The Impacts of Local Control over Political Institutions: Evidence from State Splitting in India *

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Abstract

Regional and ethnic interest groups frequently lobby for greater autonomy within federal systems, or more homogeneous jurisdictions. There remains little solid evidence that increased autonomy leads to improved development outcomes. We use a border regression discontinuity design to exploit India's creation of three new states in 2000, states designed to give regional interest groups greater representation. The border areas of these new states were similar on all economic characteristics when the states were created, even though the states in aggregate were quite different. Examining outcomes 12 years after the formation of the new states, we find a marked increase in economic activity immediately across the border in the new states. School enrolment also increases, suggesting greater investment in human capital. Durable goods remain comparable across the two sides of the state border, suggesting that free movement of labor and capital can mitigate differences in economic opportunities across proximate geographies. The results provide new evidence that institutions matter for development, and local control of institutions can have large economic impacts. The results also suggest that geographic discontinuities might be better suited to capturing differences in inputs rather than outputs, especially when mobility across borders is unrestricted.

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1 Introduction

Regional and ethnic interest groups frequently lobby for greater autonomy within federal systems, or more homogeneous jurisdictions. While the theoretical rationale for such requests is established, there remains little solid evidence that increased autonomy leads to improved development outcomes.

States are the proximate determinant of local institutions; except where states are weakest, their boundaries delineate the boundaries of formal institutions. Changing state boundaries therefore provide a valuable window into understanding the effects of those institutions. In this paper, we exploit India's creation of three new states in 2000—Chhattisgarh, Jharkhand, and Uttarakhand—to examine how increased autonomy and political representation affect the provision of public goods and distribution of development outcomes. Ethnic and regional interest groups frequently lobby for increased autonomy and control over their governance structures, frequently resorting to violence to achieve it. In some cases the demand is for independence as a nation, and in some cases, the demand is for internal statehood in a federal system. The latter struggles have been an essential feature of Indian political history since independence in 1948. Our study is the first to provide an empirical strategy that isolates the impact of new state formation on development outcomes.

Obtaining well-identified estimates of the impacts of state creation, whether national or subnational, is difficult for two reasons. First, states are largely stable, presenting few opportunities to observe changes in a context where common data is available before and after the changes. Second, these changes are inevitably preceded by political agitation and often violence: the formation of new states is endogenous and likely arises precisely when trends in these new regions are changing, making the isolation of the impact of the new state difficult.

We present a novel method for analyzing the impact of new state creation, and apply

it to India's three new states, which were carved out of three existing states in November 2000, to give increased political representation to the residents of those states. We conduct a regression discontinuity analysis, examining socioeconomic outcomes among people living very close (20km) to the state border. Before the new states were created, the socioeconomic differences across the border are minimal; caste and tribal identities differ, but public goods, population, economic output and geography are the same on both sides of the not-yet-created border. In these geographically close and similar regions, any divergence in outcomes that emerges immediately after the creation of the new states is plausibly caused by the political decentralization. We use a combination of remote sensing and survey data. Using satellite photos of the earth at night, an increasingly used proxy of local economic output, we show that the border regions were indistinguishable from 1992-1999, and then sharply diverge, with significantly higher light output in the new states. Using censuses of households undertaken in 1991, 2001 and 2011, we show that education levels along the border increase significantly in villages in the newly created states, but not in the old states from which the new states were created. Cohort analysis confirms that these effects are driven by newly educated children rather than migration of educated adults. Finally, look at a range of assets, we show that households in the new states have not significantly increased in ownership of durable goods, a fact which is likely explained by the free movement of labor across these new internal borders. The results suggest that the decentralized states do deliver better services, which lead to greater economic activity, but that people directly across the border can still derive some benefit.

Several other papers use borders to identify the impacts of policies or institutions on economic outcomes. Dell (2010) and Dell et al. (2015) find long run effects of respectively, economic institutions of forced labor in Peru, and a centralized bureaucracy in Vietnam, on development outcomes hundreds of years later. Using a border discontinuity analysis similar to ours, Michalopoulos and Papaioannou (2014) find the surprising result that national

boundaries have no impact on local development in Africa when ethnicity is controlled for. Their outcomes are limited to night lights, which may do a poor job of detecting economic activity in the poorest and most rural places. A second reason we find an impact of states where they find none may be that African states are often weak in the border regions, which would mitigate border effects. However, we are unable to control for ethnicity with the same level of disaggregation. All these papers attempt to identify the long run impacts of borders between states; our paper is among the first to use this strategy to identify impacts of contemporary policies in regions that were similar before borders existed.

Several studies document how states or jurisdictions that are centralized around ethnicity have an improved ability to resolve disputes, obtain concessions from colonial or federal powers (Acemoglu and Robinson, 2013; Herbst, 2000), or provide more or better public goods (Acemoglu et al., 2009; Alesina et al., 1999). Several other studies find that arbitrary borders or borders that do not correspond with ethnic lines are associated with adverse outcomes, including violence (Alesina et al., 2011; Englebert et al., 2002; Michalopoulos and Papaioannou, 2011). While most of these studies are based on national borders, the demands for statehood in India have reflected a similar demand among ethnic and regional groups to have increased autonomy over their own jurisdictions.

Finally, this paper is related to the literature on how the equilibrium size of political jurisdictions is determined. Oates (1972) argues that there is a tradeoff between economies of scale in government service provision and the cost of heterogeneous populations in a single jurisdiction; more heterogeneous populations imply smaller optimal jurisdictions. Alesina et al. (2004) and Alesina and Spolaore (1997) present models and show that these empirical relationships hold in equilibrium, respectively in subnational jurisdictions and in countries. Our findings are among the first to provide solid empirical evidence of development outcomes improving when jurisdictions become smaller. Extensions to this analysis will examine the mitigating factors of political parties to better understand who gains the most from new

state formation.

