

The Emergence of Modern Economic Growth: A Comparative and Historical Analysis

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Not on our Turf: India

- Though India was not as advanced technologically as China in the pre-modern eras it did have some strong economic sectors and had a strong mercantile class.
- Recall that after 1688 the British government had to ban the import of Indian textiles (calicoes) to protect the wool industry.
- India is another canonical example of the correlation of European colonialism and economic stagnation.

- After 1757 when the British East India Company (BEIC) annexed Bengal and Bihar, it gradually expanded into the sub-continent. The maximal expansion occurred in 1856 with the annexation of Awadh. Expansion stopped by the “Mutiny” of 1857.
- After this the British controlled directly 63% of the land area with the rest was ruled indirectly – the “Princely states.”
- In the century up to 1857 we know little about aggregate economic performance. This period witnessed the famous contraction of the Indian textile industry and de-industrialization. But other sectors also expanded, for instance exports of opium and indigo.

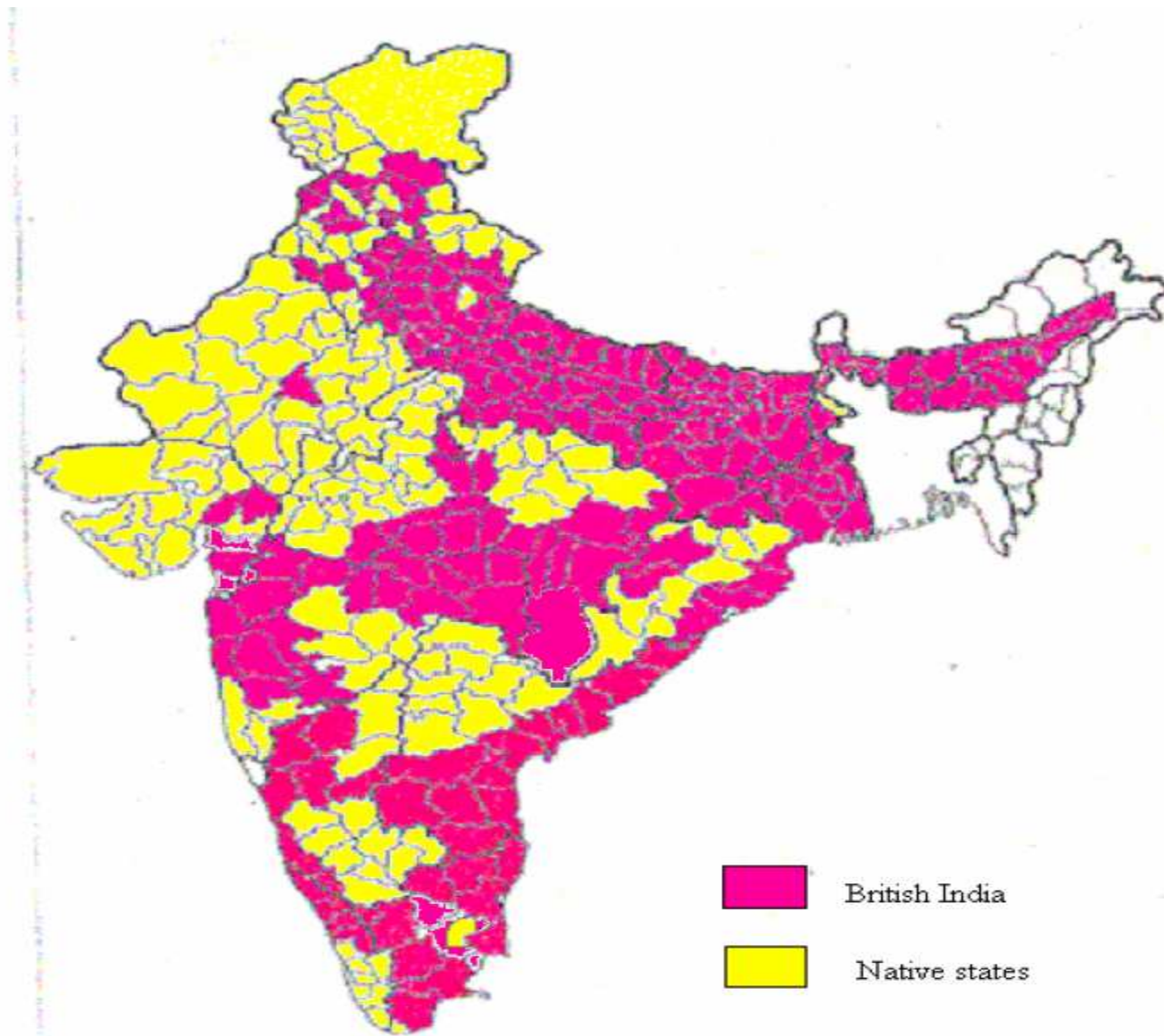


Figure 1 : British India and Native States

Predation and Institutions

- Mughals and the BEIC were predatory. Mughal land taxes were about 50% of the crop (compare with Imperial China where according to Bin Wong land taxes were only 5% of output). These were taken over and if the levels were not increased, collection and enforcement were much more efficient.
- BEIC also engaged in a fair amount of looting.
- Wholesale re-organization of the system of land tenure. In areas of 'Permanent Settlement' the BEIC adopted a system of tax farming. Paying taxes to the colonial state was made the responsibility of people called Zamindars who then collected the taxes directly from the cultivators.
- The Zamindars were effectively given property rights to the land.
- In the 'Permanent Settlement' of 1793, the tax liabilities were fixed in nominal terms in perpetuity

Institutional Variation

- Elsewhere, the colonial state collected taxes directly from the producers - ryotwari.
- Here there was no tax farming and the amount of taxes paid varied over time.
- In these areas the individual cultivators got the property rights to the land.
- There were also other systems, for instance situation where villages were collectively responsible for taxes.
- There is a lot of anecdotal evidence that these systems adapted themselves to conditions in the ground. When the BEIC faced a strong local elite, for instance, they made them Zamindars.

