Political Power-Sharing, Firm Entry, and Economic Growth: Evidence from Multiple Elected Representatives*

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Abstract

We examine the effect of political power-sharing on local economic activity by exploiting quasi-random variation in the number of politicians governing adjacent regions. We utilize haphazard overlap of electoral and administrative boundaries in India. This allows us to exploit geographic discontinuity across boundaries separating single and multiple-politician-governed regions, and within-region variation in the number of politicians. We find increasing the number of politicians governing an area leads to new firm creation, lower unemployment, and greater real economic activity. The effect is driven by greater state efficiency, lower regulatory bottlenecks, and reduced cronyism following increased checks and balances among non-aligned politicians.

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1 Introduction

Should political institutions concentrate power in more hands or a single hand? Political theorists have long debated the fundamental trade-off between the concentration of power among politicians and the checks and balances imposed on them in understanding the optimal design of political institutions.[1] This paper examines a particular feature of the political-institutional design –multiple elected representatives or multiple politicians – and tests if increasing the number of politicians governing an area adds value. Specifically, we investigate the effect of the multiple politicians on firm entry and subsequent economic growth. Studying this relationship is imperative in understanding the implications of political institutions that foster power-sharing among politicians. Multiple politicians are typical across decentralized governance systems; for example, in the US, two senators govern each state, and coalition governments are becoming increasingly common across the globe. Moreover, answering this question can inform the broader literature on multiple managers that arise in a variety of situations, such as a firm or startup being managed by multiple managers or co-founders, the same entity being regulated by multiple regulatory authorities, doctoral students being advised by multiple chairs, courses being co-taught by multiple instructors, among others.

This paper presents microeconomic evidence on the link between power-sharing among politicians and economic activity in a setting that allows us to examine the effect of the presence of multiple elected representatives. Specifically, we study the role of these representatives in shaping the environment that facilitates firm entry and consequently fosters economic growth. New firm entry is an important determinant of aggregate productivity growth and local employment.[2] Since new firm creation is a function of local economic and political conditions, this setting provides a natural setup for evaluating the effect of multiple politicians on local governance. Additionally, the heterogeneity in the reliance of new firms on governance allows us to identify the underlying mechanism.

Theoretically, the relationship between multiple politicians and economic growth is ambiguous. On the one hand, multiple politicians can hurt local economic conditions due to the presence of multiple grabbing hands, increasing the holdup problem, and due to the lack of collective action, because of coordination failure or free-rider problem.[3] On the other hand,

[1]See Montesquieu (1751), Kant (1795), Hayek (1960), and Buchanan and Tullock (1962) among others.

[2]See Haltiwanger, Foster and Krizan (2001), Brandt, Van Biesebroeck and Zhang (2012), Haltiwanger, Jarmin and Miranda (2013), and Adelino, Ma and Robinson (2017) among others.

[3]Shleifer and Vishny (1993) argue efficiency of allocation decreases with the number of politicians as multiple politicians (grabbing hands) take bribes where only one did before. This builds on the industrial organization perspective of double marginalization (Spengler (1950), Bresnahan and Reiss (1985)). Multiple politicians can increase the holdup problem by increasing the number of checkpoints and introducing downstream checkpoints as in Grossman and Hart (1986), Hart and Moore (1990), Blanchard and Kremer (1997), and Olken and Barron (2009), among others. Multiple politicians can

multiple politicians can improve local economic conditions by reducing the concentration of power and imposing checks and balances on each other (Bardhan (2002)), bringing different skills to the table as well as division of labor (Holmstrom (1978), Epstein and O'halloran (1999)) or reducing corruption (Rasmusen and Ramseyer (1994), Rose-Ackerman (1994)). Despite the theoretical ambiguity, the empirical evidence is limited, primarily due to issues of endogeneity associated with the emergence of political institutions that foster power-sharing among politicians, as discussed in Aghion, Alesina and Trebbi (2004).

An ideal experiment to test the effect of multiple politicians on firm entry and subsequent economic growth would entail an exogenous distribution of the number of politicians governing the same area. India – *the world's largest democracy* – provides such a setting. The electoral boundaries are drawn by a powerful non-partisan commission with the objective of equalizing populations across all electoral constituencies within a state. The commission redrew the electoral boundaries in 2008 after a period of more than three decades. Prior research has documented that the 2008 electoral boundaries drawn by this commission are mostly politically neutral (Iyer and Reddy (2013)). The commission ignores the administrative boundaries at the block level – the lowest administration level in India – while drawing the electoral boundaries, resulting in a haphazard overlap of administrative and electoral boundaries. Therefore, the process creates a quasi-random distribution of the number of politicians governing a block, because block, whether wholly or partially inside an electoral constituency, comes under the jurisdiction of the politician. Although these politicians are equally and jointly responsible for the governance of the block, they do not compete with each other for votes. We refer to the blocks governed by multiple politicians as split blocks and those governed by a single politician as an unsplit block.