2   Background: Federal System and State Creation in India

The definitive organization of India into states occurred in 1956 under the States Reorganization Commission, which delineated states primarily along linguistic lines, though religious, cultural and economic solidarity also carried weight. These are largely the states that persisted until 2000; the exceptions lie predominantly in the fractured Northeast, where several new states were created in part to appease insurgent groups fighting for independence.

In the fall of 2000, three new states (Chhattisgarh, Jharkhand, Uttarakhand) were carved out of three existing states (respectively, Madhya Pradesh, Bihar and Uttar Pradesh). The new states were driven by politics rather than linguistics; in each case, the demand for a new state was driven by ethnic or caste groups that argued that they were underrepresented in the old state structure. In Chhattisgarh, the primary argument was economic, in that Chhattisgarh is a significant rice and mineral producer and considerably better off than the remainder of its parent state, Madhya Pradesh; the cultural distinctiveness of Chhattisgarh with respect to Madhya Pradesh is disputed. In Uttarakhand and Jharkhand, however, cultural distinction played a key role. The movement for statehood for Jharkhand was predominantly driven by forest-dwelling tribal people, who make up 41% of the population of Jharkhand but only 20% of the parent state of Bihar. The third new state, Uttarakhand, is distinguished by a higher share of upper caste Hindus than the rest of Uttar Pradesh; the movement for statehood was in part driven by a desire to separate from the increasingly lower-caste dominated politics of the plains. In our sample period of 1991-2001, no state boundaries changed other than the three new states that we study; the creation of the three new states in 2000 is the largest single change to state boundaries in India since 1956. The

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combined population of the new states was 11 million; the new states represented small proportions of ancestor states Uttar Pradesh and Madhya Pradesh, Jharkhand had close to 35% of its ancestor Bihar.

State governments are one of the central players in government administration in India, and have significant powers over how government resources are allocated. The Indian constitution grants significant administrative and legislative power to state governments. States incur 57% of total expenditures, and have administrative control over police, provision of public goods, labor markets, land rights, money lending, state public services, and retail taxes. Programs are implementing at the district level under the supervision of the district collector. The state cabinet controls the placement of the district collector; there is increasing evidence that the competence of district collectors has a significant impact on local government administration and economic growth. State elections use a first-past-the-post system, where candidates compete to represent single-member legislative constituencies. The probability of members of new states' being represented by majority members of state legislatures therefore dramatically increases with the formation of the new states.

3   Data

We use a combine data from remote sensing and surveys. As a proxy of overall economic activity, we use average, cloud free measurements of luminosity provided by the National Oceanic and Atmospheric Administration Defense Meteorological Satellite Program (NOAA/DMSP). These are now widely used as proxies for economic output in areas where survey data is weak or geographically coarse (Henderson et al., 2011; Pinkovskiy, 2013). The major assets of night lights as a source of data are that they are annual, and their quality is consistent across all locations and years. To control for changes in sensitivity from one satellite to the next, we intercalibrated the time series data using years with observations

from multiple satellites, following NOAA recommendations. Luminosity is measured on a scale of 0-63; the brightest values are topcoded, and the smallest rural areas are too dark to be picked up by the satellite. We use data from 1992 to 2013.

The survey data comes from a series of censuses collected by the Government of India between 1991 and 2011. The Population Census (1991, 2001, 2011) records demographic information about households at the village-level, including scheduled caste and scheduled tribe classification, as well as village-level public goods like schools, electricity connections and roads. The Economic Census (1990, 1998, 2005) is a complete enumeration of non-farm establishments; there is no minimum firm size, and both formal and informal establishments are included. It records total employment, as well as the gender and caste/tribe classification of all firm owners. We use the Economic Census primarily for testing baseline at baseline (i.e. 1990 and 1998), as 2005 is likely too soon after new state creation for us to find significant effects.[1] Finally, we use data from a major asset census undertaken by the Indian government—the Socioeconomic and Caste Census (SECC), undertaken in 2012.[2]

None of these datasets are released with common identifiers; however they all report village, subdistrict, district and state names (in some cases in local scripts). We developed a fuzzy name matching algorithm that was optimized for Indian languages (a Levenshtein algorithm with allowances for common substitutions used in India), and manual matching and verification, we matched all these datasets to each other by name. We obtained geographic coordinates for population census locations from a mapping firm (ML Infomap) and matched them to the bounding polygons of the old and the new states. We calculated Euclidean distances to borders, as distortions from the shape of the earth are not significant

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[1]The most recent census was conducted in 2012, but data was not available at the time of writing.

[2]The predecessor of the SECC is the Below Poverty Line Census, which was undertaken from 2002-2005; the timing is not ideal for this study, as the combination of years puts these data exactly in the time period where it is unclear whether individuals have had time to benefit from new state creation or not. We therefore do not use these data in this paper.

at the short distances that we work with in this study.[3] We use data from the three new states created in 2000 (Chhattisgarh, Jharkhand and Uttarakhand), as well as the ancestor states from which the new states were carved (respectively, Madhya Pradesh, Bihar and Uttar Pradesh). That is, we do not look at borders between new states and neighboring states that were not their ancestors, as these have been political boundaries for decades.

Table 1 reports means across all new states and ancestor states, as well as regression discontinuity estimates of border effects on baseline outcome variables, i.e. placebo impacts of the state border before it was a border between states. Column 3 shows the t statistic for the mean difference in outcomes between new and old states; all of these are highly significant and substantial—confirming the fact that on average the regions that composed the three new states are very different from the regions that remained with the predecessor states. The new states have more members of Scheduled Tribes, lower GDP (proxied by luminosity), fewer electricity and lower non-farm employment growth from 1990 to 1998.

