

WORKING PAPER NO: 658

**Administrative Proliferation and Developmental
Outcomes: Data from India**

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Administrative Proliferation and Developmental Outcomes: Data from India*

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28 February, 2022 13:07:26

Abstract

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Many developing countries have reorganized their subnational administrative boundaries as a part of administrative reforms and decentralization. Theoretically, administrative proliferation can lead to better developmental outcomes by better managing ethnic heterogeneity, bring public services closer to people, and better matching services to local preferences. However, empirical evidence on the antecedents and effectiveness of administrative proliferation is mixed. Using data on administrative change and nighttime lights from India in the period between 1991 and 2011, we show that ethnic and economic marginalization can lead to the creation of new administrative units, and that once created, new administrative units have a positive effect on economic outcomes of the region. However, the positive effects are not sustained in the long term.

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Keywords: Administrative Proliferation, Development, Local Government, Nighttime Lights

JEL Codes: O12, R58, R12

Introduction

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Is there an optimal size for local administrative units? In a bid to arrive at the optimal population size in a local government unit, many national governments have reorganized their sub-national boundaries and have implemented vast decentralization reforms with an explicit goal to improve governance (Faguet 2014). The fundamental

*This paper is adapted from the PhD dissertation of Jothsna Rajan submitted in Feb 2020 and is an unpublished manuscript. **Current version:** February 28, 2022; **Corresponding author:** jothsna@iitk.ac.in

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25 argument for decentralized administration is that there is heterogeneity in demand for public services. The variance in preferences can be better understood and catered to by a government that is closer to the citizens, thus raising well-being throughout society. Small jurisdictions have an information advantage—they can tailor their services, tax appropriately, and raise welfare (Oates 1972). In addition, it enhances the capability of
30 the citizens to monitor their government and aligns the incentive structure facing the public official to better match local preferences (Oates 1972; Tiebout 1956; P. Smoke and Loffler 2013; Paul Smoke 2015a).

Many developing countries create new districts as a part of their administrative reforms process—also referred to as administrative proliferation or government fragmentation.
35 Administrative proliferation is the creation of new administrative units by the splitting of existing ones at subnational levels (Grossman and Lewis 2014). Although administrative proliferation may be associated with decentralization reforms, it is a distinct policy choice. Decentralization involves the devolution of responsibility, authority, and resources to lower-level governmental units (Falleti 2013), while administrative prolif-
40 eration only creates new governmental units without changing the underlying power structure (Grossman and Lewis 2014; Grossman, Pierskalla, and Boswell Dean 2017).

Administrative proliferation also may claim some of the theoretical benefits of decentralization as it brings citizens closer to their administrators. Each administrative unit is smaller and more homogeneous—with less heterogeneity in preferences, they are
45 able to provide better services to citizens (Pierskalla 2019). Splitting of administrative units also may reduce the bargaining power of each unit. Electoral dynamics of the newly created splinter and the previously existing parent units are both going to shift, and citizens as well as politicians face a new calculus around resource allocation. Empirical work has explored the role of electoral politics in administrative proliferation
50 (Resnick 2017) and the effect of administrative proliferation on conflict and violence (Pierskalla and Sacks 2017; Bazzi and Gudgeon 2021). There has only been a limited exploration of the effects of administrative proliferation on developmental outcomes—and the available evidence has been mixed (Lewis 2017; Billing 2019; Halimatusa'diyah 2020; Carlitz 2017).

55 Another consideration in the creation of administrative units is the management of ethnic diversity. Ethnic politics constitutes a crucial dimension of public life and serves as an intermediary between public administration and economic wellbeing of citizens (Esman 1997), especially in the cases where multiple hierarchically nested administrative units interact to provide public goods. In ethnically diverse states it is common to
60 devolve power to subnational units as a compromise between the demands of territorially concentrated ethnic groups and the need to preserve the higher-level territorial integrity. Also empirically there has been a strong case made in political economy literature for the negative impact of ethnicity on economic development (Alesina, Baqir, and Easterly 1999; Alesina and Ferrara 2005), although later work has questioned
65 these effects in subnational scales (Gerring et al. 2015; Gisselquist 2014; Gisselquist, Leiderer, and Nino-Zarazua 2016).

In this paper, we present the theory behind administrative proliferation and the available evidence on its effectiveness. We try to identify the antecedents of administrative proliferation and whether it leads to positive effects on development outcomes. We test our hypothesis with data from India, which has had far reaching decentralization reforms enacted, along with administrative proliferation at the local level. Since the 1950s, India has seen frequent administrative bifurcations at the local government level (district level). The number of districts in the country has increased from 356 in the 1971 census period to 640 in the 2011 census and further to 731 since then. We explore the effect of bifurcation of local administrative units on developmental outcomes—as measured by luminosity measures from satellite data (Chen and Nordhaus 2011; Henderson, Storeygard, and Weil 2012; Mellander et al. 2015; Huang et al. 2014; Donaldson and Storeygard 2016). We use the data collected on public goods provisions and ethnicity in the districts of India over two consecutive census periods - from 1991 to 2011 and luminosity measures during the same period. Key questions that are considered are: *are the districts that are chosen to be newly created, substantively different from the ones that remain in terms of their ethnic composition and economic outcomes? Is there a significant divergence in the developmental outcomes of the districts that were newly created post their separation from the erstwhile districts?*

Our empirical analysis follows two steps. First, we hypothesize that ethnic and economic marginalization of the region has a direct effect on the creation of new districts. In the second step we test whether the creation of a new districts and the associated administrative machinery have a positive effect on the subsequent economic performance of the region. We test these hypotheses using a subdistrict level dataset that includes metrics of economic activity, inputs to public services such as education and healthcare and ethnic demographic data from the census. We find that administrative proliferation is driven by economic and ethnic motivations of marginalized regions within the administrative unit, and that once new administrative units are created, there is a positive effect on developmental outcomes in the newly created districts. We add to the growing literature on administrative proliferation by exploring empirically its effects on a generalized development metric—nighttime lights. We also compare the outcomes in districts that were newly created (child) with the old districts that are now smaller (parent), and propose possible mechanisms by which administrative proliferation could affect economic outcomes. The rest of the paper is organized as follows. First the relevant academic literature on administrative proliferation is briefly reviewed, followed by the process of how districts are created in India. In the subsequent section, we discuss our data and methodological approach. Then in section 5, we discuss the antecedents of district bifurcation, followed by its effects on developmental outcomes. In section 6, we discuss some possible mechanisms of the observed effects and conclude.

Administrative Proliferation

In democratic societies, small jurisdictions are believed to enhance political participation, make politics less abstract, politicians more responsive, and facilitate exit-based empowerment of citizens (Blom-Hansen, Houlberg, and Serritzlew 2014; Opalo 2020).
110 Decentralization may promote responsiveness and effectiveness of the government as it enhances the capability of the citizens to monitor their government and aligns the incentive structure facing the public official. Decentralisation will increase economic efficiency as local governments have an information advantage and can respond better to variance in preferences at the local level (Oates 1972), and population mobility
115 will lead to competition between local authorities and better provision of public goods (Tiebout 1956). Decentralised service delivery especially when citizens directly elect the local governments is expected to provide better coverage, quality, and efficiency (Paul Smoke 2015b). Competing local governments may experiment with various ways to provide public goods and lead to innovations that can be applied elsewhere.