Our first contribution is to introduce a novel dataset on the entry of private firms from 2003 until 2016. Our dataset spans the universe of the Indian formal market over this period. We start by augmenting the firm-entry dataset from the Ministry of Corporate Affairs with the precise location of these firms, which we obtain by parsing the text in the address file. We then merge the geo-referenced firm-entry data with the electoral and administrative-boundaries data. The resultant matched dataset that we assemble has the unique advantage of allowing us to observe the location choice of a new firm and the number of politicians governing the location across a full major economy and over a long time period.

The quasi-random variation in the distribution of the number of politicians and granular geo-referenced novel micro-data on firm entry allows us to use a geographic regression discontinuity (RD) to identify the effect of multiple politicians. Specifically, we compare units

result in lack of collective action because of coordination failure or the free-rider problem and related issues as discussed in the literature on common agency problem (Bernheim and Whinston (1986), Dixit (1997), Dixit, Grossman and Helpman (1997)).

located close to the boundary separating split blocks from unsplit blocks.[4] An important assumption for our RD estimation is that all relevant factors before the 2008 delimitation vary smoothly at the block boundaries. Using the 2001 Census data, we document that the villages just inside a split block – governed by multiple politicians based on 2008 delimitation – are similar to villages in unsplit blocks just outside the boundary across several dimensions, including population, access to education and health, banking and entertainment infrastructure, and geography. This observation is consistent with the political neutrality with which the 2008 electoral boundaries were determined and the RD assumption that all relevant factors before the 2008 delimitation varied smoothly at the block boundaries. This implies the villages located in unsplit blocks just outside the boundary of a split block are a valid counterfactual to villages situated just inside the split block.

Comparing units, villages hereafter, on either side of the boundary separating split and unsplit blocks after 2008, we find the number of new firms is 3% higher in villages just inside a split block relative to villages in unsplit blocks just outside the boundary. Similarly, the villages just inside a split block are associated with 7% higher nightlight intensity than villages in unsplit blocks just outside the boundary. Additionally, villages just inside a split block are associated with 5% higher employment and reduced demand for unemployment benefits, which is reflected in the lower application rates of the national employment guarantee scheme (NREGA). Furthermore, we document that the treatment effect increases monotonically with the number of politicians governing the split blocks.

We further refine our identification by focusing on a subsample of boundaries separating split and unsplit blocks to address issues of selective sorting around the border. Specifically, we focus on straight-line-like boundaries, and boundaries defined by salient geographic characteristics, namely rivers and river basins. These results are qualitatively similar – and often statistically equal – to those of our main specification.

Our results are robust to a variety of analyses: alternative RD specifications, bandwidths, and kernels; falsification test and placebo analysis; dropping observations to remove small and large blocks; alternative transformations of the dependent variable; controlling for other covariates; controlling for the quality of politicians through constituency fixed effects; comparing grids of alternative sizes across the boundary; and standard error adjustments to account for spatial autocorrelation. Moreover, we show additional firms entering split blocks are unlikely to exit more than firms entering in unsplit blocks.

Next, we use a differences-in-discontinuity design to examine the effect of the exogenous change in the number of politicians governing a block following the 2008 delimitation. India redrew its electoral boundaries in 2008 after three decades, resulting in widespread

[4]The unit in our analysis refers to a village. We use the terms village and units interchangeably.

changes to electoral boundaries and the distribution of the number of politicians governing a block. Combining this natural experiment with the geo-referenced data spanning before and after 2008 allows us to conduct a differences-in-discontinuity estimation. Specifically, the test allows us to document the effect of an area moving from being governed by a single politician to multiple politicians and vice versa. Our estimate indicates the transition of a block from being governed by a single politician to multiple politicians is associated with a 1.1%-1.6% increase in the entry of new firms, and the transition of a block from being governed by multiple politicians to a single politician is associated with a 0.7%-1.0% reduction in firm entry. This result adds credibility to our findings from the geographic RD design indicating the effect of changing the number of politicians is symmetric Specifically, we observe an increase in firm entry when a block switches from being unsplit to split and a decrease in firm entry when a block switches from being split to unsplit.

We explore several dimensions of cross-sectional heterogeneity in industry and firm characteristics to evaluate the pathways underlying the higher entry of firms in blocks with multiple politicians. Our results suggest multiple politicians increase firm entry by reducing regulatory bottlenecks – manifested through the higher entry of firms in regulated industries. Moreover, we provide direct evidence showing the projects announced in split blocks take less time to receive regulatory approvals. This finding is further reflected in the higher entry of small firms, because regulatory or procedural bottlenecks often act as barriers to the entry of small firms. Higher entry of firms in areas with multiple politicians could also result from higher corruption leading to grease in the wheels.[5] However, this is possibly unlikely, because we document lower entry of firms operating in industries more susceptible to cronyism. Additionally, greater entry of small firms provides complementary evidence against the grease-in-the-wheels mechanism, because corruption represents an extra cost of doing business and is more likely to adversely affect small firms (Svensson (2003), Fisman and Svensson (2007), Colonnelli and Prem (2022)).