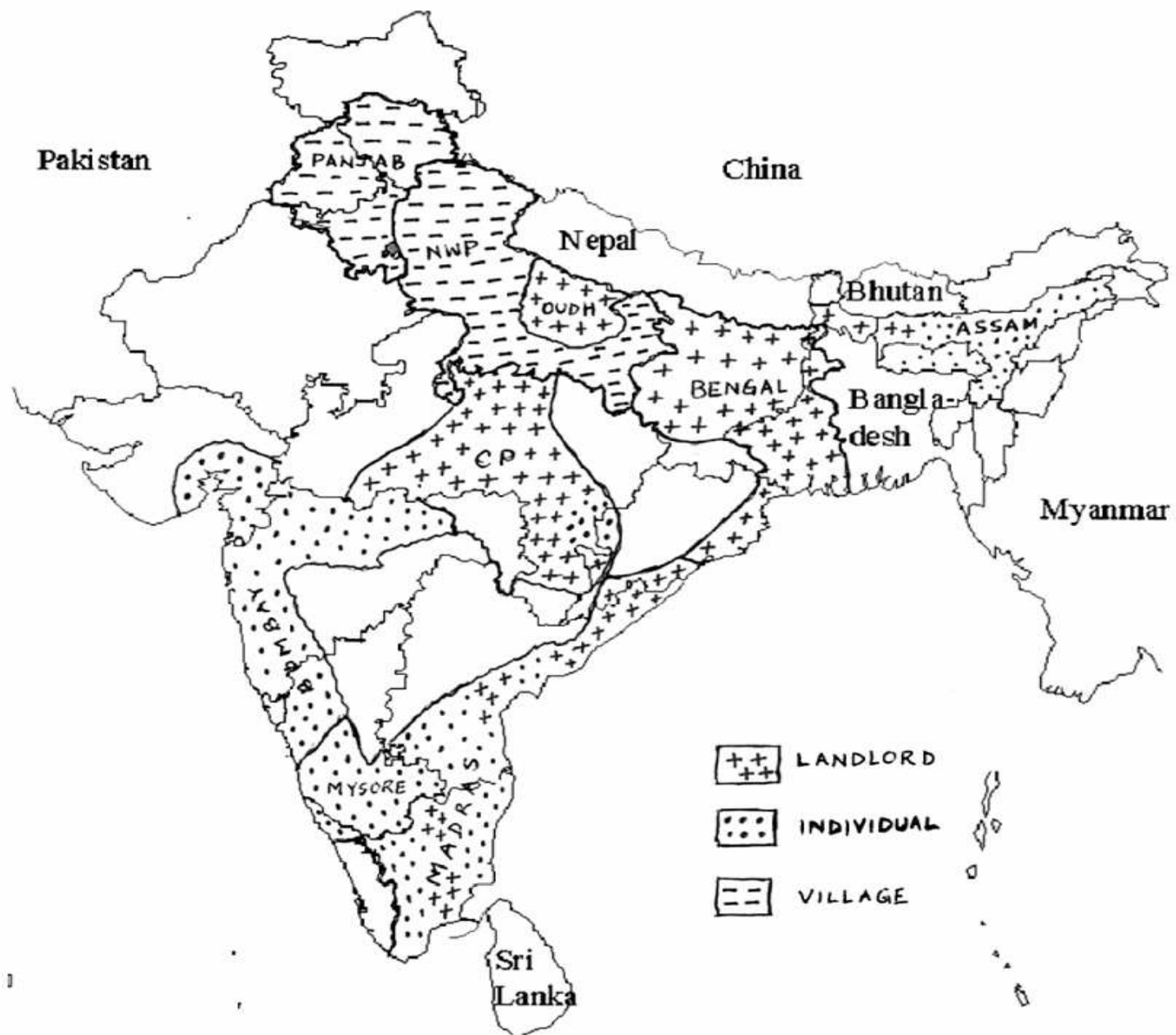


FIGURE 1. MAP OF INDIA

TABLE 1—STATE-WISE DISTRIBUTION OF LANDLORD AND NON-LANDLORD DISTRICTS

State	Mean non-landlord proportion	Classification of revenue systems				Total districts
		Landlord based	Individual based	Village bodies		
				Landlord	Non-landlord	
Andhra Pradesh	0.66	2	8	0	0	10
Bihar	0.00	12	0	0	0	12
Gujarat	1.00	0	7	0	0	7
Haryana	0.85	0	0	0	5	5
Karnataka	1.00	0	15	0	0	15
Madhya Pradesh	0.10	14	1	0	0	15
Maharashtra	0.78	4	14	0	0	18
Orissa	0.32	6	2	0	0	8
Punjab	0.87	0	0	0	6	6
Rajasthan	0.00	1	0	0	0	1
Tamil Nadu	0.75	2	9	0	0	11
Uttar Pradesh	0.42	0	0	12	35	47
West Bengal	0.00	11	0	0	0	11
Total	0.51	52	56	12	46	166

Notes: This table lists only districts that used to be part of British India. Areas where the British did not set up the land revenue system are excluded. Districts of British India currently in Pakistan, Bangladesh, or Burma are excluded. The table also excludes the states of Assam and Kerala, for which agricultural data are not available in the World Bank dataset. The table lists 1960 districts, some of which were split into two or more districts over time. We use unsplit districts in all our analyses.

- The main economic contours are as follows:
- Income per-capita increased slowly but steadily until the early 20th century and then stagnated until independence.
- Slowdown seems to be associated with deterioration (even falling) agricultural production, expanding rates of population growth.
- Very little structural change. Proportion of the population working in agriculture almost unchanged.
- Very little investment which was very low as a % of GDP.
- Real agricultural wages were constant when GDP per-capita was rising, falling afterwards – hence rising inequality in the early period.
- The colonial state was very small as a % of GDP.

TABLE 3.1
Growth Rates of Net Domestic Product (NDP),
Total and in Agriculture, 1868-9 to 1946-7

(annual trend growth rates in per cent)

	<i>Agriculture</i>	<i>NDP</i>	<i>Population</i>	<i>Per capita NDP</i>
1868-98	1.01	0.99	0.40 ^a	0.59
1882-98	1.08	1.29	0.51 ^b	0.78
1900-46	0.31	0.86	0.87 ^c	-0.01

^a Growth rate between 1872 and 1901.

^b Growth rate between 1881 and 1901.

