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RESEARCH NOTE

Indirect rule and public goods provision: evidence from colonial India

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Abstract

This paper contributes to the conflicting literature about indirect rule by delivering a new theoretical explanation for the persistent effects of indirect rule on contemporary provision of public goods. It looks at a single region of India which has areas that historically experienced both direct and indirect rule. The theoretical mechanism focuses on the principal-agent problem and the incentives that it produces for local leaders. Unlike local princes, colonizers were under stricter oversight and had to be more accountable to the top due to the obligations to extract resources. A spatial regression discontinuity design is used to compare directly and indirectly ruled territories. The empirical results show that indirect rule has predominantly long-term negative effects on the provision of selected public goods.

It is well established that differences in institutional design can impact socio-economic outcomes (North and Weingast, 1989; Acemoglu and Robinson, 2006). One of such institutions that was introduced during the colonial times was indirect rule. In contrast to the direct centralized administration of power that colonizers imposed in the colonized territories, indirect rule created a system where the colonizers delegated certain policy-making duties to native leaders. Despite being seen as a more generous system toward the natives, literature provides a set of conflicting results about the effects of indirect rule on local policy outcomes.[1] Some studies show negative effects of indirect rule on development since local princes gained a decent amount of autonomy in internal policy-making and played a role of proto-autocrats[2], which led to lower incentives for providing public goods (Mamdani, 1996). Others find that since princes in indirectly ruled territories were natives, it allowed for better integration in the local environment (Lange, 2009) and could have prevented rulers' despotic intentions, that is to exclude the local populations from civil freedoms (Fisher, 1998). Such inclusiveness and tighter connections with the natives could have improved self-governance and socio-economic prosperity (Iyer, 2010). However both sets of literature do not consider the agency problem faced by the center and local leaders in directly and indirectly ruled territories. Exploring this agency problem more deeply provides a theoretical mechanism explaining long-term effects of indirect rule.

I utilize micro-level data from India to explore the long-term effects of indirect rule in comparison with the direct regulations imposed by the colonizers. To do so, I use a single state,

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[1]See the full literature review in the Online Appendix A.

[2]Literature notices that there could have been some local princes who may have been benevolent, like in Baroda and Travancore cases, but generally the majority of princes resembled autocratic rulers (Foa, 2016; Lee, 2017; Mukherjee, 2021).

Karnataka, which is constituted by both former directly and indirectly ruled territories. Applying a spatial regression discontinuity design allows me to identify a causal effect of colonial indirect rule on the public goods provided today.

This paper contributes to the literature about colonial legacy by providing a theoretical explanation of indirect rule effects in comparison with direct administering and by emphasizing the importance of exploring micro-level data. It introduces village-level Indian data and highlights that micro-level analysis can reveal more complicated causal relationships and heterogeneous effects of well-known institutions and processes.

1. Indirect rule and incentives of local leaders

The theoretical argument is based on the models of power delegation and principal-agent relations in multi-tier political systems (Gailmard, 2014) with the colonial government as a principal. Local leaders are the agents of this colonial government, and they are making decisions at the local territories on behalf of the center. A principal-agent problem occurs when the local leaders have a trade-off between being accountable to the central government or acting in their own private interests.[3] Following the logic of principal-agent models, this paper assumes that the central government aims to constrain local agents in their ability to invest resources in private consumption in order to avoid abusive rent-seeking and local instability.

Center's ability to constrain varied between directly and indirectly ruled territories. Native princes under indirect rule experienced less pressure for large-scale extraction from the center, which gave them more freedom to behave in their private interests rather than provide public goods (such as roads) that could have been used for extractive purposes. In contrast, under direct rule local leaders operated under more oversight from the center that demanded extensive extractions. Investing in resource extraction led to investing in certain types of public goods. Ultimately, two types of local leaders and their relations with the center (the Crown) created two distinct local administrations - those with strong and those with weak incentives to provide public goods rather than invest in private consumption.