120 Local government proliferation also brings citizens closer to their government and may engender better match between supply and demand of public goods and services (Faguet and Sanchez 2008). Administrative proliferation at the sub-national levels is the creation of new administrative units from existing ones without changing administrative resources, responsibilities or authority of the respective units. It is
125 not decentralization but often accompanies decentralization reforms—when decentralization reforms are implemented the benefit from controlling each sub-national unit increases and there is incentive for local elites to demand the creation of new units (Grossman and Lewis 2014).

At the same time, there is a counter argument in favour of larger jurisdiction sizes because larger units allow for economies of scale in providing public goods (Hirsch 1959).
130 Local bureaucracies may be poorly staffed and ill-equipped to handle the responsibilities associated with the decentralized provision of public goods (Prud'Homme 1995). Making each unit smaller and increasing the number of units, may increase the total cost of co-ordination and co-operation. There is also the possibility that the newly
135 created administrative units may struggle to generate resources due to poorer administrative capability, thus leading to subpar public good provision (Billing 2019). Thus critics argue that effectiveness of decentralization measures is often hampered by the particular context of its implementation.

The literature on administrative proliferation has identified the reasons for the same in
140 top down and bottom up political processes—leaders at the national levels providing patronage to supporters by creating administrative jobs (Green 2010; Hassan 2016). Some of the potential reasons are to allow some form of self-government, to eliminate or side step secessionist demands from regionally cohesive groups and to avoid ethnic based conflict (Brancati 2006; Pierskalla and Sacks 2017), or to sidestep legislative
145 checks against executive power (Hassan and Sheely 2017). Electoral incumbents have

a preference for visible policies that can be clearly attributed to them when they face still competition (Mani and Mukand 2007). Administrative unit creation is a policy that is relatively less demanding on legislative capability, highly visible and clearly attributable to the incumbent government. Another reason can be administrative convenience. Or stated economically, smaller regions are easier to govern, they may be more homogenous. The preferences of people are similar and makes it easier for governments to estimate and provide public services (Paasi 2013). Public services are better delivered to citizens who are closer to the administrative centres (Brinkerhoff, Wetterberg, and Wibbels 2018; Asher, Nagpal, and Novosad 2018). But how do the ethnic, religious and cultural markers of the residents, or more saliently voters, affect the creation of administrative units? This is a key question that needs to be answered in terms of the antecedents of local government proliferation.

The theorized heterogeneity in preferences among the populace may be powered by an ethnic diversity. Alesina, Baqir, and Hoxby (2004) posit that there is a fundamental tradeoff between economies of scale that comes with larger jurisdictions and the costs associated with having a more heterogeneous population. Population heterogeneity may manifest as ethnic or racial diversity or income inequality. The authors find that the preference for homogeneity along ethnic lines may overshadow efficiency concerns or preferences along income lines. Alesina and Ferrara (2005) in their survey of literature on the effects of diversity on economic performance argued that public goods provisioning is worse in more fragmented societies. Decentralization may improve political stability by giving minorities some control over the subnational government and the issues that affect them directly. So there may be merit in more decentralized public service provision in more ethnically diverse regions (Adeney 2017; L. Anderson 2016; L. D. Anderson 2012).

However, empirical exploration of administrative reforms have so far led to mixed results. Grossman, Pierskalla, and Boswell Dean (2017) find that administrative unit proliferation leads to better performance in public service provision which levels off as the size of administrative units drops further. The effect of administrative proliferation on service output can be heterogenous and needs to be understood in the context for each service. Lewis (2017) finds negligible effects on education, and negative effects on water and sanitation, while Halimatusa'diyah (2020) finds negative effects on maternal mortality rates—both using data from Indonesia. Dahis and Szerman (2018) in Brazil find that an increase in municipalities has had positive effects on education and health, better provision of sanitation services, lower poverty rates and higher income among newly created municipalities, while parent municipalities lag behind or are unaffected. Billing (2019) find that newly created administrative units ('splinter') are disadvantaged in terms of available resources and staffing and as a result are poorer in public good provisioning compared to existing district of which it was a part ('parent') or a district that was never split. Baskaran and Blesse (2019) evaluate the effect of border reforms (mergers and splits) on economic outcomes in sub-Saharan Africa and find that both have a positive and significant effect, while mergers have a higher effect in

magnitude than splits.

190 Thus the conversation surrounding antecedents and effects of administrative prolifera-
tion are far from settled in the literature. The key questions are two-fold—Are districts
that are bifurcated, substantively distinct from those that are not? It is possible and
likely in the observed political scenario in India that the districts that are newly created
are ethnically distinct from the parent district from which it has been carved out. The
195 second question is is there a significant divergence in the developmental outcomes of
the districts that were newly created post their separation from the erstwhile districts?
We explore these questions in the rest of the paper.

District Splitting in India: Processes and New Dis- tricts

200 New districts in India are created by assigning a few sub-districts from an existing
district as a new district and by choosing one of the sub-districts from the new unit
as the district headquarters. New districts within states are created by the state gov-
ernments, under their respective land revenue acts—usually without any involvement
of the national government. For example, a new district Chamrajnagar was created
205 from the existing Mysore district in 1997 in Karnataka State. Of the 11 sub-districts
in Mysore, four were transferred to and formed into a new district, with Chamrajnagar
subdistrict assigned to be the new headquarters. Therefore, district creation in India
is a movement and reallocation of sub-districts and allocation of a new geographically
more proximate administrative headquarters. The administrative machinery below
210 the district level does not change, but a new district headquarters and the associated
infrastructure are created.

Administrative proliferation in India has been occurring since Independence, but it
has picked up pace since the enactment of the decentralization reforms in 1992. India
enacted extensive decentralization reforms with a constitutional amendment in 1992
(see Fig-0.1). Until the 73rd and 74th amendment to the constitution, the structure
215 of government in India was two-tiered, with the union and state governments—and
the district level administrators performed such tasks as assigned to the them by the
state governments, such as rural development programs. With the passing of the 73rd
and 74th amendment, the local government units became a third tier of government.
The local government units are themselves comprised of three levels - district level,
220 sub-district (taluka) level and village (panchayat) level. However, a typical district in
India remains large and heterogeneous with high population numbers. Indian districts
vary widely in size from Thane district in Maharashtra with a population of a little
over 11 million and Dibang Valley in Arunachal Pradesh with a population of 8004 in
2011. The average population across all 640 districts was around 1.8 million in 2011.

Data and Methods

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In order to study this phenomenon of district proliferation we used data from India across three censuses—1991, 2001, and 2011. The subnational boundary alternations that occur in the inter-census period are captured in the census that follows. In the census period 1991-2001, there were 127 new districts created from the existing 466 districts, and in census period 2001-2011, 47 new districts were created, taking the total up to 640. The district census handbooks of each census record the year and the geographical scope of administrative changes within each district, thus providing a reliable source of all the sub-national administrative changes taking place in the country. The economic indicators for the region are computed from the night-time lights data that is recorded by the Defense Meteorological Satellite Programs—Operational Linescan System (DMPS-OLS). The measured indicators report the recorded intensity of surface lights. The measures have a high correlation to human activities and have previously been employed to study regional economic activity and performance (Henderson, Storeygard, and Weil 2012; Huang et al. 2014; Pandey, Joshi, and Seto 2013; Townsend and Bruce 2010; Bennett and Smith 2017; Chand et al. 2009). We used the radiance-calibrated data that include a correction for the saturation issue that might occur in regions of high light intensity (Hsu et al. 2015). We superimposed the geospatial boundaries of census-designated villages in India on the night-time lights data and computed aggregate luminosity for each village from 1992 to 2013. This data was then aggregated to subdistrict levels and converted to percapita measures by dividing the luminosity numbers by the estimated population figures. The population figures for the inter-census period is obtained by simple extrapolation with the assumption of uniform population growth.

