CATO
RESEARCH BRIEFS
IN ECONOMIC POLICY
SEPTEMBER 24, 2021 NUMBER 269

Impact of Colonial Institutions on Economic Growth and Development in India

Evidence from Night Lights Data

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Many cross-country studies find that quality of historical institutions is a major cause of disparity in present-day economic development as measured by income per capita. Due to the unavailability of data on a comprehensive measure of development such as per capita income, studies examining the role of historical institutions on development at the subnational levels use alternate proxies of economic well-being in their analysis. We examine the long-term effects of British colonial institutions on overall economic development within India using satellite night lights data.

During the period of British rule, India was divided into two types of territories: British India and native or princely states. British India comprised areas where the British administration had full autonomy in the internal and external affairs and hence was under the "direct rule" of the British. Princely states, on the other hand, were areas that were ruled by the local kings (or hereditary rulers) and therefore were under the "indirect rule" of the British. While the external affairs of the princely states were under British control, the local kings (or hereditary rulers) had full autonomy in the internal affairs of these areas. This characteristic of the native states makes these regions a good counterfactual to the areas that were directly governed by the British colonial rule. After India's independence in 1947, all these regions collectively came under a uniform governance. We exploit this division of India into areas that came directly under British rule and areas that were indirectly governed by British rule during the colonial period and investigate the effect of being directly ruled by the British on present-day economic development.

Editor, **JEFFREY MIRON**, Harvard University and Cato Institute.

Economist Lakshmi Iyer first studied the effect of this colonial institution. Her key finding is that after controlling for the selection effect, the areas under direct British rule had lower levels of investment in public goods such as health, education, canals, and roads. She also finds directly ruled areas to have higher levels of poverty, inequality, and infant mortality but similar levels of literacy. Iyer notes that "one major drawback of district-level data in India is the absence of data on per capita income, consumption, or net domestic product (these are available only at the state level)." As a result, she is unable to study the impact of this historical institution on overall development.

We extend Iyer's analysis by constructing a proxy for overall economic development at the district level in India using satellite night lights data, which have many advantages, including availability at higher levels of spatial disaggregation. These data have been widely accepted as a proxy for overall economic development at the national and subnational levels in the growth and development literature.

We find that modern districts that were historically under direct British rule had about 39 percent fewer night lights per capita in 1993 relative to modern districts that were historically under indirect British rule. Looking at the growth pattern during 1993 to 2013, a period of rapid growth following the liberalization that began in 1991, we find that areas that were under direct British rule had about a 2 percent lower annual growth rate compared to indirectly ruled areas. The negative coefficient of the initial level of night lights per capita provides evidence of convergence—that is, areas that were initially less developed were growing faster. On analyzing the rate of convergence across areas under direct and indirect rule, we find that areas under direct British rule were converging at a rate of 2 percent per year while areas that were under indirect British rule were converging at a rate of nearly 6 percent per year.

Iyer provides convincing evidence that the British selectively annexed areas that had higher agricultural productivity. Controlling for this effect of direct British rule, based on the policy of doctrine of lapse adopted by the British from 1848 to 1856 whereby the death of a ruler of a princely state without an heir would be automatically annexed, Iyer shows that direct British rule was much more damaging in terms of public investment in physical and human infrastructure than what is captured by our estimates. Using the same approach as Iyer, we find that directly ruled modern districts had about 48 percent fewer night lights per capita in 1993 relative to indirectly ruled modern districts. Our finding that directly ruled districts are doing worse when correcting for the selection effect is consistent with the story of the British annexing more productive areas, which would make the original results underestimate the adverse effect of direct British rule.

Next, we turn to the possible channels through which direct British rule may account for the relative backwardness of these districts compared to the indirectly ruled districts. Given the importance of human capital in the development process, and the debate on the primacy of institutions versus human capital, we include the level of human capital measured by literacy rate in our analysis. While the literacy rate is strongly positively related with night lights per capita, there is a slight positive correlation between direct British rule and the literacy rate. Therefore, inadequate human capital due to direct British rule cannot explain the relative backwardness of these areas.

Iyer also found evidence of underinvestment in health and physical infrastructure in directly ruled areas. When we include infant mortality rate as a measure of health, and roads per capita and railroads per capita to capture physical infrastructure, we still find a substantial negative effect of direct British rule on night lights per capita. That is, some of the adverse effects of direct British rule may be occurring through lower health and worse roads (British districts had more railroads per capita), but a substantial part remains unexplained.

In trying to understand the mechanisms through which direct British rule may have adversely affected development, Iyer finds a role for the land revenue collection systems (land tenure systems) developed by the British. She finds that within the areas under direct British rule, districts under non-landlord-based revenue collection systems had more investment in physical and human infrastructure than those under landlord-based revenue collection systems. No such difference existed in areas under indirect rule.

Studying the implications of different land tenure systems in the colonial period on night lights per capita, we find that a large part of the difference in overall development between directly and indirectly ruled districts is driven by directly ruled landlord districts doing much worse. The difference between directly and indirectly ruled districts with a non-landlord-based revenue collection system is much smaller. Also, the differential revenue collection institutions do not affect overall development across indirectly ruled districts. More importantly, these results persist even after controlling for literacy, infant mortality, and measures of physical infrastructure.

In sum, we have documented a significant difference in the levels of present-day development between districts historically under direct British rule and indirect rule. As well, direct British rule in combination with a landlord-based revenue system has a persistent negative effect on development through channels other than or in addition to health, human capital, and infrastructure.

NOTE

This research brief is based on Priyaranjan Jha and Karan Talathi, "Impact of Colonial Institutions on Economic Growth and Development in India: Evidence from Night Lights Data," CESifo Working Paper no. 9031, April 2021, https://www.cesifo.org/en/publikationen/2021/working-paper/impact-colonial-institutions-economic-growth-and-development-india.