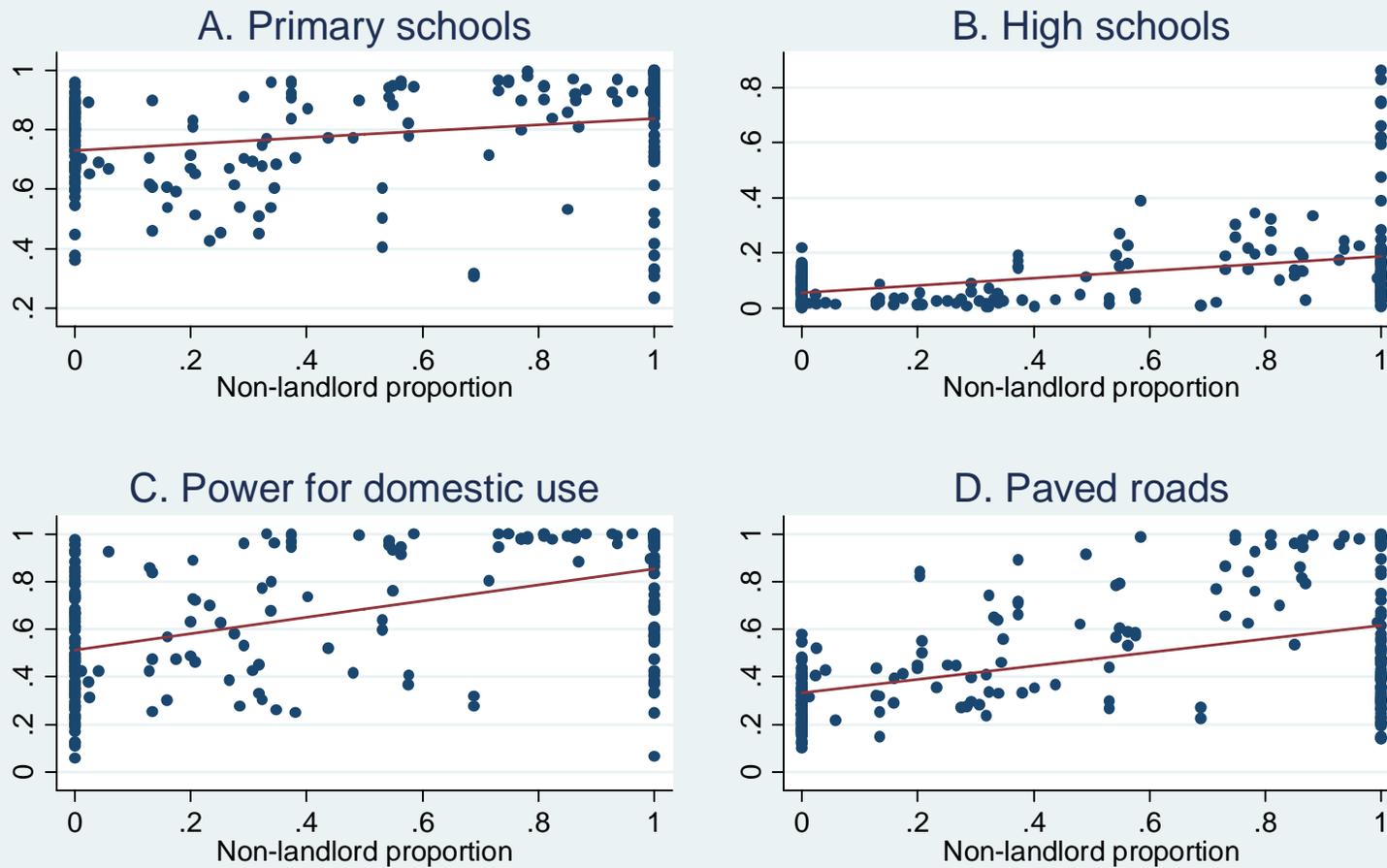
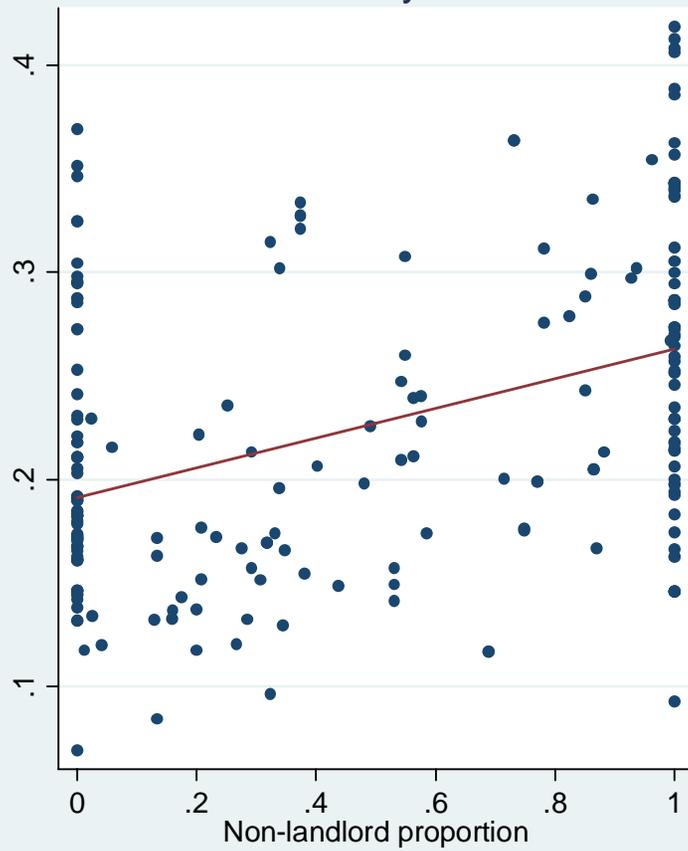