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The national census also provides the public goods data available at the village level for every village in India. These public goods include the number of facilities for education and health available at the village level which we aggregated to the subdistrict level for this analysis. Since the census data is available only for the years 1991, 2001 and 2011, we have defined a base year for the bifurcation event which is the previous census period from the year of bifurcation. For example, if a new district was created in 1994, the public goods measures for the sub-districts in the period before bifurcation, are calculated using the previous census period, that is 1991. For a new district created in 2005, the base year would be 2001, and the data from census 2001 was used. We also computed ethnic variables—a fractionalization and a dissimilarity index. At a sub-district level, the ethnic distribution is likely to be different from that of a higher administrative unit such as a district. The census data provides population data in three categories—scheduled sastes (SC), scheduled tribes (ST) and others (OTH) at the village level, which was aggregated to subdistricts. A fractionalization metric was computed for every subdistrict based on the distribution of population categories in the census of India. For any subdistrict, i , the fractionalization index is,

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$$frac_i = 1 - \left(\sum_{\forall k \in i} \pi_{ik}^2 \right) \quad (1)$$

265 where π_{ik} is the population share of sub-group $k \in SC, ST, OTH$ in subdistrict i .

A dissimilarity measure for the subdistricts can be computed as follows,

$$dissim_i = 1 - \frac{FRA_i}{FRA_j} \quad (2)$$

where i and j sub-district and district within which it is nestled respectively. We hypothesize that marginalized areas are more likely to split off and form a new district. We used the fractionalization and dissimilarity indices to measure ethnic marginalization. To measure economic marginalization, We used a night-time lights based measure - whether the average night-time lights measured in the subdistrict is greater than the average night-time lights measured for the district within which the subdistrict is nested. We also used several proxies of development as control variables. The development indicators are from the census period before bifurcation in the respective districts. We used (1) rural literacy, (2) share of population engaged in agriculture (3) average number of primary schools per village in the sub-district and (4) average number of primary health centres per villages in the sub-district. We presented the summary statistics in Tables 0.1 and 0.2.

Empirical Strategy

280 We began by testing whether the subdistricts in regions that underwent bifurcation (parent and child) are different from those in regions that did not (no split). In the next step, we tested whether the sub-districts that splintered away from the parent districts to form new districts (child) are substantively different from the sub-districts that remained within the now smaller parent district. To examine these relationships more formally, we fitted two random intercept multilevel models that account for the panel structure of our data. The basic model specification was as follows,

$$y_{ijt} = \beta_{0jt} + \underbrace{\beta_1 \cdot FRA_{ijt} + \beta_2 \cdot DIS_{ijt}}_{\text{Ethnic Measures}} + \underbrace{\beta_3 \cdot NL_{ijt}}_{\text{Economic Measure}} + \underbrace{\beta_k \mathbf{X}_{ijt}}_{\text{Controls}} + \epsilon_{ijt} \quad (3)$$

where,

$$\beta_{0jt} = \beta_0 + \alpha_j + \gamma_t + \mu_{jt} \quad (4)$$

which is combined into,

$$y_{ijt} = (\beta_0 + \alpha_j + \gamma_t) + \underbrace{\beta_1 \cdot FRA_{ijt} + \beta_2 \cdot DIS_{ijt}}_{\text{Ethnic Measures}} + \underbrace{\beta_3 \cdot NL_{ijt}}_{\text{Economic Measure}} + \underbrace{\beta_k \mathbf{X}_{ijt}}_{\text{Controls}} + \mu_{jt} + \epsilon_{ijt} \quad (5)$$

In the first estimation (presented in column (1) of Table-0.3), y_{ijt} is an indicator variable of whether the subdistrict i is a part of a district j , that underwent a bifurcation (parent or child) or a district that did not undergo bifurcation (no split) in the two census periods from 1991 to 2011; \mathbf{X}_{ijt} is a vector of control variables, including share of urban population, share of agricultural labour, share of literate population and indicators of public goods such as the number of primary schools and primary health centres in the subdistrict. In the second estimation with the same basic specification (presented in column (2) of Table-0.3), the dependent variable, y_{ijt} , is an indicator of whether the subdistrict i became a part of a new district (child) in the two census periods under consideration. In the second estimation, we excluded the subdistricts that did not have any bifurcation events in the analysis period ($split = TRUE$).

We also included an economic indicator in the estimation, that took the value of 1 if the average percapita night-time luminosity measure of the sub-district was greater than the same measure for the whole district (called Higher Night-Lights) in the years before the split. In the third estimation (presented in column (3) of Table-0.3), we study which among the subdistricts that splintered off became the headquarters of the newly formed district. In model 3, the dependent variable is an indicator of whether the subdistrict i that splintered off to become a part of the child district was made the headquarters of the newly formed child district. In this estimation we included only those subdistricts that splintered off and formed new districts ($newdistrict = TRUE$) Fig-0.2 shows the plan of analysis.

The second objective of this investigation was to test the hypothesis that district splitting leads to improved developmental outcomes. Supporters of administrative proliferation argue that it brings government closer to its citizens and therefore can deliver better developmental outcomes in developing countries. Theoretically, the benefits of administrative proliferation in developmental outcomes arise from the increased proximity of local government units to their constituents. However, despite the theoretical advantages, empirical findings about the benefits of decentralization are decidedly mixed - ranging from strong positive to strong negative and everything in between (Bardhan and Mookherjee 2006; Ahlin and Mörk 2008; Tosun and Yilmaz 2010; Bardhan 2002; Habibi et al. 2003; Kwon 2003). Literature has identified governance factors as the confounding factor that leads to the uneven performance of decentralization efforts. Local government proliferation suffers from the same governance problems that decentralization faces - elite capture of local government units, and clientilism.

However, estimating the effect of local administrative proliferation is challenging since there could be unobserved factors that simultaneously affect the creation of new ad-

325 ministrative units and developmental outcomes of the region. The size and boundary
of an administrative unit could be an active response to a perceived problem and thus
endogenous. We used two strategies to try and overcome the policy endogeneity in-
herent in this question. First, we used two-way fixed effects to control for all time
invariant state specific factors, and all common time shocks. We used an instrumental
330 variable approach to strengthen the causal explanation of the fixed effects model. The
empirical model used state-years as units of analysis and we estimated standard fixed-
effect panel models using within state variation of number of districts to estimate the
relationship between local administrative proliferation and economic outcomes. The
variable of interest is the number of administrative units (districts) per 100,000 popu-
335 lation per state in each year. As there is delay in setting up the district administrative
machinery once the creation of the district has been notified in the cabinet, we allowed
for a lag in the variable of interest $govpc_{it-lag}$.

The model can be specified as follows,

$$y_{it} = \beta_0 + \beta_1 govpc_{it-lag} + \underbrace{\beta_2 \cdot \mathbf{X}_{it}}_{\text{Lagged Control Variables}} + \underbrace{\alpha_i + \gamma_t}_{\text{Fixed Effects}} + \epsilon_{it} \quad (6)$$

Where, y_{it} represents average night-time lights per capita for a state i in year t ,
340 $govpc_{it-lag}$ is the number of administrative units (districts, in India) per 100,000 peo-
ple in the state i in year $t - lag$, γ_t are time fixed effects that will account any time
shocks such as those related to macroeconomic conditions that affect development all
across, α_i are state fixed effects that account for time-invariant factors within the state,
and ϵ_{it} is the error term. A vector of control variables including share of literate popu-
345 lation, share of agricultural labour in the workforce, and share of urban population
is included in the analysis. These measures are computed based on the data from the
census prior to the bifurcation event. $\hat{\beta}_1$ is the estimated parameter of interest, given
the objectives of this study.