However, when we focus on the border regions, the two sides of the state border are considerably more similar. The only baseline border regression discontinuity estimates that are different from zero are the share of population classified as scheduled caste (SC) or scheduled tribe (ST). Not surprisingly, there are more STs in the new states, and fewer SCs and general caste people. Given the difference in the scheduled tribe share of the population, it is somewhat surprising that there is no variance of socioeconomic outcomes across the border, as STs are on average the poorest and most marginalized group in India. This seems to suggest that when geography, public goods, access to markets and other unobservables are held constant, STs are not that much worse off than the general population.

Figure 1 shows graphs of the conditional expectation outcomes of several baseline variables, plotted against distance to the border between new and ancestor states, again before those states were created. The points on the left side of the figures are means of village-level

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[3]These data and the matching process are described in more detail in Asher (2015).

outcomes in ancestor states, and the points in the right side of the figures are outcomes in new states. Consistent with the reports in Table 1, we observe no impact of borders on any socioeconomic outcome variables, with the exception of the population shares of schedule tribes and scheduled castes.

4   Empirical Strategy

Our empirical question is whether the formation of smaller states in a federal system leads to greater development within those states. The challenge with estimating such an effect is that the timing of new state formation is endogenous. The political momentum to create a new state may be highest when socioeconomic outcomes in that region are either particularly good or bad for non-institutional reasons.[4] For example, many studies find that violence, one outcome of political agitation and precursor of state creation, is more likely to emerge when economic outcomes are bad (Miguel et al., 2004; Dube and Vargas, 2012).

We use two approaches to identify the difference in economic outcomes caused by the creation of the new states. First, we use time series regression to compare average outcomes in the period before and after the new states are created. The estimating equation is:

$$Y_{vst} = \beta_0 + \beta_1 NEW_s + \beta_2 POST2000_t + \beta_3 NEW_s*POST2000_t + \beta_4*year_t + \beta_5*year_t^2 + \boldsymbol{\zeta}\mathbf{X}_{vs} + \boldsymbol{\eta}_{vs} + \epsilon_{vst},$$

$$(1)$$

where Y_{vs} is a village-level economic outcome in village v and state s, NEW is a dummy variable indicating the village is in a new state, $POST2000$ is a dummy variable indicating the year is after 2000 (the time of new state creation), and $\mathbf{X}_{vs}$ is a vector of village controls. We do not have state fixed effects, because they would be colinear with the treatment

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[4]Poor outcomes could motivate demand for a new state if residents think increased representation can improve government services. High outcomes could motivate demand for a new state if residents believe that their tax payments are being unfairly shared with distant groups.

variable; however we include a grid cell fixed effect, symbolized by $\boldsymbol{\eta}_{vs}$. ϵ_{vs} is an error term that is clustered at the 10km grid cell level. This specification will only be used for satellite night light data, because it is the only village-level data we have available on an annual basis.

This estimation shows how economic outcomes in new states have changed since the formation of new states, controlling for pre-trends. However, the concern that the new states were created exactly at an inflection point in their growth paths.[5]

We mitigate this concern by focusing the main part of our empirical analysis on the region very close to the new state border. The identification strategy is based on the assumption that in regions that are right on the edge of a state border, differences in outcomes on opposite sides of the boundary are caused by actions of the state, rather than a locally geographic factor. We control for linear distance to the border on each side, so gradual geographic changes (for example, increasing altitude as one moves deeper into a new state) will not drive spurious results.

Threats to the identification strategy would have to take the form of non-state obfuscating variables that also vary directly along the border. For example, if a border was delineated by a mountain range, one side of the range could have a dramatically different climate and soil quality from the other. Alternately, if a border lies on a historical political boundary, cultures could differ significantly on the two sides of the boundary, which could have economic consequences. In both of these cases, we would expect to find different outcomes along these boundaries before the formation of the new states; Table 1 and Figure 1 show that this is not the case: geographic and socioeconomic variables are constant across these border. We omit several narrow sections of borders where existing geographic or administrative features were clearly used to demarcate states; specifically, there are several areas in Uttarakhand and Chhattisgarh where a wilderness reserve shares a boundary with the border, so there are

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[5]While this is plausible for a single instance of state creation, it seems implausible that all three new states were poised for growth takeoffs at precisely the same time.

no settlements on the new state side of the border, even before the new states are created. The assumptions of our analysis clear fail here, so we omit these park areas as well as the settlements that abut them.

We use a regression discontinuity analysis to estimate the border impact (Lee and Lemieux, 2010; Imbens and Lemieux, 2008). We define the village-level running variable *distance* as the distance in kilometers to the new state border, and we make distance negative for ancestor states, so that the graph can be interpreted as a standard RD treatment graph, with the villages "treated" by new state formation on the right hand side of the graph. The point at which $distance = 0$ is where we estimate the local average treatment effect of the new state. Keeping in mind that distance is negative in the pre-existing states, the population estimator β is defined by

$$\beta = \lim_{m \to 0^+} \mathbb{E}[Y_i | distance_i = m] - \lim_{m \to 0^-} \mathbb{E}[Y_i | distance_i = m].$$

Following Imbens and Lemieux (2008), we use local linear regression, with a bandwidth of 20 km, optimally calculated according to Imbens and Kalyanaraman (2012).[6] We allow for the relationship between *distance* and the outcome variable to differ in new and old states. The specification is described by Equation 2:

$$Y_{vs} = \beta_0 + \beta_1 NEW_{vs} + \beta_2 distance1_{vs} + \beta_3 distance2_{vs} + \boldsymbol{\zeta} \mathbf{X}_{vs} + \boldsymbol{\eta}_s + \epsilon_{vs}, \qquad (2)$$

where Y_{vs} is a village-level economic outcome in village v and state s, $distance1$ is the distance from the pre-existing state to the border, $distance2$ is the distance from the new state to the border, and $\mathbf{X}_{vs}$ is a vector of village controls. NEW_{st} is a dummy variable indicating that village v is in a newly created state. As above, state fixed effects are colinear with the treatment variable; so we include a grid cell fixed effect, symbolized by $\boldsymbol{\eta}$. ϵ_{vs} is an

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[6]Results are robust to both wider and narrowing bandwidths.

error term that is clustered at the 10km grid cell level. Baseline village controls and grid cell fixed effects are not necessary for identification but improve the efficiency of the estimator. The effect of being in the geographic area defining a new state is identified by β_1[7].