Figure 3: Land tenure and literacy
India districts

A. Literacy 1961



B. Literacy 1991

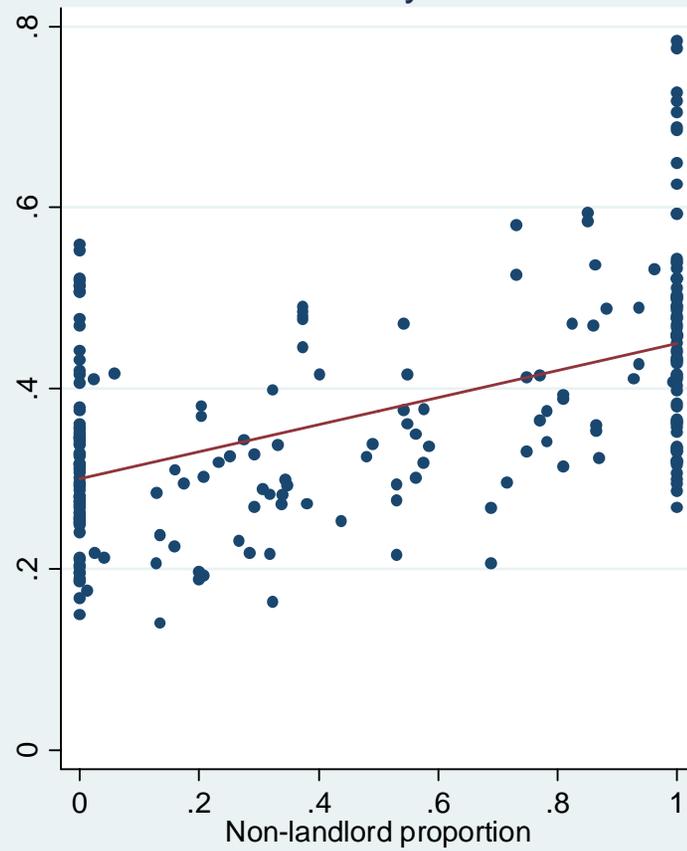


Figure 4: Land tenure, roads and