We improved the fixed effects model by using an instrumental variable (IV) strat-
350 egy employed by Grossman, Pierskalla, and Boswell Dean (2017) previously. In this
model we used an instrumental variable, the length of rivers and streams within the
state.¹ We based our instrumental variable on the fact that administrative bound-
aries are often drawn based on fixed geographical features, such as rivers and streams.
We used geographic information system (GIS) data on rivers and streams, from the
355 OpenStreetMap (OSM) project (www.openstreetmap.org) and calculated the length
of rivers and streams in each state. As large rivers can influence economic outcomes
directly, we only considered streams and small and medium rivers in our analysis, and
left out the top ten percent of rivers by length from our sample, so as not to violate
the exclusion restriction. Since these are geographical features that are time-invariant,

¹Grossman, Pierskalla, and Boswell Dean (2017) employed this strategy at the national level in
sub-saharan Africa with country-year level analysis

they cannot be used along with state fixed effects. In order to account for state specific effects, we included relatively time-invariant control variables, such as fractionalization index. We estimated standard 2SLS models with year fixed effects and controlling for the same set of control variables.

In addition to the state-year level analysis as specified above, we also employed a random intercept difference-in-difference specification using subdistrict-year as the unit of analysis. The level of local government at which the administrative proliferation has taken place in India is the district. We conducted our analysis at a level lower than the district - the taluka (subdistrict). Conducting our analysis at a level smaller than the district allowed us to reveal the dynamics within the districts. Thus, we compared the economic outcomes of the subdistricts after being reassigned to a new district to the same subdistrict before the assignment. When a new district has been created by splitting an already existing district into two, we have two new districts – both of which are smaller than the erstwhile district. However only the newly created (child) district has received a new headquarters. Also the child district needs to have new administrative offices set up and staffed while the other (parent district) already has a fully functional administrative set up. Therefore, we can expect that the district that has had a new headquarters created to have a positive effect on public services but with a lag that allows for the administrative machinery to be set up. Control variables used in the analysis include ethnic fractionalization at the sub-district level, dissimilarity index for the subdistrict with the district that it is a part of, share of literate population, share of agricultural labour in the workforce, and share of urban population in the subdistrict. All control variables are taken from the census previous to the bifurcation.

The model was specified as,

$$y_{ijt} = \beta_{0jt} + \beta_1 n_{ij} + \beta_2 p_t + \underbrace{\beta_3 \cdot n_{ij} p_t}_{\text{DID term}} + \underbrace{\beta_4 \cdot \mathbf{X}_{ijt}}_{\text{Lagged Control Variables}} + \epsilon_{ijt} \quad (7)$$

where,

$$\beta_{0jt} = \beta_0 + \alpha_j + \gamma_t \quad (8)$$

which can be combined to,

$$y_{ijt} = (\beta_0 + \alpha_j + \gamma_t) + \beta_1 n_{ij} + \beta_2 p_t + \underbrace{\beta_3 \cdot n_{ij} p_t}_{\text{DID term}} + \underbrace{\beta_4 \cdot \mathbf{X}_{ijt}}_{\text{Lagged Control Variables}} + \epsilon_{ijt} \quad (9)$$

Where, the subscripts i and t represent subdistricts and year respectively. y_{ijt} is the nighttime lights per capita measured in subdistrict i in state j in year t , n is a dummy

variable denoting bifurcation status, and p_t is a dummy variable denoting the period
 390 after bifurcation, and takes the value one starting the year two years after bifurcation
 allowing for a lag of two years, \mathbf{X}_{ijt} is the set control variables from the census prior to
 bifurcation. The intercept term is allowed to vary per year γ_t , and per state, α_j , and
 ϵ_{ijt} is the error term. $\hat{\beta}_3$ is the estimated parameter of interest, given the objectives of
 this study.

395 A second model is also estimated, with random intercept and random slope for the
 treatment effect. In this model, in addition to the random intercept, the slope of the
 treatment variable (bifurcation) is also allowed to vary per state. The equation is
 specified as follows,

$$y_{ijt} = \beta_{0jt} + \beta_1 n_{ij} + \beta_2 p_t + \underbrace{\beta_3 \cdot n_{ij} p_t}_{\text{DID term}} + \underbrace{\beta_4 \cdot \mathbf{X}_{ijt}}_{\text{Lagged Control Variables}} + \epsilon_{ijt} \quad (10)$$

where,

$$\beta_{0jt} = \beta_0 + \alpha_j + \gamma_t \quad (11)$$

400 and

$$\beta_{1j} = \beta_1 + \delta_j \quad (12)$$

which can be combined to,

$$y_{ijt} = \beta_0 + \beta_1 n_{ij} + \beta_2 p_t + \underbrace{\beta_3 \cdot n_{ij} p_t}_{\text{DID term}} + \underbrace{\beta_4 \cdot \mathbf{X}_{ijt}}_{\text{Lagged Control Variables}} + \alpha_j + \delta_j n_{ij} + \gamma_t + \epsilon_{ijt} \quad (13)$$

Results

The estimated results of the antecedents of administrative proliferation—Equation
 (5)—are presented in Table-0.3. The results show that both ethnic as well as economic
 405 marginalization has a strong association with the eventual likelihood of a subdistrict
 splintering off to form a new district. The likelihood that a subdistrict belongs to
 a bifurcated district is increasing with the fractionalization and dissimilarity indices.
 And within the split district, the child districts are the ones having a higher level of
 ethnic dissimilarity with the erstwhile unsplit district, and lower levels of night-time
 410 lights compared to the district average. This finding is in line with some of the earlier
 mechanisms suggested in literature of a socially and economically marginalized region

demanding a new administrative setup, more proximate to the region (Grossman and Lewis 2014).

Since any new district that is created requires an administrative machinery to be setup and staffed, we can expect a lag in the effects of administrative proliferation on developmental outcomes as reflected in night-time lights measures. We estimate the effects of the different lags on the outcome variable, and plot the effect sizes along with confidence intervals in Fig-0.3. As can be seen, the lags of 2 and 3 are observed to be significant. The rest of the results in this chapter present a lag of two years; the results from the first model to estimate effects on outcomes - Equation (6) - are presented in Table-0.4.

The estimation models at the subdistrict-year level - Equations (9) and (13) - are estimated across two distinct groups; subdistricts that underwent bifurcation (parent as well as child districts) are compared against subdistricts that did not undergo any bifurcation (no split) in the two decades under consideration.² In the second estimation, the ‘no split’ group was removed from consideration, and we compared the subdistricts that splintered off to form a new district (child) to the subdistricts that remained in the erstwhile district (parent). As already noted, we included state and year fixed effects in our estimation. The results of this estimation are presented in Tables. 0.5 and 0.6.

The estimated parameters of interest, the interaction term between bifurcation and period, are positive and significant for all the estimated models, showing that there is a positive and significant increase in night-time lights measure in districts that underwent bifurcation compared to those that did not. In addition, a positive and significant effect is also observed when the child districts are compared with the remaining part of the erstwhile (parent) district that they split away from.

Robustness Checks

To rule out the possibility that our results are driven by long term spatial and time trends and not by bifurcation, we ran the following placebo tests. First, we created a placebo list of bifurcated districts by randomly allocating some districts as split and compare those with the others. In Table-0.7 columns (1) and (2) present the results of the same estimation models as before for the false list of bifurcated districts. We can see that the estimated parameters of interest are not significantly different from zero for the placebo list of districts.