In the Indian case, princes in the indirectly ruled territories had more autonomy from the center and more legitimized authoritarian power over the local population. The delegated authority that was given to native princes was hard to remove without additional costs for the center, whereas the British local leaders and their bureaucrats could have been easily punished (see Online Appendix A for more details). The British representatives in the directly ruled territories were subject to more control from the colonial government than the local princes. Being natives helped princes to establish a proto-autocratic administration without formalized institutions of control and accountability (Handa, 1968). In turn, the local population was suppressed by their authority, decreasing the risks of potential revolt. That resulted in *weak incentives* of the princes to provide any type of public goods (Mukherjee, 2018). In contrast, the fear of violence and the risks of losing the territories, and associated resource extraction, led British representatives to have *strong incentives* to provide public goods in their local territories. Simultaneously, this approach could have benefited the extraction and territory expansion goals of the colonizer.

2. Historical background and data

India presents a unique setting to compare direct and indirect rule consequences. Colonial India was divided into separate territories – provinces – the combination of which formed British India.

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[3]A similar principal-agent problem existed not only in India. For instance, the Spanish *encomienda* system had an analogous problem of abused rent-seeking from the side of the local agents, who were given a monopoly on the labor of particular groups of indigenous people.

Provinces were ruled by British representatives - Governor-Generals, *directly* appointed by the Crown. The rest of the territory consisted of *indirectly ruled* princely states. Princely states were subordinated to the British, but ruled by the local princes, who were delegated to govern these territories.[4]

Although indirectly ruled territories existed throughout the whole country, this paper examines the single contemporary state of Karnataka that includes regions that were both under direct and indirect rule. Karnataka - one of the most developed Indian states - was formed by the States Reorganization Act in 1956.[5] The area of contemporary Karnataka is of large importance in pre-colonial and colonial history where several kingdoms fought for leadership and dominance in the Southern Indian region.[6] The contemporary state was shaped from the districts of the former princely states (indirect rule) - Mysore and Hyderabad, and the former British provinces (direct rule) - Bombay and Madras. Mysore and Hyderabad were two of the largest princely states in colonial India but had different historical and economic backgrounds.[7] Since state reorganization was based on the homogeneity of the linguistic groups, regardless of their colonial past, these institutionally heterogeneous territories were combined into one ethno-linguistically homogenous state - Karnataka. This homogeneity allows me to eliminate the persistence of ethno-linguistic cleavages as an alternative theoretical explanation of the differences between directly and indirectly ruled territories. However, despite forming one state with uniform regulatory attempts for development and growth, some variation in developmental outcomes is still observed (Crook and Manor, 1998), which makes Karnataka particularly attractive for micro-level comparison of indirect and direct rule persistent effects.

Methodologically, I use a spatial regression discontinuity design to estimate the effects of indirect rule (Dell, 2010). The former borders between directly and indirectly ruled territories in Karnataka serve as a two-dimensional running variable. I consider borders between direct and indirect rule as exogenous to the British capabilities and their willingness to annex.[8] I do not claim that the borders were random, since they clearly were the result of wars and treaties during the annexation process (Handa, 1968, 13), but that they might be counted as-if random, because of the uncertainty in the process of conflict and during conflict resolution (Sun and Tyson, 2019).

I use village-level data for 2011 that is available from the Village Directory of the electronic census library of India.[9] The pool of observations includes villages located in the districts

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[4]Figure B.1 in the Online Appendix shows the geographical division between princely states and British provinces in the middle of the 19th century.

[5]In 1956 it was called Mysore state, but was renamed into Karnataka state in 1973.

[6]The big administrative change occurred with the British invasion in the early 17th century. Before this period most of the territory was controlled by the Mughal Empire. There was a significant decrease of its power in the early 1600s, which led to the success of British colonizers. They created spheres of influence around most of the country. Some of the former Indian kingdoms, particularly Marathas in the west and Mysore in the south, did not accept British influence, which led to several wars, and British occupation of a reasonable part of contemporary Karnataka.