5 Results

Figure 3 shows regression estimates of Equation 1, using data from 1992-2013. The sample is the full set of observations from the three predecessor states and the three new states. The figure shows that from 1992-2000, the regions that would eventually become new states were 1-2 points darker on the 64 point luminosity scale. This is about a third of a standard deviation, or 50% of the mean value across old and new states, so the difference is economically large. There is no apparent trend in the difference in the period before the new states were formed. Beginning rapidly after the formation of the new states, we see a level increase in light, and a convergence trend: the new states are growing faster than the old states; by 2008 the difference between economic activity in old and new states is no longer statistically significant, and the gap continues to close until the end of the data in 2013.

We now turn to the border analysis. Table 2 shows regression discontinuity estimates of Equation 2 on light output in 2013, controlling for light in 1992, under a range of fixed effects and regression discontinuity bandwidths. The point estimates are all in the range of 1. While the physical range of satellite luminosity values is from 0 to 63, the mean value of the dependent variable is approximately 4, so the estimates suggest that the new state side of the border has approximately 25% more economic activity, 10 years after state separation. This large positive effect is robust to changes in bandwidth, controls and fixed effects.

Figure 3 presents the graphical analog of this result, along with several placebo baseline specifications. The y axis in each graph shows the gain in light output between 1992 and

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[7]More precisely, the effect of being in a new state is identified by $\beta_1 + \beta_3 * distance$, at the point where distance equals zero, so the β_3 term drops out.

the specified year. In 1998, 1999 and 2000, the points are continuous across the boundary, suggesting that light output is the same on both sides of the border. By 2004, the new states have begun to diverge, and by 2013 the level difference in light output between new and old states is evident across the sample.[8]

Table 6 shows time series regression discontinuity estimates of the border effect. An observation in this table is a village-year. There is a dummy variable for years after the new states were created (i.e. years after 2000), which we interact with the new state indicator. This is a test for a level shift in economic activity corresponding to the period when the new states were created. We include linear and quadratic terms in year to allow for a flexible growth trend across all states. This table confirms that the timing of the growth takeoff of the border regions of the new states corresponds to the time when they were established.

Finally, in Table 4, we report estimates of Equation 2 on four additional outcome variables measured in 2011 and 2012. Columns 1 and 2 show, for 2012, the effect of new states on enrolment in or completion of, respectively, primary and secondary education, among those cohorts who were young enough to attend school after the formation of new states. Column 3 shows the impact on the literate share of the population in new states as a whole; this value is unchanged, suggesting that the effects in columns 1 and 2 cannot be driven by some kind of selective migration. Column 4 shows the impact of new state creation on durable assets of people living in the new state. The outcome variable is from the 2011 population census house listing, and describes the percentage of residents in a village who report possession of any assets from a list including mobile phones, radios, televisions or vehicles. This value is weakly lower in new states. Figure 4 presents the graphical analog of Table 4—the secondary education and durable effects are not as strong in the figure as suggested by the regression, because the figures present raw values, rather than residuals of fixed effects.

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[8]Only six graphs are shown here for brevity. The graphs for the years not shown display very similar patterns.

The discrepancy between aggregate economic activity and consumer durables is not that surprising, given that the border between states does not prevent the movement of either labor, goods or capital. If economic opportunites are indeed better in the new states, it is very easy for people living right across the border to work in the new states while retaining residence in the old. Indeed, Figure 4 shows a monotonic trend in increasing asset possession as moves closer to the new state and further from the old. Of course, this correlation cannot be interpreted causally without further assumptions.

6 Conclusion

Both political institutions and development outcomes vary substantially across Indian states. In 2001, 52% of rural villages in Rajasthan were paved, compared with 83% in neighboring Gujarat. Geography can explain only a small share of this difference: Figure 5 shows the average share of villages accessible by paved roads on either side of the Gujarat-Rajasthan border, and how that share changes with distance from the border. The effect at the border is striking: crossing the border from Rajasthan to Gujarat immediately raises the probability of a paved road by 50%. Border effects like these are common across many of the borders between India's most and least successful states.

However, we cannot conclude that these differences are caused by institutions or policies. Many of India's borders have existed for hundreds of years; they have divided princely kingdoms from each other, separated administrative jurisdictions of the British empire, and separated cultural and ethnic groups from each other. All of these factors could bias an attempt to infer the impact of contemporary institutions on development outcomes.

The creation of three new states where previous borders did not exist creates an ideal natural experiment for isolating the impact of current policies and institutions, exactly because the places on the two sides of the border have similar levels of development and similar

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trajectories before the border is put in place. Only once the border is in place do we observe divergence, suggesting that this divergence is caused by the creation of the new states. Taken together, the findings suggest that political institutions indeed matter a great deal to economic development, and greater control over those institutions is a plausible means of improving the welfare of regional ethnic groups.