Next among the districts that are bifurcated (true bifurcations; not placebo), we created a placebo list of subdistricts that were allocated to new districts, and compare those with the rest. The results of the two estimations are presented in columns (1) and (2) of Table-0.8. In this estimation as well, the estimated parameters of interest are

²For districts that did not undergo any bifurcation in the analysis period, years until 2001 and considered ‘before’ and years from 2002 to 2011 are considered ‘after’

not different from zero, suggesting that the observed effects presented in this chapter are driven by bifurcation and not long term trends.

450 Lastly we created a false “split” five years prior to the actual split (time placebo) and looked at the effects of bifurcation and splintering using the same models as specified before. The results support my findings and are presented in columns (3) and (4) of Tables-0.7 and 0.8.

Discussion and Conclusion

455 Our findings support the hypothesis that district bifurcations are beneficial for the overall development of the region, especially in the child district. This is consistent with the findings of [Asher, Nagpal, and Novosad \(2018\)](#) who suggested that reducing the distance between citizens and administrative centres could lead to better outcomes using data from India. Our findings are also consistent with other studies from sub-
460 saharan africa ([Grossman, Pierskalla, and Boswell Dean 2017](#)) and Indonesia ([Lewis 2017](#)). Based on our findings, we can say that compared to districts that were not split, split districts (parent and child) are better off in terms of economic outcomes as measured by night-time lights. The underlying mechanism for the observed effects maybe arising due to the greater ethnic homogeneity of the region or due to redistributive
465 benefits as a result of bifurcation. As a result of bifurcation of the district, both the child and the parent region have greater ethnic homogeneity afterwards, and the parent region has an already established administrative system.

However, the child regions have an advantage over the parent regions in the post bifurcation period. After excluding unsplit districts from consideration, child districts
470 gain more benefits when compared to parent districts. This is reasonable to expect, because the villages in the child district gain an additional advantage of having a new administrative setup build closer to them. The greater benefit to the child region over the parent region seems to suggest that the observed effects are due to redistributive benefits and the effects of greater ethnic homogeneity.

475 It is acknowledged here that government functions are many and varied and the effect of population size on one of those functions might not be the same as that on others. As such, this study limits its comments on local government size to general economic outcomes as measured by night-time lights, without commenting on the performance of local governments with respect to other functions and services, or the efficiency and
480 cost of service delivery. Administrative proliferation as a policy measure has mixed results with specific public service measures such as education, sanitation, water supply, or maternal health ([Lewis 2017](#); [Billing 2019](#); [Halimatusa’diyah 2020](#); [Carlitz 2017](#)). The findings from this study suggest a positive approach towards administrative proliferation, however, it also needs to be considered here that the population per district
485 in India is high, and as such the observed effects of administrative bifurcations may

fall off at lower levels of population per administrative units.

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References

- Adeney, Katharine. 2017. "Does Ethnofederalism Explain the Success of Indian Federalism?" *India Review* 16 (1): 125–48. 490
- Ahlin, Åsa, and Eva Mörk. 2008. "Effects of Decentralization on School Resources." *Economics of Education Review* 27 (3): 276–84. <https://doi.org/10.1016/j.econedurev.2007.01.002>.
- Alesina, Alberto, Reza Baqir, and William Easterly. 1999. "Public Goods and Ethnic Divisions." *The Quarterly Journal of Economics* 114 (4): 1243–84. <https://doi.org/10.1162/003355399556269>. 495
- Alesina, Alberto, Reza Baqir, and Caroline Hoxby. 2004. "Political Jurisdictions in Heterogeneous Communities." *Journal of Political Economy* 112 (2): 348–96.
- Alesina, Alberto, and Eliana La Ferrara. 2005. "Ethnic Diversity and Economic Performance." *Journal of Economic Literature* 43 (3): 762–800. <https://doi.org/10.1257/002205105774431243>. 500
- Anderson, Liam. 2016. "Ethnofederalism and the Management of Ethnic Conflict: Assessing the Alternatives." *Publius: The Journal of Federalism* 46 (1): 1–24.
- Anderson, Liam D. 2012. *Federal Solutions to Ethnic Problems: Accommodating Diversity*. Routledge. 505
- Asher, Sam, Karan Nagpal, and Paul Novosad. 2018. "The Cost of Distance: Geography and Governance in Rural India." *World Bank Working Paper*.
- Bardhan, Pranab. 2002. "Decentralization of Governance and Development." *Journal of Economic Perspectives* 16 (4): 185–205. <https://doi.org/10.1257/089533002320951037>. 510
- Bardhan, Pranab, and Dilip Mookherjee. 2006. "Decentralisation and Accountability in Infrastructure Delivery in Developing Countries*." *The Economic Journal* 116 (508): 101–27. <https://doi.org/10.1111/j.1468-0297.2006.01049.x>.
- Baskaran, Thushyanthan, and Sebastian Blesse. 2019. "Subnational Border Reforms and Economic Development in Africa." *ZEW-Centre for European Economic Research Discussion Paper*, no. 18-027. 515
- Bazzi, Samuel, and Matthew Gudgeon. 2021. "The Political Boundaries of Ethnic Divisions." *American Economic Journal: Applied Economics* 13 (1): 235–66.
- Bennett, Mia M., and Laurence C. Smith. 2017. "Advances in Using Multitemporal Night-Time Lights Satellite Imagery to Detect, Estimate, and Monitor Socioeconomic Dynamics." *Remote Sensing of Environment* 192 (April): 176–97. <https://doi.org/10.1016/j.rse.2017.01.005>. 520
- Billing, Trey. 2019. "Government Fragmentation, Administrative Capacity, and Public Goods: The Negative Consequences of Reform in Burkina Faso." *Political Research*