date of British revenue control

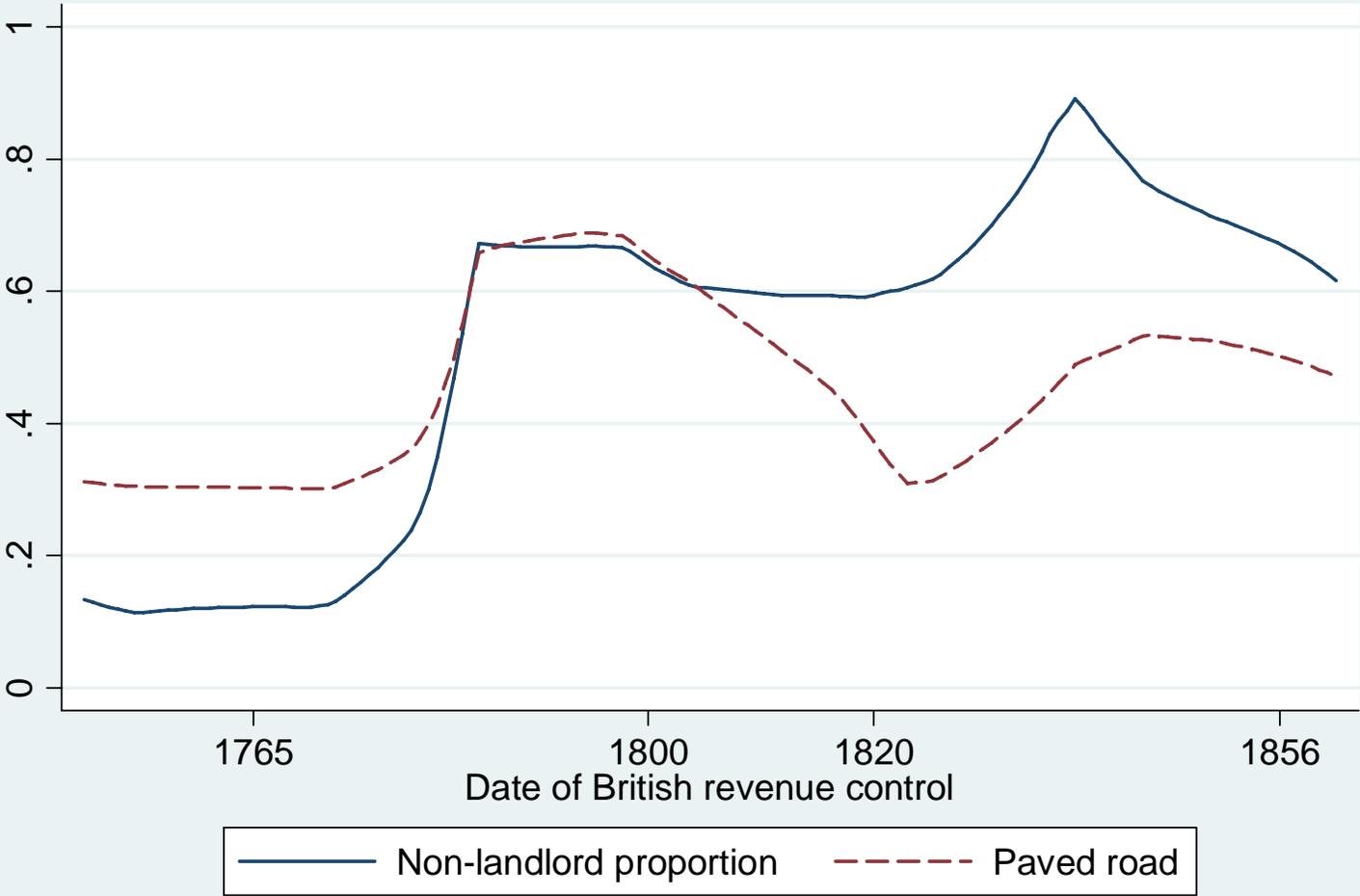


Figure 5: Land tenure and voter turnout
India districts, 1980s

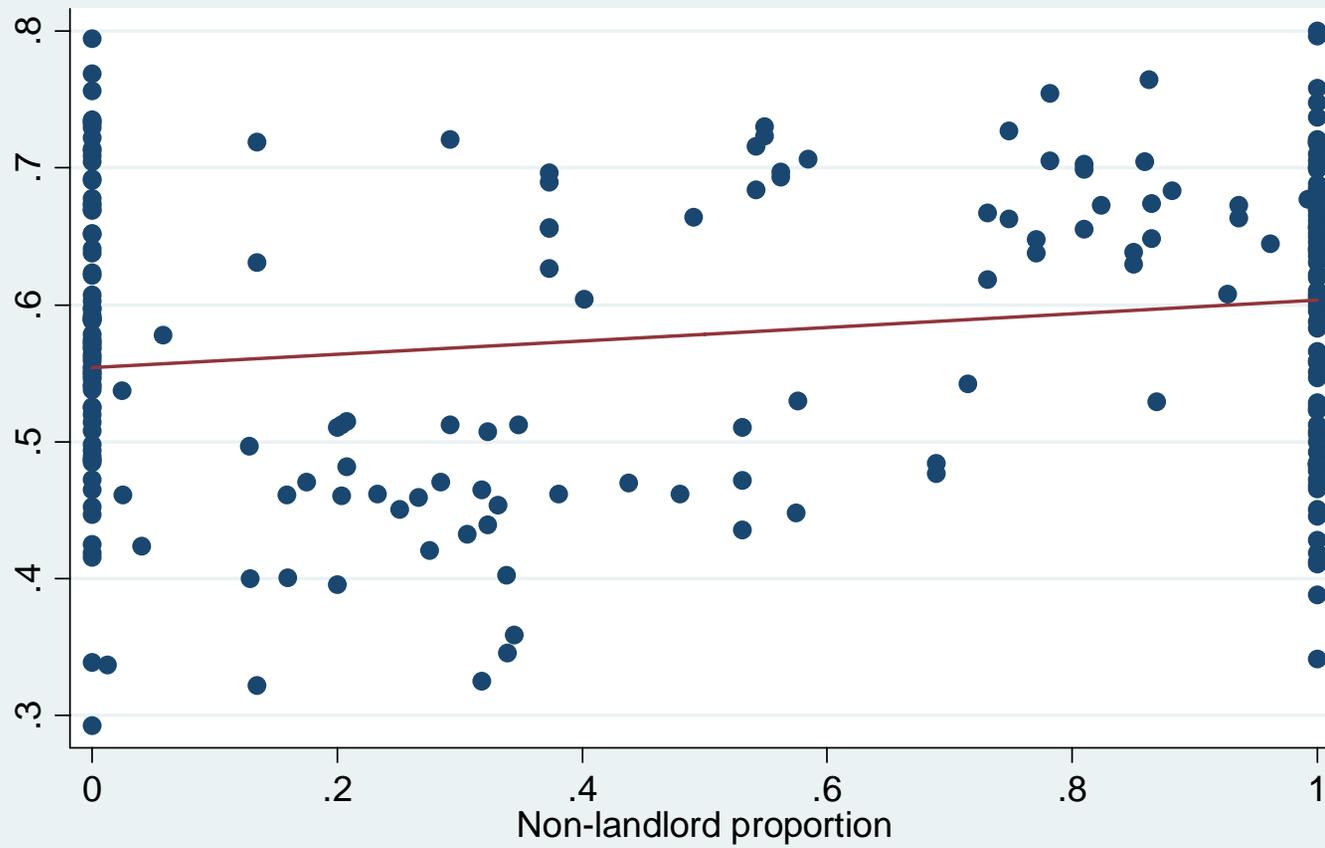