Table 1

Summary Statistics

Variable	Old State	New State	t-stat on difference	RD estimate	t-stat on RD estimate
Village population (1991)	1047	555	-12.00***	-58	-0.77
Baseline Share of scheduled tribes in population (1991)	0.09	0.35	7.15***	0.02	0.95
Baseline Share of scheduled castes in population (1991)	0.21	0.12	-7.61***	0.00	0.08
Baseline Share of literate population (1991)	0.27	0.29	1.21	-0.00	-0.07
Luminosity (1992)	2.02	0.88	-5.29***	-0.13	-0.54
Luminosity (1999)	1.87	1.07	-4.35***	-0.02	-0.11
Share of population with non-farm jobs (1998)	0.05	0.05	3.79***	-0.00	-0.34
Non-farm employment growth, 1990-1998	0.58	0.47	-2.62***	0.02	0.13
Primary schools 1000 ppl (1991)	1.08	2.01	8.33***	0.28	0.74
Share villages with electricity (1991)	0.19	0.04	-13.89***	0.03	0.79

The table presents mean values for all variables used, measured before the creation of the three new states in 2000. Column 1 shows means for villages that remained in the ancestor states, while Column 2 shows means for villages that became part of the new states. Column 3 shows the t statistic for the difference of means across columns 1 and 2. Column 4 shows the regression discontinuity estimates of the effect of being in an area that eventually became a new state on the baseline variable, and column 5 is the t statistic for this last estimate.

Table 2

RD estimates of new states on GDP, proxied by luminosity (2013)

	1	2	3	4	5	6
New State	1.050	0.495	0.690	0.818	1.610	0.537
	(0.439)**	(0.267)*	(0.247)***	(0.428)*	(0.468)***	(0.258)**
Distance to border (old state)	31.813	35.835	32.367	17.011	15.508	13.987
	(12.839)**	(6.416)***	(5.999)***	(15.413)	(6.522)**	(8.272)*
Distance to border (new state)	17.134	25.790	25.849	40.683	15.038	5.608
	(14.902)	(7.698)***	(7.096)***	(18.498)**	(8.464)*	(11.607)
f101992 light	1.712	1.725	1.709	1.597	1.495	0.202
	(0.125)***	(0.057)***	(0.063)***	(0.136)***	(0.107)***	(0.075)***
Bandwidth	20 km	20 km	20 km	20 km	30 km	20 km
Grid Cell Fixed Effects	No	No	50 km	10 km	50 km	50 km
Village Controls	No	Yes	Yes	Yes	Yes	Yes
N	5153	3791	3791	3791	7139	3791
r2	0.66	0.65	0.70	0.81	0.71	0.52

$^{*}p < 0.10, ^{**}p < 0.05, ^{***}p < 0.01$

The table shows border regression discontinuity estimates of the effect of being in one of India's new states on local economic activity, as proxied by light output measured at night. The dependent variable in columns 1 through 5 is light output in 2013. Column 6 shows the effect on the change in light output between 1999 and 2013. All columns include village level controls and state pair fixed effects, so constant terms are not displayed.

Table 3

Time Series estimates of effect of new states on GDP, proxied by luminosity (1992-2013)

	Full Sample	RD	RD (f.e.)	Non-border sample
1(Year >2000) * New State	0.837	0.787	0.787	0.828
	(0.065)***	(0.226)***	(0.226)***	(0.065)***
Year	-35.813	-36.135	-36.135	-35.806
	(1.408)***	(6.739)***	(6.746)***	(1.421)***
Year^2	0.009	0.009	0.009	0.009
	(0.000)***	(0.002)***	(0.002)***	(0.000)***
New State	-0.337	-0.025	-0.219	1.523
	(0.127)***	(0.294)	(0.321)	(0.681)**
1(Year >2000)	-0.646	-0.489	-0.489	-0.647
	(0.027)***	(0.151)***	(0.151)***	(0.027)***
Border Distance (old)		18.340	15.232	-0.257
		(7.153)**	(7.895)*	(0.191)
Border Distance (new)		30.453	39.588	-0.334
		(13.667)**	(13.531)***	(1.619)
Bandwidth	Full	<20 km	<20 km	>20 km
Grid Cell Fixed Effects	None	None	20 km	20 km
N	3140326	69174	69174	3071152
r2	0.06	0.31	0.43	0.30

$^*p < 0.10,^{**}p < 0.05,^{***}p < 0.01$

Table 4

RD effect of new states on assets and education

	Primary Ed	Secondary Ed	Adult Literacy	Durable Assets
New State	0.077	0.043	0.003	-1.978
	(0.015)***	(0.008)***	(0.007)	(1.044)*
Distance to border (old state)	-0.358	-0.372	0.295	-9.103
	(0.383)	(0.210)*	(0.184)	(25.966)
Distance to border (new state)	0.205	-0.154	0.097	39.627
	(0.391)	(0.213)	(0.161)	(26.447)
Bandwidth	20 km	20 km	20 km	20 km
Grid Cell Fixed Effects	50 km	50 km	50 km	50 km
N	3264	3269	3270	3071
r2	0.26	0.38	0.52	0.37

$^*p < 0.10,^{**}p < 0.05,^{***}p < 0.01$

The table shows border regression discontinuity estimates of the effect of being in one of India's new states on education and durable assets. Columns 1 and 2 capture, respectively, impacts on primary and secondary enrolment in 2012. Column 3 looks at adult literacy measured in 2011, and column 4 shows the impact on the percentage of households reporting any durable assets in 2012. All columns include village level controls and state pair fixed effects, so constant terms are not displayed.