- 525 *Quarterly* 72 (3): 669–85. <https://doi.org/10.1177/1065912918800820>.
- Blom-Hansen, Jens, Kurt Houllberg, and Søren Serritzlew. 2014. “Size, Democracy, and the Economic Costs of Running the Political System.” *American Journal of Political Science* 58 (4): 790–803.
- Brancati, Dawn. 2006. “Decentralization Fueling the Fire or Dampening the Flames of Ethnic Conflict and Secessionism?” *International Organization* 60 (3): 651–85.
- 530 Brinkerhoff, Derick W., Anna Wetterberg, and Erik Wibbels. 2018. “Distance, Services, and Citizen Perceptions of the State in Rural Africa.” *Governance* 31 (1): 103–24.
- Carlitz, Ruth D. 2017. “Money Flows, Water Trickles: Understanding Patterns of Decentralized Water Provision in Tanzania.” *World Development* 93: 16–30.
- 535 Chand, T. R. Kiran, K. V. S. Badarinath, C. D. Elvidge, and B. T. Tuttle. 2009. “Spatial Characterization of Electrical Power Consumption Patterns over India Using Temporal DMSP-OLS Night-Time Satellite Data.” *International Journal of Remote Sensing* 30 (3): 647–61. <https://doi.org/10.1080/01431160802345685>.
- 540 Chen, Xi, and William D. Nordhaus. 2011. “Using Luminosity Data as a Proxy for Economic Statistics.” *Proceedings of the National Academy of Sciences* 108 (21): 8589–94.
- Dahis, Ricardo, and Christiane Szerman. 2018. “Administrative Unit Proliferation and Development: Evidence From Brazilian Municipalities.” *{SSRN Scholarly Paper}* ID 3125757. Rochester, NY: Social Science Research Network.
- 545 Donaldson, Dave, and Adam Storeygard. 2016. “The View from Above: Applications of Satellite Data in Economics.” *Journal of Economic Perspectives* 30 (4): 171–98.
- Esman, Milton J. 1997. “Public Administration, Ethnic Conflict, and Economic Development.” *Public Administration Review*, 527–33.
- 550 Faguet, Jean-Paul. 2014. “Decentralization and Governance.” *World Development, Decentralization and Governance*, 53 (January): 2–13. <https://doi.org/10.1016/j.worlddev.2013.01.002>.
- Faguet, Jean-Paul, and Fabio Sanchez. 2008. “Decentralization’s Effects on Educational Outcomes in Bolivia and Colombia.” *World Development* 36 (7): 1294–1316.
- 555 Falleti, Tulia G. 2013. “Decentralization in Time: A Process-Tracing Approach to Federal Dynamics of Change.” *Federal Dynamics: Continuity, Change, and the Varieties of Federalism*, 140–66.
- Gerring, John, Strom C. Thacker, Yuan Lu, and Wei Huang. 2015. “Does Diversity Impair Human Development? A Multi-Level Test of the Diversity Debit Hypothesis.” *World Development* 66: 166–88.
- 560 Gisselquist, Rachel M. 2014. “Ethnic Divisions and Public Goods Provision, Revisited.” *Ethnic and Racial Studies* 37 (9): 1605–27. <https://doi.org/10.1080/01419870.2012.762106>.
- Gisselquist, Rachel M., Stefan Leiderer, and Miguel Nino-Zarazua. 2016. “Ethnic Heterogeneity and Public Goods Provision in Zambia: Evidence of a Subnational ‘Diversity Dividend’.” *World Development* 78: 308–23.
- 565 Green, Elliott. 2010. “Patronage, District Creation, and Reform in Uganda.” *Studies*

- in Comparative International Development* 45 (1): 83–103.
- Grossman, Guy, and Janet I. Lewis. 2014. “Administrative Unit Proliferation.” *American Political Science Review* 108 (1): 196–217. <https://doi.org/10.1017/S0003055413000567>. 570
- Grossman, Guy, Jan H. Pierskalla, and Emma Boswell Dean. 2017. “Government Fragmentation and Public Goods Provision.” *The Journal of Politics* 79 (3): 823–40.
- Habibi, Nadir, Cindy Huang, Diego Miranda, Victoria Murillo, Gustav Ranis, Mainak Sarkar, and Frances Stewart. 2003. “Decentralization and Human Development in Argentina.” *Journal of Human Development* 4 (1): 73–101. <https://doi.org/10.1080/1464988032000051496>. 575
- Halimatusa’diyah, Iim. 2020. “Does Local Government Proliferation Reduce Maternal Mortality? Evidence from Indonesian Sub-National Government.” *Asian Politics & Policy* 12 (4): 592–616. 580
- Hassan, Mai. 2016. “A State of Change: District Creation in Kenya After the Beginning of Multi-Party Elections.” *Political Research Quarterly* 69 (3): 510–21.
- Hassan, Mai, and Ryan Sheely. 2017. “Executive–legislative Relations, Party Defections, and Lower Level Administrative Unit Proliferation: Evidence from Kenya.” *Comparative Political Studies* 50 (12): 1595–1631. 585
- Henderson, J. Vernon, Adam Storeygard, and David N. Weil. 2012. “Measuring Economic Growth from Outer Space.” *American Economic Review* 102 (2): 994–1028.
- Hirsch, Werner Z. 1959. “Expenditure Implications of Metropolitan Growth and Consolidation.” *The Review of Economics and Statistics* 41 (3): 232–41. <https://doi.org/10.2307/1927450>. 590
- Hsu, Feng-Chi, Kimberly E. Baugh, Tilottama Ghosh, Mikhail Zhizhin, and Christopher D. Elvidge. 2015. “DMSP-OLS Radiance Calibrated Nighttime Lights Time Series with Intercalibration.” *Remote Sensing* 7 (2): 1855–76. <https://doi.org/10.3390/rs70201855>. 595
- Huang, Qingxu, Xi Yang, Bin Gao, Yang Yang, and Yuanyuan Zhao. 2014. “Application of DMSP/OLS Nighttime Light Images: A Meta-Analysis and a Systematic Literature Review.” *Remote Sensing* 6 (8): 6844–66.
- Kwon, Osung. 2003. “The Effects of Fiscal Decentralization on Public Spending: The Korean Case.” *Public Budgeting & Finance* 23 (4): 1–20. <https://doi.org/10.1111/j.0275-1100.2003.02304001.x>. 600
- Lewis, Blane D. 2017. “Does Local Government Proliferation Improve Public Service Delivery? Evidence from Indonesia.” *Journal of Urban Affairs* 39 (8): 1047–65.
- Mani, Anandi, and Sharun Mukand. 2007. “Democracy, Visibility and Public Good Provision.” *Journal of Development Economics* 83 (2): 506–29. 605
- Mellander, Charlotta, José Lobo, Kevin Stolarick, and Zara Matheson. 2015. “Night-Time Light Data: A Good Proxy Measure for Economic Activity?” *PLOS ONE* 10 (10): e0139779. <https://doi.org/10.1371/journal.pone.0139779>.
- Oates, Wallace E. 1972. *Fiscal Federalism*. Edward Elgar Publishing.
- Opalo, Ken Ochieng’. 2020. “Citizen Political Knowledge and Accountability: Survey 610

- Evidence on Devolution in Kenya.” *Governance* 33 (4): 849–69.
- Paasi, Anssi. 2013. “The Institutionalization of Regions: A Theoretical Framework for Understanding the Emergence of Regions and the Constitution of Regional Identity.” *Fennia - International Journal of Geography* 164 (1): 105–46.
- 615 Pandey, Bhartendu, P. K. Joshi, and Karen C. Seto. 2013. “Monitoring Urbanization Dynamics in India Using DMSP/OLS Night Time Lights and SPOT-VGT Data.” *International Journal of Applied Earth Observation and Geoinformation* 23 (August): 49–61. <https://doi.org/10.1016/j.jag.2012.11.005>.
- Pierskalla, Jan H. 2019. “The Proliferation of Decentralized Governing Units.” In
620 *Decentralized Governance and Accountability: Academic Research and the Future of Donor Programming*, edited by J. Rodden and E. Wibbels, 115–43. Cambridge University Press.
- Pierskalla, Jan H., and Audrey Sacks. 2017. “Unpacking the Effect of Decentralized Governance on Routine Violence: Lessons from Indonesia.” *World Development* 90:
625 213–28.
- Prud’Homme, Remy. 1995. “The Dangers of Decentralization.” *The World Bank Research Observer* 10 (2): 201–20.
- Resnick, Danielle. 2017. “Democracy, Decentralization, and District Proliferation: The Case of Ghana.” *Political Geography* 59: 47–60.
- 630 Smoke, Paul. 2015a. “Managing Public Sector Decentralization in Developing Countries: Moving Beyond Conventional Recipes.” *Public Administration and Development* 35 (4): 250–62.
- . 2015b. “Rethinking Decentralization: Assessing Challenges to a Popular Public Sector Reform.” *Public Administration and Development* 35 (2): 97–112.
- 635 Smoke, P., and G. Loffler. 2013. “Literature Review on the Role of Decentralization/Devolution in Improving Development Outcomes at the Local Level.” *Report for UK Department for International Development: London*.
- Tiebout, Charles M. 1956. “A Pure Theory of Local Expenditures.” *Journal of Political Economy* 64 (5): 416–24.
- 640 Tosun, Mehmet Serkan, and Serdar Yilmaz. 2010. “Decentralization, Economic Development, and Growth in Turkish Provinces.” *Emerging Markets Finance and Trade* 46 (4): 71–91. <https://doi.org/10.2753/REE1540-496X460405>.
- Townsend, Alexander C., and David A. Bruce. 2010. “The Use of Night-Time Lights Satellite Imagery as a Measure of Australia’s Regional Electricity Consumption and Population Distribution.” *International Journal of Remote Sensing* 31 (16):
645 4459–80. <https://doi.org/10.1080/01431160903261005>.

