Resisting modernisation due to resentment? Evidence from British India.

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Question & Motivation

Does the religion of the final ruler in an Indian district before colonisation affect the literacy of the subjects of his religion under European colonisation? If so, why?

- Motivation
  - Significant research on the effects of political change and colonialism across the world (Acemoglu, Johnson and Robinson, 2001; Banerjee and Iyer, 2005; Olsson, 2009; Iyer, 2010; Angeles and Neanidis, 2015; Broms, 2017).
  - Expanding literature on how political change and colonialism affected *different* groups within the *same* geographic regions. (Chaudhary and Rubin, 2011; Wucherpfennig et. al, 2016)
  - (Huillery, 2011) argues that different African Powers reacted differently to colonization. (Avery, 2020) argues that this affected long term economic outcomes.

Identification and Results

- Disintegration of the Mughal (Muslim) Empire before colonisation provides the variation required in the religion of the final ruler before British colonisation.
- We use distance from the birth place of Shivaji (a rebel king who became a symbol of Hindu Rebellion (Vartak, 1999)) as an instrument for the religion of the final ruler.
- Controls:
  - Demographic: population shares of different religions, population shares of different castes, average household size
  - Geographic controls: coastal dummy, major census city, port city, altitude, latitude, and longitude.
  - Income controls: district real income from agriculture, occupation classes (industry, agriculture etc.) and urbanization.
- We find that Muslim literacy in 1911 & 1921 is 2.9 % lower (both OLS and IV) in districts where the final ruler before British conquest was Muslim. Hindu literacy is 1.1% (IV value) lower in regions where the final ruler was Hindu.
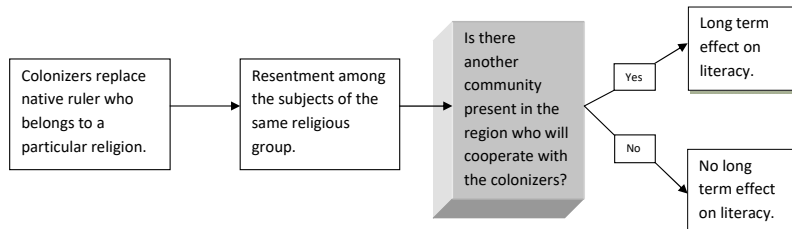
Lewis(2002): Resentment and thus reluctant to adapt to the new world

> *"The relationship between Christendom and Islam in the sciences was now reversed. Those who had been disciples now became teachers; those who had been masters became pupils, often reluctant and resentful pupils."*

- However, modern research in psychology and in particular behavioral economics has shown that though resentment can lead to retaliatory vendettas and subjects to behave in a way that is counter to immediate self-interest, however allowing for cooling off periods reduces resentment. (See Bolle, Tan, and Zizzo, 2014; Perrson, 2018)[1].

- Thus, why and how does resentment creates this long term effect on literacy?

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[1] Anderlini et al (2009) is an important exception

Our Explanation: Resentment + Inter-religious Competition


```
Colonizers replace      Resentment among      Is there              Yes    Long term
native ruler who   →    the subjects of the → another          →           effect on
belongs to a            same religious        community                    literacy.
particular religion.    group.                present in the
                                              region who will
                                              cooperate with    No     No long
                                              the colonizers?           term effect
                                                                        on literacy.
```

Results II

- There is no effect on child literacy of religion of the final ruler.
- The effect on overall literacy lasts only if there is a major presence of the rival religious community in the region.
  - The employment under the British do not follow the same pattern.
- We substantiate our findings by studying the effect of doctrine of lapse (a policy implemented between 1848-1856, which was deeply resented by Hindu community (Gupta, 2008)) on Hindu literacy.
- The Hindu literacy of districts annexed under doctrine of lapse is even lower in 1881 compared to districts which were annexed by other means.
- However, these effects do not last by 1911-1921 as these districts had a very low presence of Muslim communities.