Figure 6: Land tenure and electoral competition
India districts, 1980s

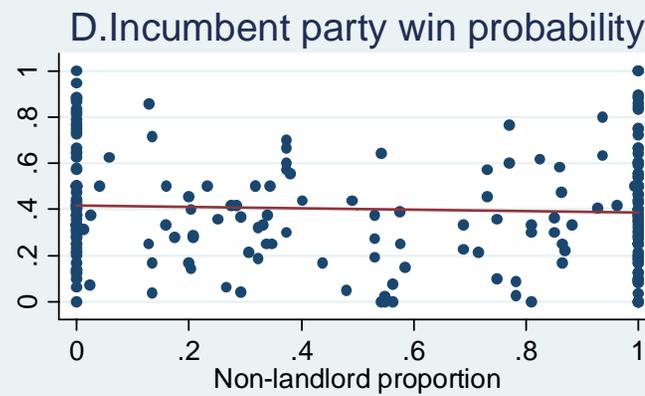
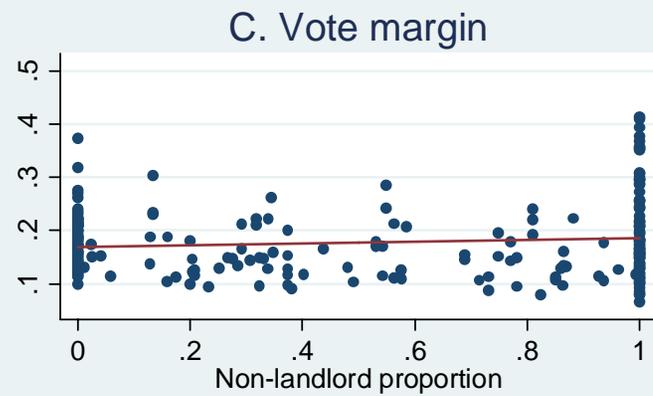