[7]In the end of the 19th century Mysore was annexed by the British, but in 1881 it was returned to the native princes. Hyderabad, on the other hand, was never annexed, although it was much poorer and less developed than Mysore. It was located in the middle of the continent without access to the sea (Sherman, 2007), which allowed the creation of a more closed political environment. Some of the princely states, like Mysore, were well-developed and very tempting for the colonizers, but they ultimately stayed under indirect rule. Princely states also varied in the way how they treated the Residents of the Crown. Some of them tried to cooperate to get more benefits from the Crown (Mysore), while others did not recognize them as valid political actors (Hyderabad). Differences in the execution of indirect rule and the heterogeneity of the princely states makes their comparison even more interesting.

[8]In the case of Mysore, it was also known that the annexation was driven by the necessity of the British to protect themselves against the alliance between Mysore's leader - Tipu Sultan - and Napoleon during the Napoleonic Wars (Mukherjee, 2018). Hence the decision to annex was exogenous to the socio-economic status of Mysore.

[9]Official Website of the Office of the Registrar General and Census Commissioner of India (URL Source: http://censusindia.gov.in/)

alongside the former Mysore–Bombay and Hyderabad–Bombay borders (Fig. B.2 in the Online Appendix).[10,11]

The main independent (*treatment*) variable is whether a village is located in the former princely state or the province territory. Although some of the districts and villages changed their shapes and names, the district division alongside the former borders between directly and indirectly ruled territories was preserved since 1872 (Singh and Banthia, 2004), which allows me to assign the treatment variable values using contemporary geographic information system (GIS) district-level data.

Dependent variables capture public goods provision through the availability of paved roads (*pucca roads*)[12] and medical facilities (*health centers*) (summary statistics are provided in the Tables C.1–C.2 in the Online Appendix). This choice is explained by the presence of two sets of public goods — infrastructural and social, that are usually provided by local leaders. First, these public goods respond to the needs of the local population. Roads are necessary for food distribution or for access to schools and hospitals; they also have an economic value of expanding the market. Medical facilities are important for maintaining the health of both Crown subordinates and locals, which is also valuable for long-term colonizers' present at the territory. Second, these are the goods that exhibit physical persistence. It is easier and cheaper to pave a road that existed in the village rather than construct a new road. With respect to medical facilities it is easier to build a hospital in places with previously existing medical facilities and medical personnel; and there is historical evidence that the British not only build medical facilities, but also sent medical personnel overseas.[13] Also, the Crown was likely to invest only in the provision of such public goods that could be useful for her main goal - resource extraction. All the dependent variables are binary, where 1 indicates the availability of a public good and 0 indicates its absence.

3. Results

Whether a village is located on the side of the border that was formerly under indirect rule is a deterministic and discontinuous function of known covariates: longitude and latitude. All relevant factors, except the treatment, should be continuous at the boundary (Angrist and Pischke, 2008).

There are potential counterfactuals that could explain heterogeneity across the borders. One of them is different land revenue systems. However, the entire geographical region analyzed in this study had the same scheme of land revenue during colonial times (Banerjee and Iyer, 2005),[14]

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[10]The list of districts is the following: Bagalkot, Bijapur, Chittradurga, Davangere, Dharwad, Gadag, Gulbarga, Haveri, Koppal, Raichur, Shimoga, Uttara Kannada, Yadgir.

[11]Karnataka includes parts of both Bombay and Madras British provinces, however I am interested in comparing only one of them with two former princely states — Mysore and Hyderabad. In general, Bombay and Madras were quite similar in their territory and the organization of power, centering the most of British power in South Asia. However, my choice of Bombay is mainly explained by the fact that Bombay was completely dissolved in 1960, and south Bombay did not get a primary successor in the current administrative division of India, by basically being succeeded by current parts of Karnataka. Madras, even though also divided in 1950s, unlike Bombay, still was predominantly succeeded by Tamil Nadu, one of the economically largest contemporary states, with the former Madras Presidency capital - Madras, now Chennai, staying a capital of a current Tamil Nadu state.