Contribution

- **Colonisation and Human capital formation** (Acemoglu, Johnson and Robinson, 2001; Chaudhary and Rubin, 2011; Cappelli and Baton, 2017)
  - Colonisation can effect human capital formation among different religious groups living in the same geographical region in different ways.
- **Decline in political power of Islam and its long term effects on Muslim community** (Lewis, 2002; Chaney 2015; Saleh 2015)
  - Negative effect on human capital formation due to belonging to the religious group that held political power.
  - A possible explanation for low levels of human capital formation among muslims in India
- **Economics of religion** (Becker and Woessmann, 2009; Chaudhary and Rubin, 2016; Carvalho 2012)
  - Inter-religious competition can play a crucial role in the process of political change.

Background

- Mughal Empire starts declining after death of Emperor Aurangzeb in 1707.
- Regional states emerge with rulers from different religions.
- British start annexing Indian territories after winning Battle of Plassey in 1757.
- In 1921, India had large presence of both Hindu population (68%) and 26% Muslim population
- Hindus and Muslims co-inhabited in 90% of the districts in 1911
- There was large heterogeneity in the proportion of Hindus and Muslims within the same district. According to the 1911 census, range of Hindu population is [5%-100%] and range of Hindu population is [0%-91%]

The Mughal Empire in 1707

Figure 2: Mughal Empire in 1707
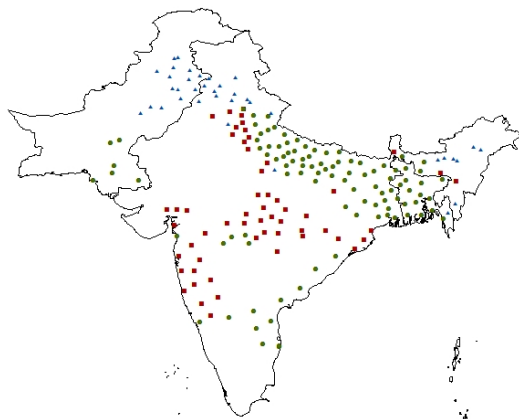
British annexation of kingdoms by religion

Figure 3: Religion of final ruler removed by British (1757-1857). Green (circles) - Muslim, Red (squares) - Hindu, Blue (triangles) - Others

Background: Anecdotal evidence of resentment among the Muslims

" *It was argued that psychologically they (Muslims) had not recovered from their loss of power when they were supplanted as rulers of the subcontinent by the British and that they lived in the past, in a nostalgic world of former glories*" (Masselos, 1996)

"*When Muslim hegemony was gone and real power lay with the British, the Muslims would not, could not, forget that they had once ruled over the land. Their reaction was bitter and truculent*" (Aziz,1967)

Background: Inter-religious Competition

- In his book *Communalism in modern India (2008)*, Bipin Chandra seeks to determine the roots and social functions of Communalism during the colonial period.
- He argues that competition for resources and political power was organised along religious lines.
- Hindus and Muslims competed for governmental jobs and educational concessions.
- This is also in line with economic theories that argue that competition for resources may be organised along ethnic lines (See Esteban, Mayoral and Ray, 2012).

State of Education prior to the Censuses

- Buchanan surveys (1807-1813) and Adam's report on State of education of Bengal and Behar (1835-38) consist of aggregated data of education in early colonial period.
- Literacy was less than 1 percent for both Hindus and Muslims.
- In 1854 British launched new education policy for India (Macaulay's minute, 1835; Wood's despatch, 1854).