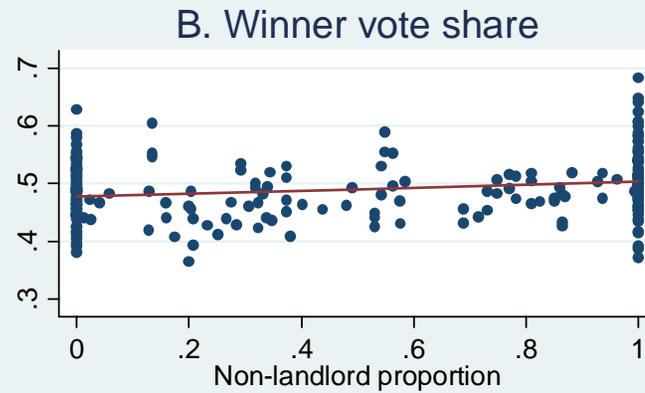
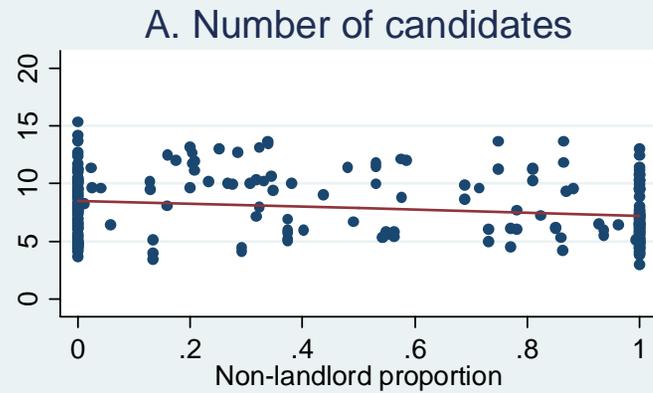
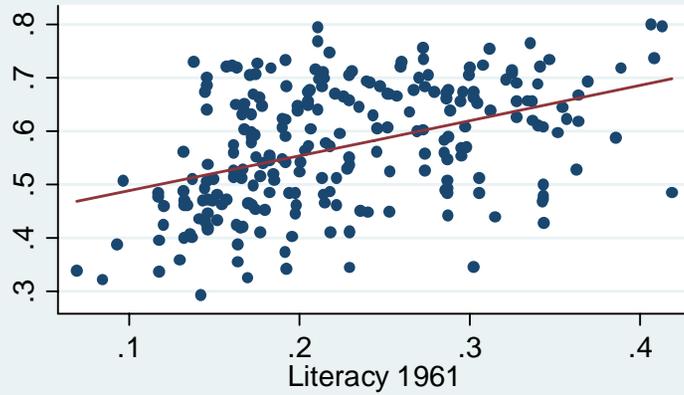
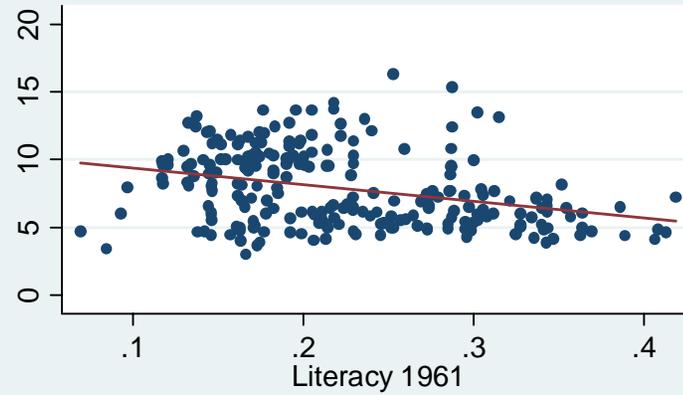