^c Growth rate between 1901 and estimated 1946.

Notes: '1898' stands for average of three years, 1896-7, 1897-8 and 1898-9. '1900' and '1946' are similarly averages of three years.

Sources: Alan Heston, 'National Income', in *CEHI 2*, Table 4.3A, for 1868-98; S. Sivasubramonian, 'Revised Estimates of the National Income of India, 1900-01 to 1946-47', *IESHR*, 34(2), 1997.

Source: All Tables from Tirthankar Roy (2000)

The Economic History of India, 1857-1947, Oxford University Press.

TABLE 9.5
Labour Force and Occupational Structure,
the Indian Union, 1881-1951

	1881	1901	1911	1921	1931	1951
Population (millions)	213.2	238.1	251.9	251.2	278.7	356.6
Work-force (millions)	100.8	115.7	121.0	117.7	119.4	139.5
Participation rate (%)	47	49	48	47	43	39
Participation rate for men (%)	63	63	62	60	58	54
Participation rate for women (%)	31	33	34	33	27	23
Occupational structure (% of work-force):						
Primary sector ^a	74	75	76	77	76	76
Secondary and tertiary sectors	26	25	24	22	22	24
Industry and trade ^{b, c}	20	16	16	15	15	-
Industry ^b	-	-	10	9	9	10
Trade and transportation	-	-	7	7	7	7
Other services	-	-	7	6	6	7

^a Includes animal husbandry, forestry, hunting, fishing, and 'general labour'.

^b Includes mining, construction.

^c For all of British India, including Burma.

Sources: Alice Thorner, 'The Secular Trend in the Indian Economy, 1881-1951', *Economic Weekly*, 14(28-30), special number, July 1962; Daniel Thorner, 'De-industrialization' in India, 1881-1931', in Daniel and Alice Thorner, *Land and Labour in India*, Asia Publishing House, New York, 1962.

TABLE 7.6
Direction of Foreign Trade, 1850-1940

(percentages of total export or import)

	1850-1	1910-1	1940-1
Export from India to			
Britain	44.6	24.9	34.7
China	35.0	9.2	5.3
Japan	neg.	6.4	4.8
USA	neg.	6.4	13.9
Import to India from			
Britain	72.1	62.2	22.9
China	8.6	1.8	1.8
Japan	neg.	2.5	13.7
USA	neg.	2.6	17.2

Note: neg. stands for negligible.

Source: See Table 7.5.

- What can account for these patterns, particularly the very poor aggregate economic performance?
- A classic idea suggests that after the 1920s there was a sort of Malthusian crisis. But this was brought on by the institutional changes introduced into the rural areas by the BEIC.
- Long standing notion in the historiography that Zamindari areas did worse than Ryotwari. For instance the Bengal experienced the worst declines in agricultural productivity. Also Bihar, the poorest and most dysfunctional state in India, was heavily dominated by the Zamindari system.
- It was exacerbated by the reluctance of the colonial state to invest.

Very Little Public Investment

TABLE 7.7
Estimates of Investment, 1901 to 1946

	1901-13	1930-9	1940-6
<i>Per cent of gross capital formation^a</i>			
Gross capital formation	100.0	100.0	100.0
Construction	61.2	67.5	70.2
Machinery	29.8	29.2	28.5
Agriculture	2.0	3.5	4.6 ^b
Other	27.8	25.7	23.9
Inventory	9.0	3.3	1.4
Public sector	32.7	22.2	18.0
Private Sector	67.3	71.8	82.0
<i>Per cent of national income^d</i>			
Gross capital formation	6.93	9.35	7.30
Net capital formation ^c	4.00	2.84	2.12
Public investment ^e	2.23	2.08	1.32

Some Systematic Evidence

- Banerjee and Iyer investigated the long-run effects of the Zamindari system, which they call the landlord system.
- They start with a simple strategy using district level data (can't get income) regressing various outcomes on geographical controls and a dummy for whether or not there was a non-landlord system.
- Places without Zamindars do better today.