Data

- Imperial Gazetteer of India (1908) lists place names in India and their socio-economic characteristics.
- Every district commentary has history subsection which is used to code the the religion of the final ruler who was deposed by British.
- Census of India (1881, 1911, and 1921): District-wise Hindu and Muslim literacy, Demography,and Occupations
- Chaudhary and Rubin (2011): average rainfall and, type of soil.
- Donaldson (2018): District level agricultural income predicted from yields and prices.
- Schwartzberg, Bajpai and Mathur (1992): Mughal boundaries and historical Hindu temple data locations.
- Jha (2013): Medieval ports

Summary statistics

- According to the 1881 census, muslim literacy was 4.2%. It was 5.6% for Hindus.
- In the 1911 census, the differences still are substantial: The Muslim literacy rate was 6.2%. It was 7.1% for Hindus.
- But, considerable heterogeneity across districts in 1911 & 1921.
- In Bengal Province, Muslims had a 5.8% literacy rate, whereas Hindus had a 11.9% literacy rate.
- In Central Provinces, Muslims had an 11.9% literacy rate, whereas Hindus had a 4.3% literacy rate.

Specification

$$\text{Muslim LIT}_{it} = \alpha_1 + \beta_1 (\text{Last Ruler is Muslim=1})_i + X_{it}^{'} \gamma_1 + \epsilon_{it} \quad (1)$$

$$\text{Hindu LIT}_{it} = \alpha_2 + \beta_2 (\text{Last Ruler is Hindu=1})_i + X_{it}^{'} \gamma_2 + \epsilon_{it} \quad (2)$$

- X_{it} are district level controls: Demographic controls include population shares of different religions, population shares of different castes, occupation classes (industry, commerce, profession, and agriculture), average household size, and urbanization. Geographic controls include coastal dummy, major census city, port city, latitude, and longitude. Income controls include district real income from agriculture.
- OLS results: Muslim literacy low where British overthrew Muslim ruler ($\beta_1 < 0$)
- Hindu literacy low where British overthrew Hindu rulers ($\beta_2 < 0$)
- Standard errors clustered at district level

OLS Results

	Muslim literacy				
	1881		1911 and 1921		
	(1)	(2)	(3)	(4)	(5)
Muslim ruler	-0.00697**	-0.0112***	-0.0187***	-0.0266***	-0.0288***
	(0.00330)	(0.00393)	(0.00671)	(0.00690)	(0.00858)
Demographic controls	NO	NO	NO	YES	YES
Geographic controls	YES	YES	NO	YES	YES
Income control	NO	NO	NO	NO	YES
Year FE	NO	NO	YES	YES	YES
N	182	182	367	365	315

Standard errors in parentheses corrected for district-level clustering. The Muslim ruler dummy is assigned as one when the religion of last ruler whose territory British annexed is Muslim. Demographic controls include Muslim population share, Christian population share, Tribal share, Sikh share, Other(Parsi,Jew) religion share, population shares of occupation classes(industry, commerce, profession and agriculture), average household size, urbanization rate. Geographic controls include coastal dummy, major census city, port city, latitude and, longitude Income controls include district real income from agriculture

* $p<0.1$, ** $p<0.05$, *** $p<0.01$

Table 1: Religion of last Ruler and Muslim literacy in Colonial India

OLS Results

|	Hindu literacy				
	1881		1911 and 1921		
	(1)	(2)	(3)	(4)	(5)
Hindu ruler	-0.0194**	-0.0143***	-0.0282***	-0.0104**	-0.0109**
	(0.00783)	(0.00474)	(0.00560)	(0.00465)	(0.00516)
Demographic controls	NO	NO	NO	YES	YES
Geographic controls	NO	YES	NO	YES	YES
Income control	NO	NO	NO	NO	YES
Year FE	NO	NO	YES	YES	YES
N	182	182	383	365	315

Standard errors in parentheses

* $p<0.1$, ** $p<0.05$, *** $p<0.01$

Table 2: Religion of last Ruler and Hindu literacy in Colonial India

Rebellion by Maratha (Hindu) Kingdom : IV

- The origin of rebellion by Hindu kings can be traced back to Shivaji who was born on 1630 in Junaar (Gordon, 1993).
- Shivaji became the symbol of hindu resistance as Maratha rulers spread to other parts of India (Vartak, 1999).
- Concentric dispersion from Junnar provides variation in the religion of the last ruler.
- Distance of district centroid from Junnar as an instrument for religion of the last ruler.