Figure 1
Balance Test: Border Effects Before New States
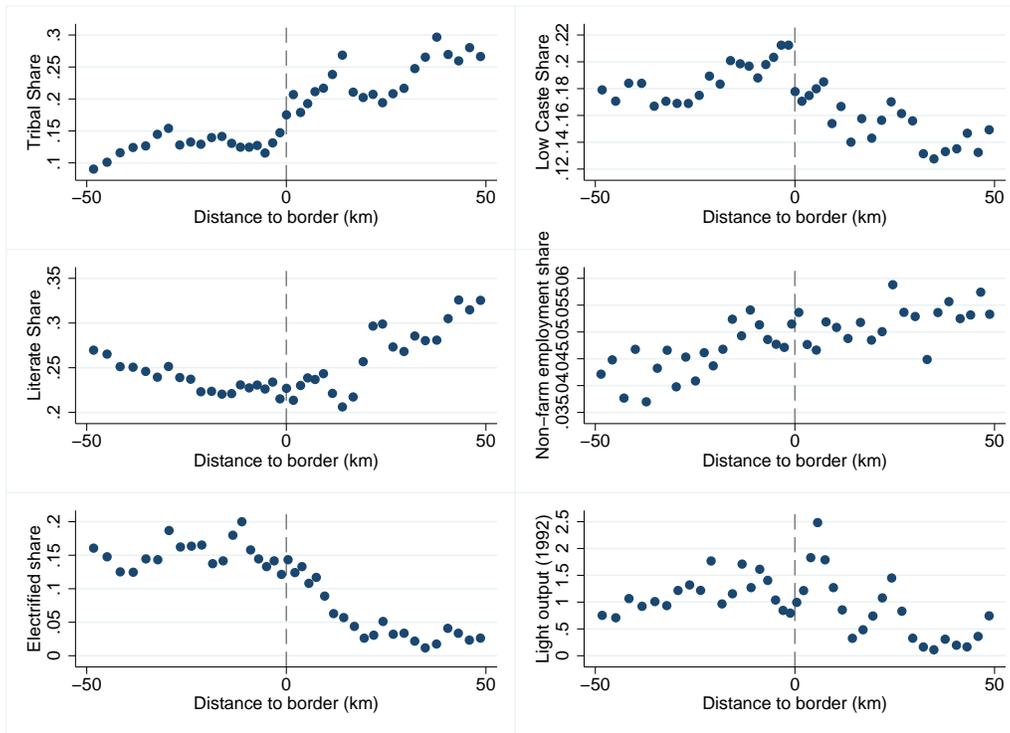
The figure displays average village-level baseline variables in the proximity of borders between new and old states. The points on the right half of the graph represent villages that will eventually be part of new states. All variables are measured before the new states were created.

Figure 2

Average GDP Difference Between New and Predecessor States (Luminosity Proxy)
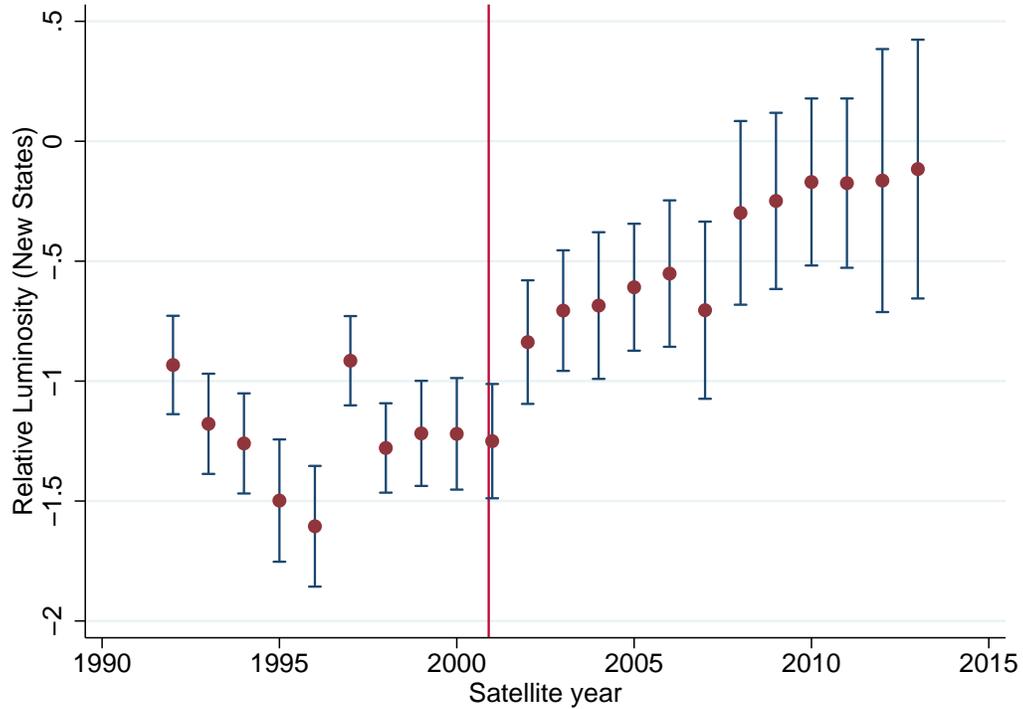
The figure displays regression estimates of the difference in GDP, as proxied by luminosity, between predecessor states (Madhya Pradesh, Uttar Pradesh, Bihar) and new states (Jharkhand, Chhattisgarh, Uttarakhand) for ten years before and ten years after the creation of the new states in November 2000 (marked by the vertical line). Error bars show 95% confidence intervals. Regressions control for 1991 village level controls, 20km grid cell fixed effects and are clustered at the 50km grid cell.