TABLE 3—DIFFERENCES IN AGRICULTURAL INVESTMENTS AND YIELDS
(Mean non-landlord proportion = 0.5051 (s.d. = 0.4274))

Dependent variable	Mean of dependent variable	Coefficient on non-landlord proportion		Coefficient on non-landlord dummy	
		OLS Full sample (1)	OLS Excluding Bengal and Bihar (2)	OLS Full sample (3)	OLS Excluding village-based districts (4)
<i>Agricultural investments</i>					
Proportion of gross cropped area irrigated	0.276	0.065* (0.034)	0.066* (0.035)	0.077*** (0.027)	0.005 (0.032)
Fertilizer use (kg/ha)	24.64	10.708*** (3.345)	10.992*** (3.406)	9.988*** (2.301)	10.695*** (3.040)
Proportion of rice area under HYV	0.298	0.079* (0.044)	0.094** (0.043)	0.016 (0.032)	0.074* (0.038)
Proportion of wheat area under HYV	0.518	0.092** (0.046)	0.119*** (0.045)	0.031 (0.036)	0.107** (0.052)
Proportion of other cereals area under HYV	0.196	0.057* (0.031)	0.084*** (0.024)	−0.035 (0.025)	0.109*** (0.041)
<i>Agricultural productivity</i>					
log (yield of 15 major crops)		0.157** (0.071)	0.152** (0.074)	0.173*** (0.053)	0.089 (0.085)
log (rice yield)		0.171** (0.081)	0.195** (0.081)	0.099 (0.062)	0.173** (0.079)
log (wheat yield)		0.229*** (0.067)	0.228*** (0.070)	0.188*** (0.054)	0.143 (0.098)
No. of districts		166	143	166	109
Year fixed effects		YES	YES	YES	YES
Geographic controls		YES	YES	YES	YES
Date of British land revenue control		YES	YES	YES	YES

Notes: Standard errors in parentheses, corrected for district-level clustering. * Significant at 10-percent level; ** significant at 5-percent level; *** significant at 1-percent level. Each cell represents the coefficient from a regression of the dependent variable on the measure of non-landlord control. Data are from 1956 to 1987. Data for area under high-yielding varieties (HYV) is after 1965. Geographic controls are altitude, latitude, mean annual rainfall, and dummies for soil type and coastal regions. The non-landlord dummy is assigned as follows: the dummy equals one for all individual-based districts and all village-based districts except those in Oudh. For landlord-based districts and the village-based districts of Oudh, the dummy is zero.

- As we already noted which system was introduced was to some extent adapted to the conditions the BEIC found.
- Imagine that there were strong local elites when the BEIC arrived who were made Zamindars. Then it is hard to imagine that we are estimating the causal effect of the tax revenue system and not the impact of something else which causes there to be strong elites (possibly bad for socio-economic outcomes).
- Banerjee and Iyer propose an IV strategy. They argue that one factor driving the creation of the revenue system was intellectual fashions in Britain.
- Therefore as an instrument they use a dummy variable which is 1 if the district was conquered between 1820 and 1856 (the effective end of British imposition of these systems).