Map: Concentric diffusion of Hindu rebellion
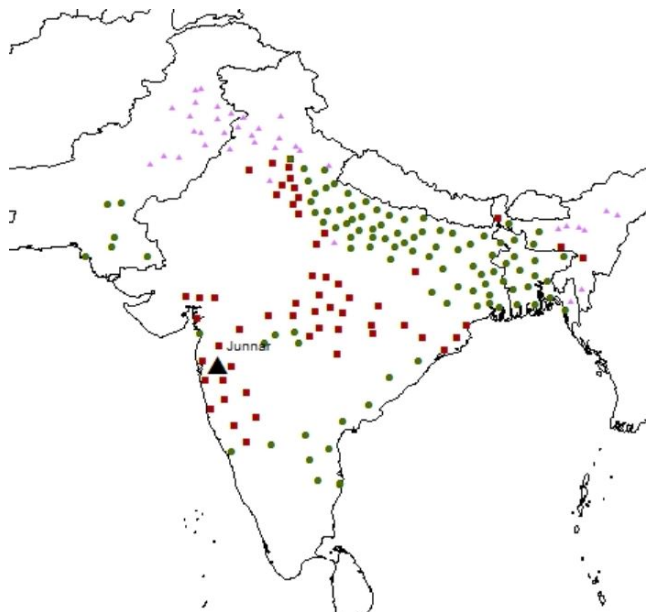
IV Results: Muslim Literacy

	1st **Stage**	2nd **Stage**
		1911 & 1921
	Last Ruler is Muslim	Muslim literacy
	(1)	(2)
Distance from Junnar *1000	0.576***	
	(0.0854)	
Muslim ruler		-0.0290**
		(0.0119)
Demographic controls	YES	YES
Geographic controls	YES	YES
Income control	YES	YES
Year FE	YES	YES
N	315	315
1^{st}stage F statistic	20.19	

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table 3: The effect of religion of last ruler on Muslim literacy: 2SLS based on distance to Junnar IV

IV Results: Hindu Literacy

	1st **Stage**	2nd **Stage**
		1911 & 1921
	Last Ruler is Hindu	Hindu literacy
	(1)	(2)
Distance from Junnar *1000	-0.785***	
	(0.133)	
Hindu ruler		-0.0679***
		(0.0170)
Demographic controls	YES	YES
Geographic controls	YES	YES
Income control	YES	YES
Year FE	YES	YES
N	381	381
1^{st}stage F statistic	40.29	

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table 4: The effect of religion of last ruler on Hindu literacy: 2SLS based on distance to Junnar IV

Possible Mechanisms

- Was Muslim literacy lower under Muslim kings and Hindu literacy lower under Hindu kings?
  - Some regions in India were under indirect rule of the British.
  - Regression for districts under indirect rule. `link`

- The religious indigenous schools (particular Islamic) did not promote secular education (Chaudhary and Rubin, 2012).
  - Chaudhary and Rubin (2012) consider years of rule as proxy for strength of religious institution (schools).
  - Regression controlling for years of Muslim rule. `link`

- Is literacy lower in the border districts due to conflict between regional states (Foa, 2016)?
  - Regression controlling border districts `link`

- Social Memory and Conflict (Anderlini et. al, 2010)
  - Conflict arising from political change can persist as social memory.
  - This can lead to low take up of education even years after political change `Muslim child literacy` `Hindu child literacy`

Our explanation: Salience of competition

- Ethnic communities compete with each other for resources (Esteban, Mayoral and Ray, 2012) and hence can affect each others literacy outcomes.
- The religious communities in India competed for resources in general and for British favours in particular.
- Now suppose Muslim are displaced from power by the British. Muslims feel resentment and British do not trust them
- If there is no competition from Hindus then as resentment among Muslims and the British distrust of them comes down then Muslims and the British decide to cooperate and Muslims take up education provided under the British government.
- However if Hindus are present then they cooperate with the British from beginning and Muslim literacy is lower.