Figure 3
Impact of New States on Economic Output, Proxied by Night Light
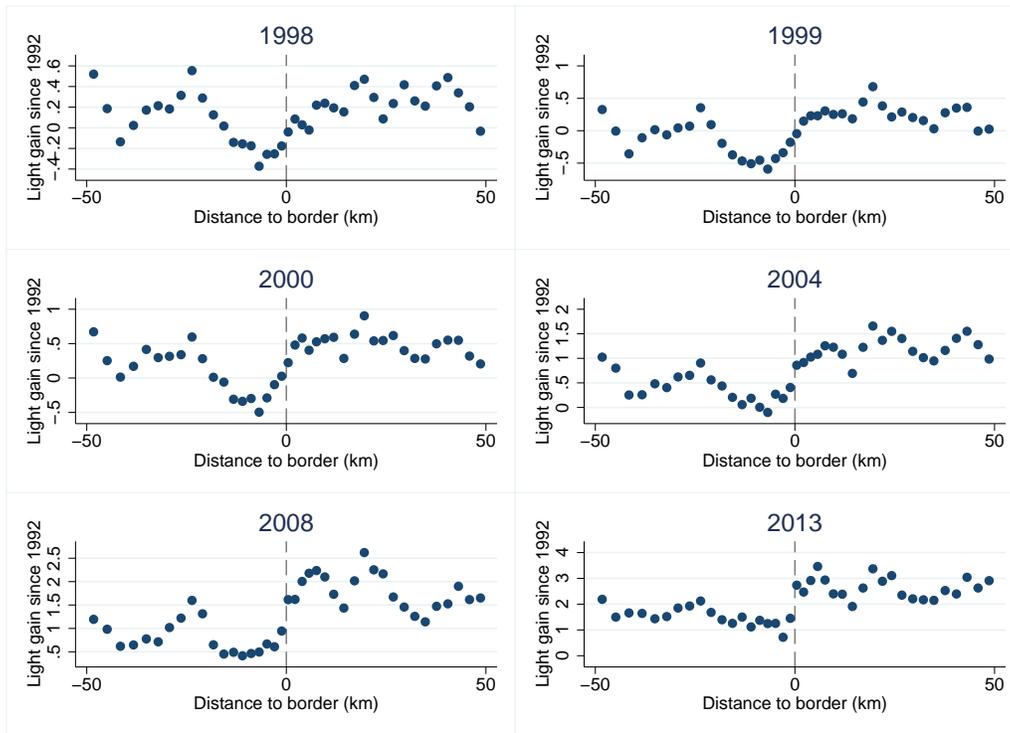
The figure displays average village-level gain in luminosity since 1992, in the proximity of borders between new and old states. The points on the right half of the graph represent villages that will eventually be part of new states. The graphs show changes in output between 1999 (one year before new states were created) to 2013. The base year in all graphs is 1992.

Figure 4
Impact of New States on Education and Durables
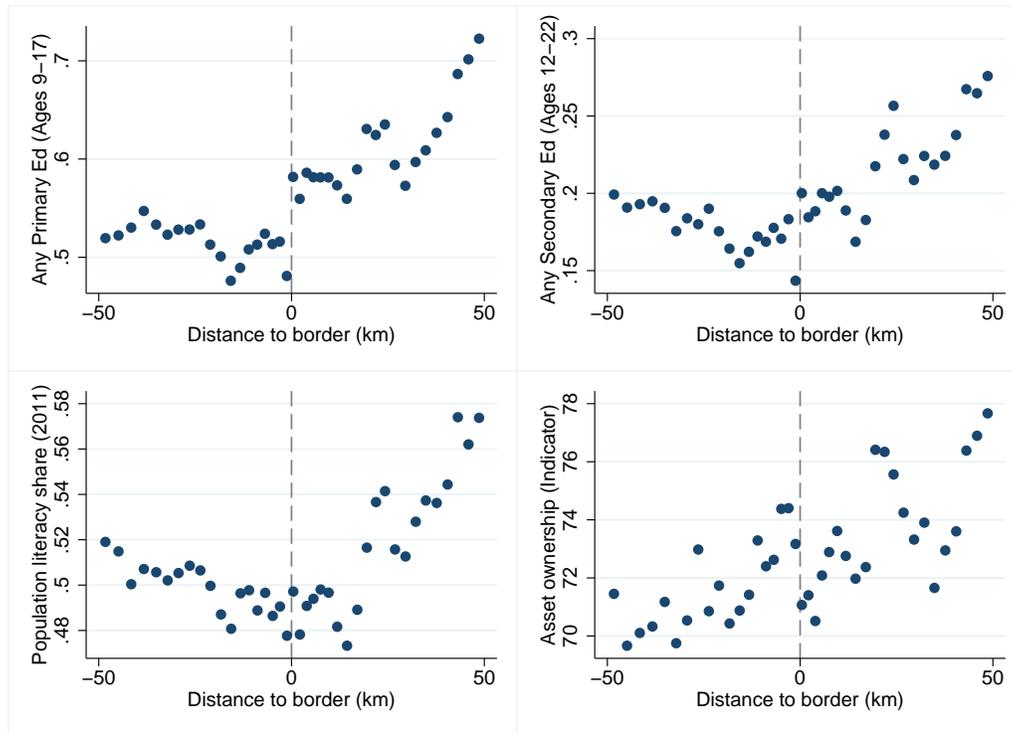
The figure displays average village-level levels of enrolment, literacy and durable possession 11-12 years after the creation of new states. The points on the right half of the graph represent villages that will eventually be part of new states.