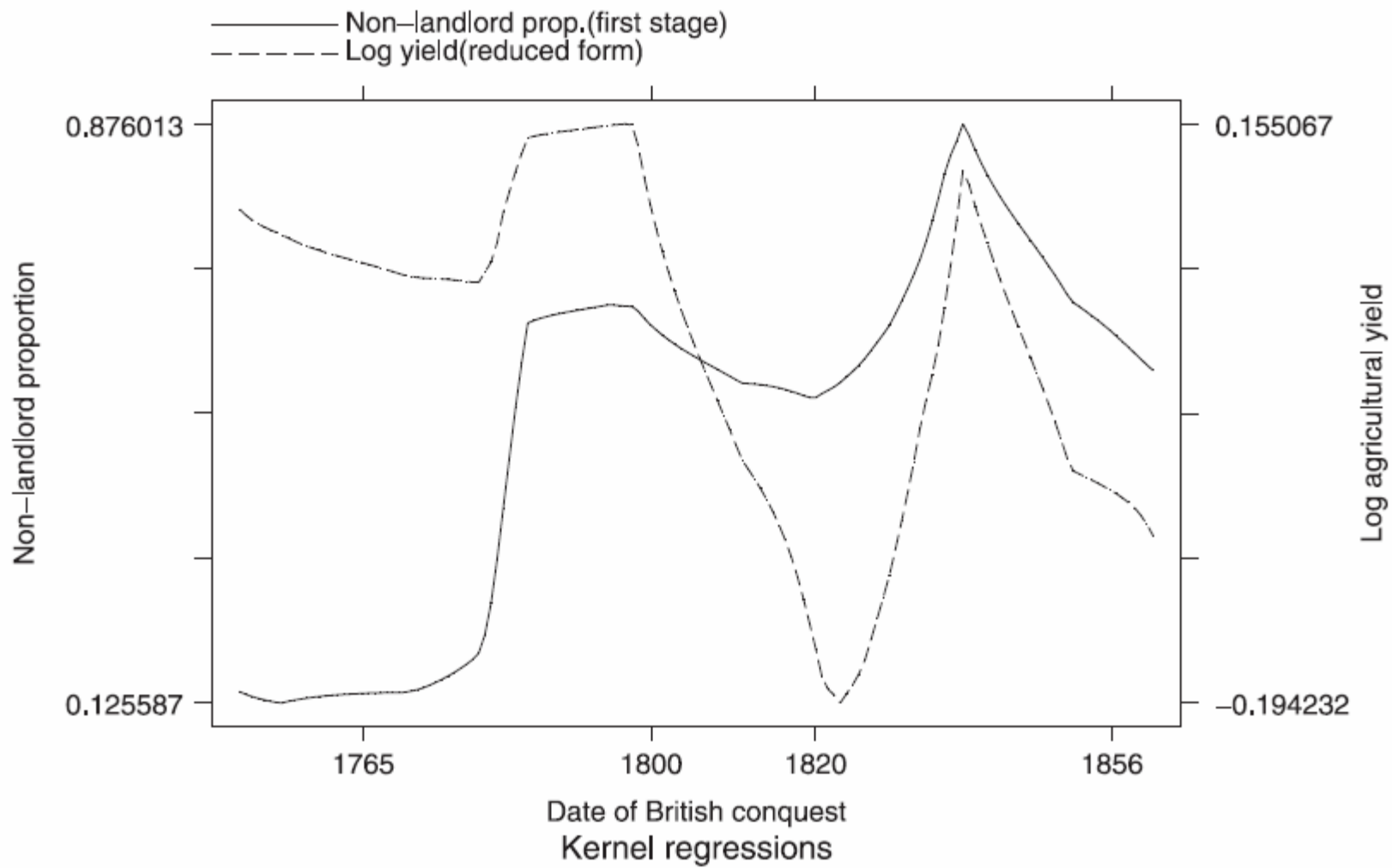


FIGURE 4. INSTRUMENTAL VARIABLES STRATEGY

TABLE 4—ROBUSTNESS OF OLS RESULTS

Panel A: Robustness checks			
Dependent variable	Coefficient on non-landlord proportion		
	OLS Neighbors only (1)	IV Full sample (2)	
<i>Agricultural investments</i>			
Proportion of gross cropped area irrigated	0.101** (0.041)	0.216 (0.137)	
Fertilizer use (kg/ha)	10.589** (4.979)	26.198** (13.244)	
Proportion of rice area under HYV	−0.015 (0.083)	0.411** (0.163)	
Proportion of wheat area under HYV	0.078** (0.034)	0.584*** (0.163)	
Proportion of other cereals area under HYV	−0.025 (0.024)	0.526*** (0.129)	
<i>Agricultural productivity</i>			
log (yield of 15 major crops)	0.145** (0.061)	0.409 (0.261)	
log (rice yield)	0.126 (0.098)	0.554* (0.285)	
log (wheat yield)	0.253*** (0.084)	0.706*** (0.214)	
No. of districts	35	166	
Year fixed effects	YES	YES	
Geographic controls	YES	YES	
Date of British land revenue control	YES	YES	
Panel B: First-stage regressions for IV			
Dependent variable: Non-landlord proportion			
Coefficient on	(1)	(2)	(3)
Instrument (=1 if date of British revenue control is between 1820 and 1856)	0.331*** (0.086)	0.430*** (0.092)	0.419*** (0.087)
<i>R</i> -squared	0.40	0.43	0.63
No. of observations	166	166	166
Geographic controls	YES	YES	YES
Date of British land revenue control	YES	YES	YES
Date of British land revenue control squared	NO	YES	NO
State fixed effects	NO	NO	YES

What is Going On?