Tables and Figures

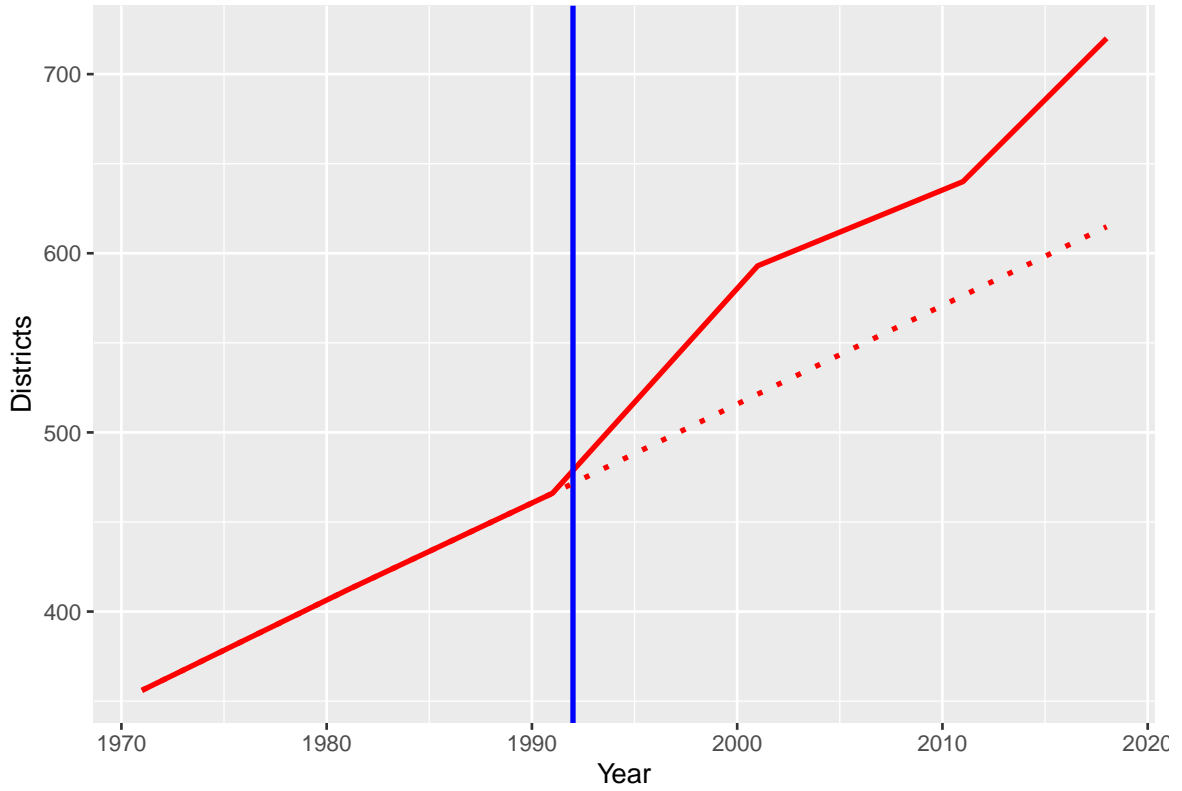


Figure 0.1: Administrative Proliferation in India: 1971-2018

Table 0.1: Bifurcations during Period 1991 - 2001

	No Split	Parent	Child
Mean Night-time Lights	0.00071	0.00095	0.00092
Fractionalization	0.37	0.40	0.42
Dissimilarity	0.04	0.07	0.02
Share of Urban Population	0.49	0.49	0.46
Share of Agri-Labour	71.38	70.41	71.26
Primary Schools	154.76	176.84	150.11
Primary Health	4.75	4.92	4.73
Rural Literacy	34.92558	36.96062	36.24539

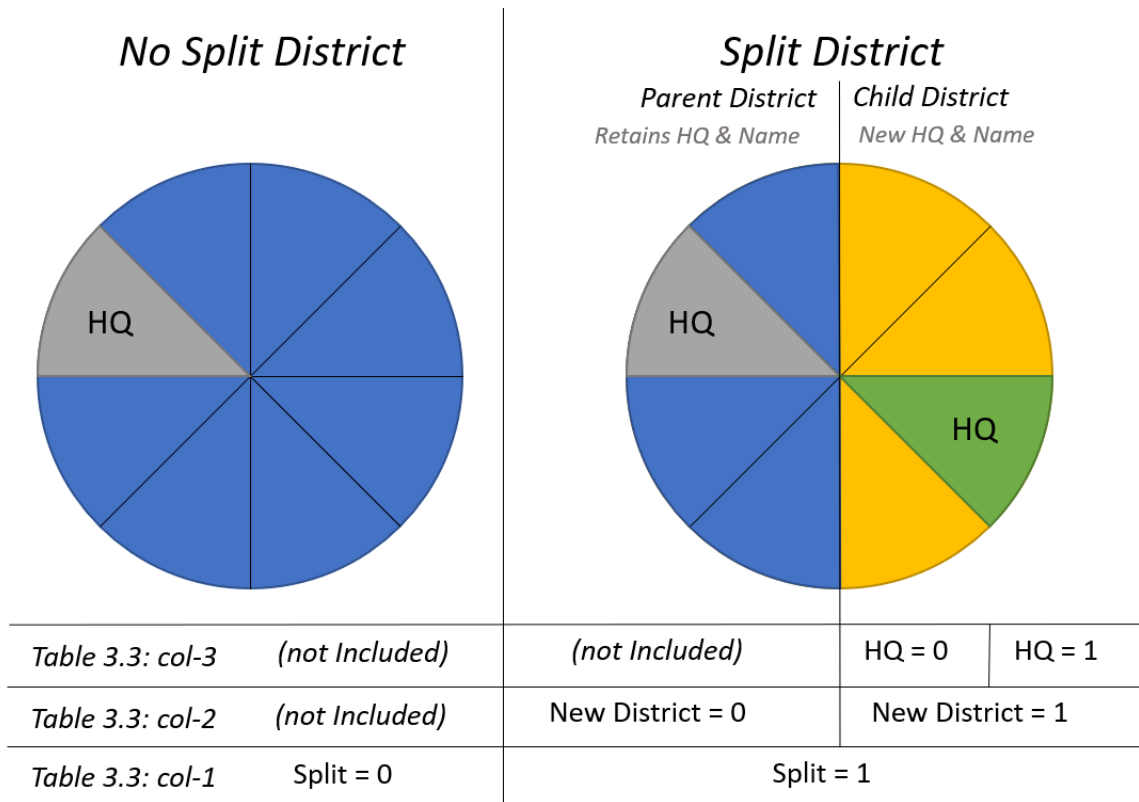


Figure 0.2: Plan of analysis of District Bifurcations

Table 0.2: Bifurcations during Period 2001 - 2011

	No Split	Parent	Child
Mean Night-time Lights	0.00122	0.00131	0.00115
Fractionalization	0.38	0.41	0.39
Dissimilarity	0.04	0.05	0.14
Share of Urban Population	0.26	0.24	0.27
Share of Agri-Labour	71.52	69.26	67.90
Primary Schools	159.35	149.46	156.76
Primary Health	4.85	4.41	4.19
Rural Literacy	35.63	33.89	34.89