Competition matters

- Hindu population-wise β_1 coefficient plot - Effect of Muslim Ruler on the Muslim literacy
- The religion of ruler matters only when there is a presence of rival Hindu community in the district - role of competition

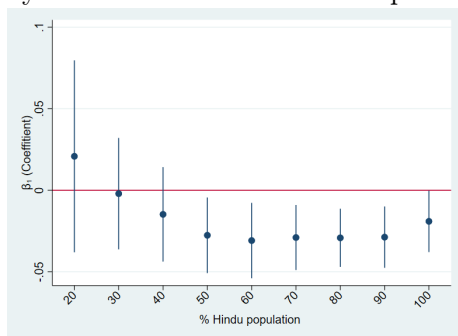Figure 5: Beta coefficient: Muslim literacy and Religion of last ruler with Hindu population cut-offs

Competition matters

- Muslim population-wise β_2 coefficient plot - Effect of Hindu Ruler on the Hindu literacy
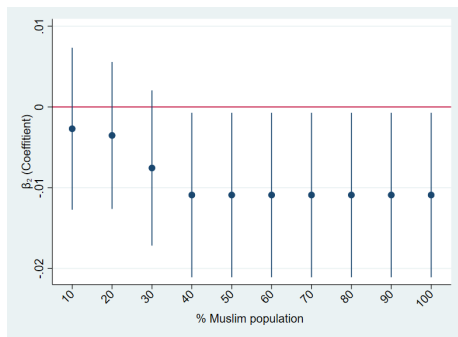
Figure 6: Beta coefficient: Hindu literacy and Religion of last ruler with Muslim population cut-offs

Appendix

Are results driven by non Hindu or Muslim ruled states

- Removing Assam and Punjab and small population share of muslims

	Muslim literacy			
	$\leq 1 Muslims$		Excluding Assam and Punjab	
	1881	1911 and 1921	1881	1911 and 1921
	(1)	(2)	(3)	(4)
Muslim ruler	-0.00954***	-0.0267***	-0.00917***	-0.0282***
	(0.00308)	(0.00784)	(0.00310)	(0.00898)
Demographic controls	NO	YES	NO	YES
Geographic controls	YES	YES	YES	YES
Income control	NO	YES	NO	YES
Year FE	NO	YES	NO	YES
N	175	310	146	265

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table 5: Muslim literacy and Religion of last ruler

back

Controlling for years of Muslim rule

| | Muslim literacy | | Hindu literacy | |
| | 1911 and 1921 | | 1911 and 1921 | |
	(1)	(2)	(3)	(4)
Muslim ruler	-0.0191**	-0.0280**		
	(0.00956)	(0.0116)		
Hindu ruler			-0.0187***	-0.0176***
			(0.00525)	(0.00622)
Demographic controls	YES	YES	YES	YES
Geographic controls	YES	YES	YES	YES
Income control	NO	YES	NO	YES
Year FE	YES	YES	YES	YES
Years of Muslim Rule	YES	YES	YES	YES
N	365	315	365	315

* p<0.1, ** p<0.05, *** p<0.01

Table 6: Muslim literacy and Hindu literacy and Religion of last ruler

back

Controlling for boundary districts

	Muslim literacy	Hindu literacy
	1911 and 1921	1911 and 1921
	(1)	(2)
Muslim ruler	-0.0318**	
	(0.0146)	
Hindu ruler		-0.0139**
		(0.00624)
Boundary	-0.0294**	-0.00737*
	(0.0116)	(0.00417)
Muslim Ruler ×Boundary	0.0287**	
	(0.0138)	
Hindu Ruler ×Boundary		0.00491
		(0.00677)
Demographic controls	YES	YES
Geographic controls	YES	YES
Income control	YES	YES
Year FE	YES	YES
N	308	308