[12]*Pucca* - refers to solid and more permanent. In South Asia usually used as a reference to a more solid material to construct roads and houses. Pucca houses are usually made more steady utilizing concrete, metal, or stones as primary construction materials. With regard to roads it usually means that roads are made with concrete as a primary material and are more strong and permanent; they can also handle vehicles of various weights. In other words, pucca roads can refer to paved roads.

[13]The British fulfilled numerous medical and educational missions to their overseas territories (Kent, 1999).

[14]It can be observed in Figure 1 of Banerjee and Iyer (2005) paper. Additionally, Mukherjee (2021) shows that the land tenure system in Hyderabad state was possibly more extractive than that in Mysore state. It provides evidence that the type of land tenure itself can be endogenous to the system of governance (direct or indirect rule) and the type/specifics of the princely state which vaguely allows us to remove the concern about potential direct colonial land tenure institutions effect on the heterogeneity across the borders.

which allows me to eliminate it as a possible explanation. Another factor is internal migration; it is possible that people were moving to places with a better administrative system. However, historians establish that migration was uncommon in these territories during colonial times (Fisher, 1998). People were not only attached to their families and the communities where they grew up, but it was also quite hard to move without a proper transportation system. Furthermore, in colonial times people did not have enough information about the other side of the border, which could have prevented them from moving across the border for a better life. This argument allows me to eliminate migration as a potential counterfactual.

Controlling for certain factors that may impact the interaction between direct and indirect rule and public goods availability (e.g., contemporary economic indicators) cannot be possible because of post-treatment bias. Thus, for control variables I use a set of geographic factors that are not changeable over time and population characteristics such as total population, scheduled castes and scheduled tribes population. I use scheduled castes and tribes population given that the caste system existed at these territories many years before the colonizers came to India, and since it was hard to move to new territories (especially for people from the lower castes), the social hierarchy of the population persisted through the colonial times until today. Sections D and E in the Online Appendix present a set of balance tests and explain the choice of pre-treatment covariates in the estimated regression models.

Table 1 presents the results for the OLS models with twenty kilometers bandwidths around the borders (ten kilometers on each side of the border). The choice of twenty kilometers is based on the idea of a proximity to the border in search of an optimal bandwidth as required by the RDD assumptions (Lee and Lemieux, 2010). Following that in Online Appendix H, I provide a set of alternative bandwidths of 10, 15, 50, and 100 kilometers around the border. The main results show a mostly dominant negative effect of indirect rule. I do not observe a separation between different types of goods. Roads have a negative significant effect from indirect rule for the Mysore case, and health centers have a significant negative effect from indirect rule for the Hyderabad case; the rest of the coefficients are non-significant for the OLS estimation. However, the results for the alternative estimation using a non-parametric approach (Section G in Online Appendix) show significant negative effects of indirect rule on roads and health centers across both borders. The results for the alternative specification with the cubic polynomial (Section F in Online Appendix), tests of alternative bandwidths (Section H in Online Appendix) and placebo tests with the fake borders between former direct and indirect rule territories (Section I in Online Appendix) primarily[15] support the baseline findings.

I explain this predominantly negative effect of indirect rule through the extraction mechanism: colonizers were more incentivized to provide public goods since they needed such goods as roads and medical facilities to enhance the extraction. Additionally, it could have guaranteed the safety of the extraction process decreasing the risks of resistance from the locals. To emphasize this mechanism, I test the same models with respect to another type of public good - provision of educational facilities, assuming that this is something that colonizers would be less interested in providing since it would be irrelevant for their extraction purposes. The results in the Online Appendix J show that indirect rule has either no effect (for Mysore–Bombay border) or significant positive effect (for Hyderabad–Bombay border) on the availability of high schools in contemporary villages along the border. This is an opposite result to what I observe with roads and health centers, which supports the idea about colonizers being driven by their extractive goals and them providing public goods accordingly.