Figure 5

Paved Roads Close to Border of Gujarat and Rajasthan
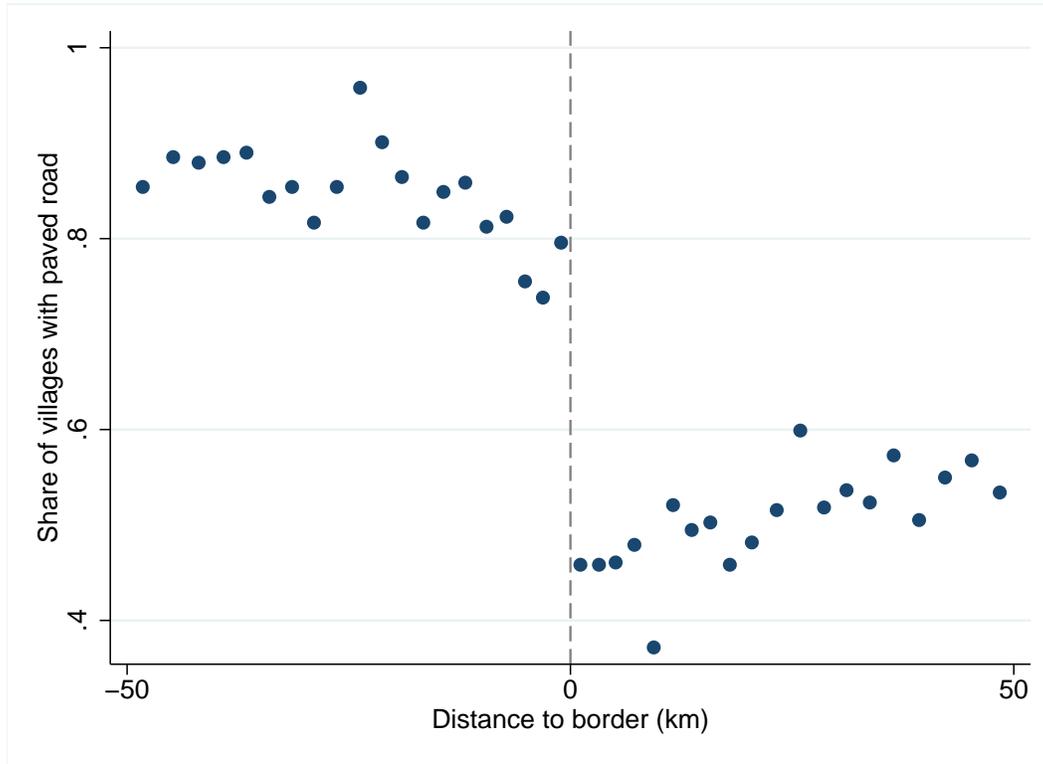
The figure displays average village-level baseline variables in the proximity of borders between new and old states. The points on the right half of the graph represent villages that will eventually be part of new states. All variables are measured before the new states were created.

References

Acemoglu, Daron and James Robinson, *Why Nations Fail*, New York: Crown Business, 2013.

——— , **Simon Johnson, and James Robinson**, "The Colonial Origins of Comparative Development: An Empirical Investigation," *The American Economic Review*, 2009, *91* (5), 1369–1401.

Alesina, Alberto and Enrico Spolaore, "On the Number and Size of Nations," *The Quarterly Journal of Economics*, 1997, *112* (4).

——— , **Reza Baqir, and Caroline Hoxby**, "Political Jurisdictions in Heterogeneous Communities," *Journal of Political Economy*, 2004, *112* (2), 348–396.

——— , ——— , **and William Easterly**, "Public Goods and Ethnic Divisions," *Quarterly Journal of Economics*, 1999, *114* (4), 1243–1284.

——— , **William Easterly, and Janina Matuszeski**, "Artificial states," *Journal of the European Economic Association*, 2011, *9* (2), 246–277.

Dell, Melissa, "The Persistent Effects of Peru â s Mining Mita," *Econometrica*, 2010, *78* (6).

——— , **Nathan Lane, and Pablo Querubin**, "State Capacity, Local Governance, and Economic Development in Vietnam," 2015.

Dube, Oeindrila and Juan F Vargas, "Commodity Price Shocks and Civil Conflict: Evidence from Colombia," *Review of Economic Studies*, 2012, *80* (4).

Englebert, P., S. Tarango, and M. Carter, "Dismemberment and Suffocation: A Contribution to the Debate on African Boundaries," *Comparative Political Studies*, 2002, *35* (10), 1093–1118.

Henderson, J Vernon, Adam Storeygard, and David N Weil, "A Bright Idea for Measuring Economic Growth," *American Economic Review*, 2011, *101* (3).

Herbst, Jeffrey I., *States and Power in Africa: Comparative Lessons in Authority and Control*, Princeton: Princeton University Press, 2000.

Imbens, Guido and K. Kalyanaraman, "Optimal bandwidth choice for the regression discontinuity estimator," *Review of Economic Studies*, 2012, *79* (3).

Imbens, Guido W. and Thomas Lemieux, "Regression discontinuity designs: A guide to practice," *Journal of Econometrics*, 2008, *142* (2), 615–635.

Lee, David and Thomas Lemieux, "Regression discontinuity designs in economics," *Journal of Economic Literature*, 2010, *48* (2), 281–355.

Michalopoulos, Stelios and Elias Papaioannou, "The Long-Run Effects of the Scramble for Africa," 2011.

___ **and** ___ , "National Institutions and Subnational Development in Africa," *Quarterly Journal of Economics*, 2014, pp. 151–213.

Miguel, Edward, Shanker Satyanath, and Ernest Sergenti, "Economic Shocks and Civil Conflict: An Instrumental Variables Approach," *Journal of Political Economy*, 2004, *112* (4).

Oates, W.E., *Fiscal Federalism*, New York: Harcourt Brace Jovanovich, 1972.

Pinkovskiy, Maxim L, "Economic Discontinuities at Borders: Evidence from Satellite Data on Lights at Night," 2013.