Figure 7: Literacy and electoral outcomes

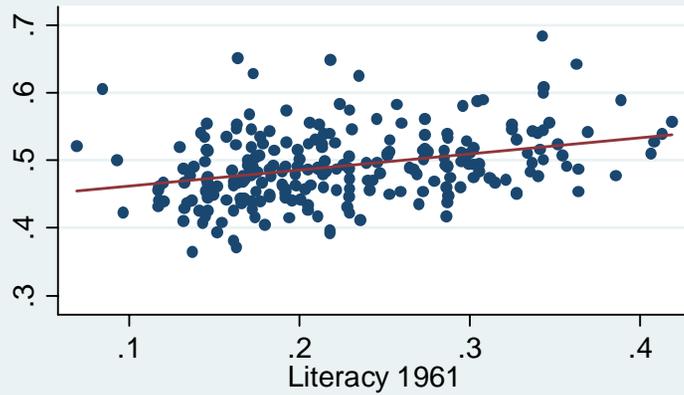
A. Voter turnout



B. # candidates



C. Winner vote share



D. Incumbent party win probability

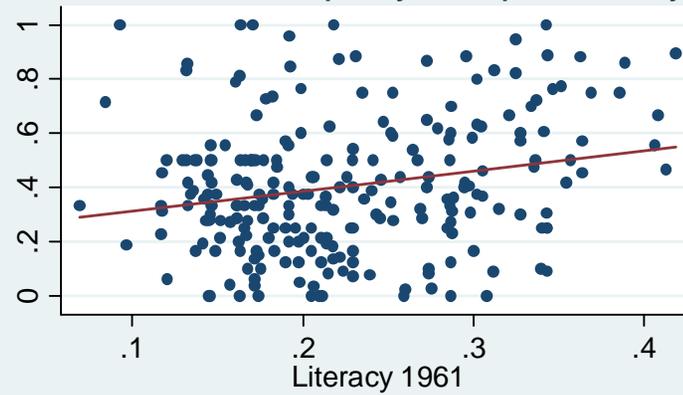
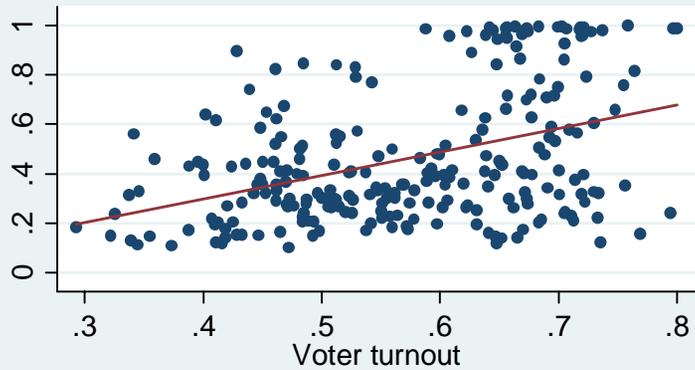


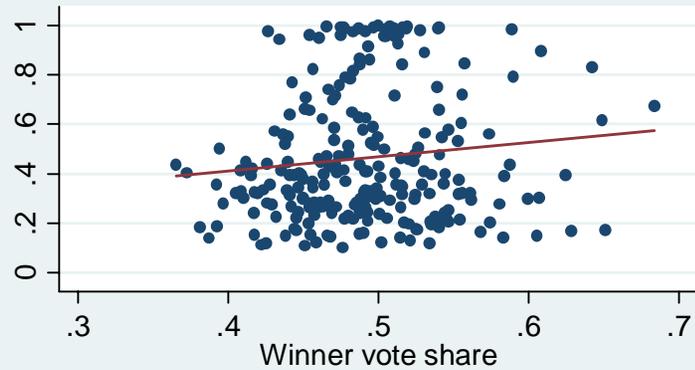
Figure 8: What explains provision of roads?

India districts, 1991

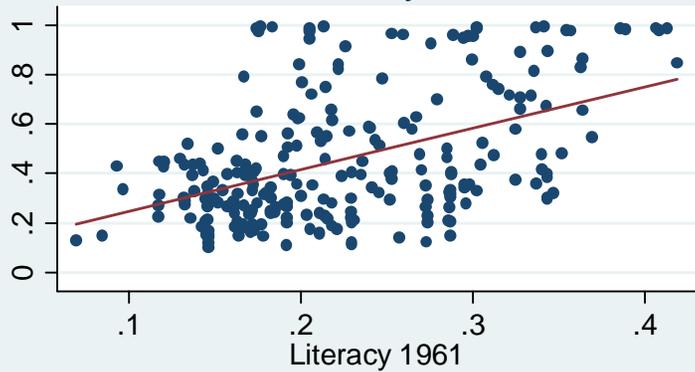
A. Electoral turnout



B. Winner vote share



C. Literacy 1961



D. Non-landlord proportion