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[15]All coefficients for the indirect rule on the placebo borders are non-significant, except for the indirect rule placebo on +10 kilometers Hyderabad–Bombay border for the health facilities. Here the coefficient is significant and has the same direction as in the baseline results. It can serve as an evidence that placebo border has the same effect as the real border, which weakens the initial results for this dependent variable and can indicate potential endogeneity in that territory in the provision of medical facilities.

Table 1. OLS Estimation of Indirect Rule Effect on Public Goods Outcomes (20 km bandwidth)

Dependent variable:	Health Centers (1)	Paved Roads (2)	Health Centers (3)	Paved Roads (4)
Indirect Rule (Mysore)	−0.016	−0.115***		
	(0.026)	(0.035)		
Indirect Rule (Hyderabad)			−0.079***	0.008
			(0.016)	(0.063)
Constant	−8.060**	0.135	6.609	5.368
	(3.199)	(5.072)	(6.761)	(6.828)
Controls	✓	✓	✓	✓
Observations	1158	1158	940	940

Note: *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$. Robust standard errors clustered on districts are in the parentheses. Models 1 and 2 show the results for the effect of indirect rule at the Mysore–Bombay border, and models 3 and 4 present results for the effect of indirect rule at the Hyderabad–Bombay border. All models are controlled for latitude, longitude, slope, terrain ruggedness, total population, scheduled castes and scheduled tribes population.

Even if historically there were differences between direct and indirect rule, whether they persist is another matter. Institutional differences between directly and indirectly ruled territories created differences in the starting points of development after independence and the reorganization of states. Although in the next forty years the Indian Government tried to implement special economic programs to balance the development of Karnataka, these programs did not reach the expected results; even by the mid-1990s an imbalance between districts of Karnataka still existed (Ramaswamy and Patagundi, 2007, 375). Due to historical differences, the southern part of Karnataka had better institutions and better infrastructure, which required less planned maintenance and less investment in the provision of new infrastructure (such as building new roads). As a result, new governmental programs that aimed to improve the economic status of certain districts continued to contribute to the skewed development between different parts of the state (Banerjee and Iyer, 2005; Karnataka human development report, 2005). This explanation supports a mechanism of physical persistence. For local governments it was easier to maintain public goods provided during the colonial times rather than creating new ones. Cultural persistence is a potential alternative mechanism of these results, but I test and rule this out in Section K of the Online Appendix.

4. Conclusion

Directly and indirectly ruled territories had distinguished institutional systems which shaped different incentives for the local leaders. Empirical tests show the long-term negative effects of indirect rule on public goods availability at the local level. Specifically, indirectly ruled territories were worse at providing paved roads and health facilities. These results are consistent with the argument that native princes did not have enough incentives to provide public goods, possibly as a result of gaining a certain amount of autonomy which helped them build a stable autocratic regime. Being natives and the heirs of monarchic families that were present in those territories before colonization may have facilitated their legitimized authority, dampening their fear of losing power. The long-term consequences of such institutional differences on public goods provision can be explained by physical and not cultural persistence.

This paper accentuates three important points. First, it provides new evidence about indirectly ruled territories and suggests that historical differences, and more specifically colonial past, can have an important influence on contemporary economic outcomes. This cannot be neglected in discussing the topic of political and economic development at the local level. Second, the persistent effect of historical institutions has been an object of considerable interest and discussion. When it comes to the impact of indirect and direct rule, there is no scholarly consensus. Here, to bring greater clarity to this discussion, the paper addresses a principal-agent problem which

helps to understand local officials' incentives as a primary mechanism of indirect rule effects. And third, the paper examines the effect of indirect rule on public goods provision in one relatively homogeneous territory - the contemporary Indian state of Karnataka. It emphasizes the importance of micro-level studies that can provide new fine-grained evidence for processes that have been already explored in the literature.

Supplementary material. The supplementary material for this article can be found at https://doi.org/10.1017/psrm.2023.31. To obtain replication material for this article, https://doi.org/10.7910/DVN/HYNOCY

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