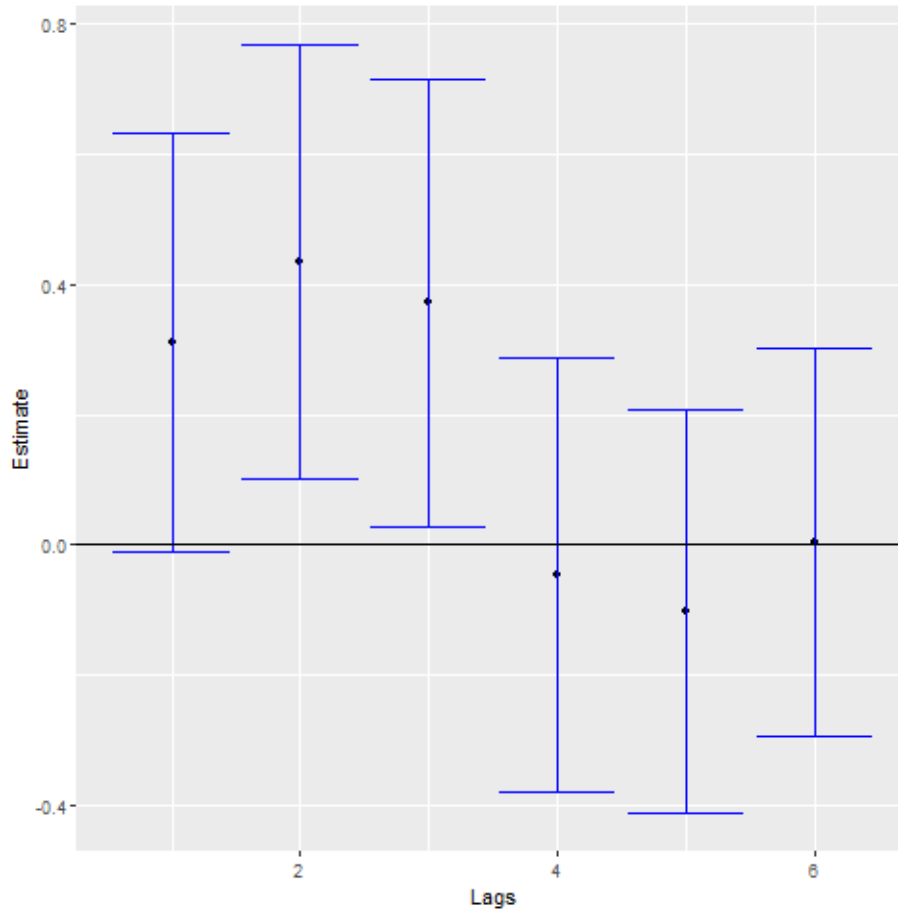


Figure 0.3: Effect size with varying lags

Table 0.3: Antecedents of District Bifurcation

	<i>Dependent variable:</i>		
	Split	New Headquarters	Headquarters
	(1)	(2)	(3)
Fractionalization	0.028*** (0.004)	0.004 (0.010)	-0.014 (0.012)
Dissimilarity	0.029*** (0.003)	0.044*** (0.008)	0.004 (0.010)
Higher Night-Lights	0.003 (0.003)	-0.053*** (0.007)	0.028*** (0.009)
Control Variables	Yes	Yes	Yes
Observations	28,956	9,786	3,410
Log Likelihood	-7,035.481	-2,897.114	-297.825
Akaike Inf. Crit.	14,094.960	5,818.228	619.650
Bayesian Inf. Crit.	14,188.280	5,895.661	681.345

The variable 'Higher Night-Lights' is an indicator, which takes the value of 1, if the average night-time lights in the subdistrict is greater than the average night-time lights measured in the district of which it is a part

Table 0.4: Administrative Units and Night-time Lights

	<i>Dependent variable:</i>	
	Twoway Fixed Effects	Instrumental Variable
	(1)	(2)
Log of No of Districts Percapita	0.434** (0.203)	0.195** (0.094)
Fractionalization	0.294 (0.317)	0.088 (0.070)
Control Variables	Yes	Yes
Observations	315	315
R ²	0.121	0.255
Adjusted R ²	-0.007	0.204
F Statistic	7.572*** (df = 5; 274)	69.424***

Note:

*p<0.1; **p<0.05; ***p<0.01

Table 0.5: District Splits and Night-time Lights

	Log of Night-time Lights	
	(1)	(2)
Split	-0.0001 (0.010)	0.002 (0.073)
After Split	-0.099*** (0.013)	-0.130*** (0.013)
Fractionalization	0.110*** (0.004)	0.107*** (0.004)
Dissimilarity	0.001 (0.004)	0.003 (0.004)
Split:After Split	0.103*** (0.014)	0.074*** (0.014)
Controls	YES	YES
Observations	64,117	64,117
Log Likelihood	-72,938.810	-72,365.610
Akaike Inf. Crit.	145,899.600	144,757.200
Bayesian Inf. Crit.	145,999.400	144,875.100
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01	

Table 0.6: New District Headquarters and Night-time Lights

	Log of Night-time Lights	
	(1)	(2)
Child District	-0.116*** (0.016)	-0.118 (0.077)
After Split	-0.074*** (0.015)	-0.083*** (0.015)
Fractionalization	0.148*** (0.007)	0.149*** (0.007)
Dissimilarity	0.010 (0.006)	0.022*** (0.006)
Child District:After Split	0.043** (0.019)	0.066*** (0.020)
Controls	YES	YES
Observations	27,498	27,498
Log Likelihood	-30,409.280	-30,233.670
Akaike Inf. Crit.	60,840.570	60,493.350
Bayesian Inf. Crit.	60,931.010	60,600.230
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01	

Table 0.7: Split and Time Placebo

	Log of Night-time Lights	
	(1)	(2)
Split	-0.052*** (0.009)	0.023 (0.020)
After Split	-0.015 (0.012)	-0.056*** (0.017)
Fractionalization	0.114*** (0.004)	0.111*** (0.004)
Dissimilarity	0.003 (0.004)	0.001 (0.004)
Split:After Split	-0.011 (0.012)	0.034 (0.021)
Controls	YES	YES
Observations	64,117	64,117
Log Likelihood	-72,952.280	-72,968.120
Akaike Inf. Crit.	145,926.600	145,958.200
Bayesian Inf. Crit.	146,026.300	146,058.000
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01	

Table 0.8: New District Headquarters and Time Placebo

	Log of Night-time Lights	
	(1)	(2)
Child District	0.013 (0.015)	-0.096*** (0.032)
After Split	-0.070*** (0.015)	-0.084*** (0.020)
Fractionalization	0.148*** (0.007)	0.148*** (0.007)
Dissimilarity	0.008 (0.006)	0.009 (0.006)
Child District:After Split	0.024 (0.019)	0.009 (0.034)
Controls	YES	YES
Observations	27,498	27,498
Log Likelihood	-30,451.300	-30,409.760
Akaike Inf. Crit.	60,924.600	60,841.530
Bayesian Inf. Crit.	61,015.040	60,931.970
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01	