- When did these differences emerge?
- Rather oddly, this appears to have been after independence.
- For instance, one could imagine that the colonial state invested more in non-landlord areas because since they could alter tax rates they were the residual claimant on income. But why would differences only emerge after independence?
- Moreover, Zamindars were expropriated in the 1950s.
- Why?
- Their explanation for this is that landlord areas get fewer public investments (which expanded rapidly after independence). This is due to lower collective action in landlord areas – legacy of Zamindari system is non-cooperative relations between elites and non-elites.

TABLE 6—WHEN DO THE DIFFERENCES APPEAR?

Panel A: Full sample			
Dependent variable	Coefficient on non-landlord proportion		Difference (3)
	1956–1965 (1)	After 1965 (2)	
<i>Agricultural investments</i>			
Proportion of gross cropped area irrigated	0.046 (0.033)	0.079** (0.036)	0.033** (0.016)
Fertilizer use (kg/ha)	1.026** (0.425)	15.581*** (4.763)	14.55*** (4.44)
<i>Agricultural productivity</i>			
log (yield of 15 major crops)	0.066 (0.065)	0.201*** (0.076)	0.135*** (0.033)
log (rice yield)	0.108 (0.069)	0.196** (0.089)	0.088** (0.044)
log (wheat yield)	0.146** (0.058)	0.268*** (0.079)	0.122* (0.063)
No. of districts	166	166	166
Year fixed effects	YES	YES	YES
Geographic controls	YES	YES	YES
Date of British land revenue control	YES	YES	YES

Panel B: Rice yields for Tamil Nadu districts

Sample: 10 districts of Tamil Nadu. Data are for 1870, 1901, 1911, 1917, 1919, and five-yearly intervals from 1922 to 1982.

Dependent variable	Coefficient on non-landlord proportion		Difference
	Before 1965	After 1965	
Log rice yield	-0.099 (0.172)	0.415 (0.366)	0.514** (0.217)
No. of districts	10	10	10
Year fixed effects	YES	YES	YES

Notes: Standard errors in parentheses, corrected for district-level clustering. * Significant at 10-percent level; ** significant at 5-percent level; *** significant at 1-percent level. Data are from 1956–1987. Geographic controls are altitude, latitude, mean annual rainfall, and dummies for soil type and coastal regions. Estimates in column (3) are computed from a regression of the dependent variable on the interaction of the non-landlord proportion and a dummy for year >1965, after controlling for the main effects of these variables, as well as geographic controls.

Direct versus Indirect Rule

- Iyer further investigated whether or not we observe systematic differences today between places where the British ruled directly and the princely states.
- This does not allow you to ask what were the effects of being colonized relative to not being colonized since obviously the princely states were heavily influenced by being right next to British India. Moreover, some aspects of policy (foreign, defense) were directly controlled. They also paid taxes to the British state.
- District level data. Simplest empirical strategy: regress current economic and policy outcomes on controls and a dummy for whether or not the district was ruled directly.

- Of course there is a problem here. The fact that direct rule is associated with higher agricultural productivity could simply reflect that the British took over the most attractive places economically.
- Iyer proposes a simple IV strategy.
- Based on the “doctrine of lapse.”
- Clear that during the tenure (1848-1856) of Lord Dalhousie as Governor General something different happened. During this period Dalhousie annexed some (not all) princely states where the ruler had died without an heir (he refused to recognize adoptions).
- Use the death of a ruler without an heir between 1848 and 1856 as an instrument.

- Today, princely states do better in terms of public goods. This flatly contradicts the conventional wisdom about indirect rule. In Africa, indirect rule is said to have strengthened the power of chiefs, reducing accountability, and generally worsening political and policy outcomes.
- Seems to be a hang over from the colonial period which has persisted (scattered evidence suggests public good provision was higher in princely states before 1948).