* p<0.1, ** p<0.05, *** p<0.01

Table 7: Muslim literacy and Hindu literacy and Religion of last ruler in boundary districts

back

Exogeneity of IV

- Is distance from Junnar correlated with pre-rebelion economic conditions?
- Economic shocks led to Temple desecration (Iyer, 2018)
- If rebellion is endogenous to the economic preconditions there has to be correlation between distance from Junnar and Temple desecration, but we do not find any correlation
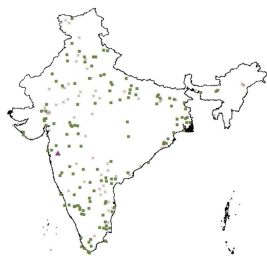
Figure 7: Temple data from Medieval India. Cross (red): Desecrated Hindu Temples , Square (green): Non desecrated hindu Temples, Triangle: Junnar

Hindu religious identity and resentment : Doctrine of Lapse

- Infamous policy of British when the kingdom without heir is annexed
- Hindu inheritance code acknowledges adopted child as legitimate heir but not British
- The places where annexation of kingdoms was done using Doctrine of Lapse has lower Hindu literacy when compared with the regions where Hindu kings were annexed by other means

Results: Doctrine of Lapse (Hindu Literacy)

	(1)	(2)	(3)
Hindu ruler=1 × Lapse=0	-0.0118**	-0.0119**	-0.0119**
	(0.00502)	(0.00500)	(0.00573)
Hindu ruler=1 × Lapse=1	-0.0250***	-0.00392	-0.00712
	(0.00574)	(0.00508)	(0.00509)
Demographic controls	NO	YES	YES
Geographic controls	YES	YES	YES
Income control	NO	NO	YES
Year FE	NO	YES	YES
N	182	365	315

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table 8: Hindu literacy, Doctrine of Lapse, and Religion of final ruler

Did community of the ruler always lagged behind?

- Princely/indirectly ruled states ruler was not removed by British
- Chaudhary and Rubin(2016) shows no effect of Muslim ruler on Muslim literacy.

TABLE 2: EFFECT OF MUSLIM RULE ON LITERACY RATES, 1911

	Total Literacy			Hindu Literacy		Muslim Literacy	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Muslim Ruler ($\beta1$)	-0.015***	-0.007	-0.001	-0.023***	-0.030***	0.010	-0.002
	[0.006]	[0.007]	[0.009]	[0.008]	[0.009]	[0.016]	[0.022]
Fraction Muslim	0.042**	0.040**	0.052**	0.103***	0.088***	-0.040	-0.065
	[0.017]	[0.018]	[0.025]	[0.019]	[0.022]	[0.032]	[0.048]
Fraction Other	0.006	0.000	-0.001	0.013	0.014*	0.037*	0.038*

Figure 8: Table from Chaudhary and Rubin(2016): Princely states and Muslim literacy

back

Muslim Literacy (Under instruction), 1881

	(1)	(2)
Muslim ruler	-0.00206	-0.00107
	(0.00130)	(0.00147)
Demographic controls	NO	NO
Geographic controls	NO	YES
Income control	NO	NO
Year FE	NO	NO
Years of Rule	NO	YES
N	182	182

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table 9: Muslim child literacy and religion of final ruler

Hindu Literacy (Under instruction), 1881

	(1)	(2)
Hindu ruler	-0.00277**	0.000200
	(0.00122)	(0.00131)
Demographic controls	NO	NO
Geographic controls	NO	YES
Income control	NO	NO
Year FE	NO	NO
Years of Rule	NO	YES
N	182	182

Standard errors in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Table 10: Hindu child literacy and religion of final ruler

Thank You