Finally, we investigate if potential checks and balances drive multiple politicians to provide a better economic environment that facilitates firm entry. Our premise of checks and balances between multiple politicians will be highest if collusion between multiple politicians is difficult. Specifically, collusion between politicians would require the net benefit from collusion to be higher than the net benefit from deviation. We use two measures that can potentially affect the benefits of collusion or deviation – non-alignment in political parties and non-alignment in caste. Opposition in political parties increases the benefit of deviation. Differences in caste can increase the cost of collusion through lower cultural proximity, resulting in lower trust or high information frictions (Fisman, Paravisini and Vig

[5]See Leff (1964), Huntington (1968), and Lui (1985).

(2017)). Exploiting the differences in political parties and the caste of politicians in split blocks, we find greater firm-entry in blocks split across multiple politicians who are non-aligned either in political party or caste lineage. The results indicate the primary channel through which multiple politicians positively affect firm entry is by imposing checks and balances on each other. Additionally, using a close-election RD design, we validate the findings by documenting lower private returns to holding public office – a measure of rent extraction (Fisman, Schulz and Vig (2014)) – for a politician that has a greater share of the population residing in split blocks.

Using survey data on the response of local bureaucrats, we present direct evidence showing that multiple politicians improve bureaucratic efficiency through active management. Furthermore, we document an overall increase in state efficiency in the presence of multiple politicians. This finding is reflected in the following: a cost-effective provision of roads; greater provision of infrastructure; greater confidence in the local politician and other aspects of local state machinery, such as police and the village governance body; greater confidence in the ability of the state to provide goods such as schools and hospitals relative to the private sector; and a higher likelihood of incumbent's reelection.

Related Literature: This paper is most closely related to the literature on the design of political institutions. We contribute to this literature by focusing on a certain aspect of political institutional design – the presence of multiple politicians. We provide well-identified empirical evidence showing multiple politicians positively affect firm entry and economic growth. Checks and balances that multiple politicians impose on each other are the key driver of this result. Moreover, we outline the mechanism through which checks and balances foster firm entry and economic growth – reduction in regulatory costs and cronyism, and overall greater state efficiency. Our documented reduction in cronyism due to checks and balances is consistent with the predictions of Acemoglu, Robinson and Torvik (2013). The importance of checks and balances in political institution dates back to Montesquieu (1751) and Kant (1795) and has been the foundation of debate on the relative efficiency of decentralized and centralized governance systems (Bardhan (2002)). Specifically, our results show that increasing the degree of horizontal decentralization can foster economic growth when different segments of horizontal decentralization can impose checks and balances on each other. This claim is consistent with the predictions of Persson, Roland and Tabellini (1997, 2000).

Our paper is also related to the literature on the common agency problem or the multiple principal problem (Bernheim and Whinston (1986), Dixit (1997), Dixit, Grossman and Helpman (1997), Mezzetti (1997), Peters (2001), Laussel and Le Breton (2001), Bergemann and Välimäki (2003)). This literature has primarily focused on issues of lack of coordination, duplication of effort and free-rider problem to hypothesise the negative outcomes of multiple principals. However, multiple principals can have positive effect by imposing checks and balances that reduces the likelihood of an agent's capture by a particular interest group. In fact, our results support the latter. We show that non-aligned multiple principles can impose checks and balances on each other thereby reducing the capture of the state machinery by a particular interest group, as evidenced by the decline of cronyism.

Our study also relates to the literature on the determinants of political corruption and the policies that can potentially deter corrupt practices. The literature has primarily focused on external checks and balances imposed through audits and anti-corruption laws in curbing political corruption (Olken (2007), Bobonis, Cámara Fuertes and Schwabe (2016), Avis, Ferraz and Finan (2018), Colonnelli and Prem (2022) among others). We add to this literature by showing political corruption could potentially be curbed by institutions where multiple politicians maintain checks and balances on each other.

Finally, we contribute to the literature studying the role of constraints in general and regulatory cost in particular in restricting the entry of firms. Using data from 85 countries, Djankov et al. (2002) show high regulatory costs impede the entry of firms. On a similar note, Klapper, Laeven and Rajan (2006) find costly regulations hamper the creation of new firms in a comprehensive database of European firms. We direct the readers to Djankov (2009) for a detailed discussion of the literature examining the role of regulatory constraints in firm entry. Other sources of constraints that have played an important role restricting firm entry include credit markets (Cetorelli and Strahan (2006), Kerr and Nanda (2009) among others), liquidity constraints (Evans and Jovanovic (1989), Holtz-Eakin, Joulfaian and Rosen (1994), Hurst and Lusardi (2004), De Mel, McKenzie and Woodruff (2008), McKenzie (2017)), access to collateral (Schmalz, Sraer and Thesmar (2017)), and insurance (Hombert et al. (2020)). Woodruff (2018) presents a detailed review of literature on the constraints to small and growing businesses in the context of developing markets. This paper contributes to the literature by documenting a hitherto unexplored barrier to firm entry – political institutions. We show that differences in political institutions can explain differences in firm entry. Specifically, we document that increasing the number of politicians governing an area positively affects firm entry by reducing regulatory inefficiencies and providing a better operating environment.

Closest to our study is the work of Gulzar and Pasquale (2017). Like them, we use a close border design to compare villages across split and unsplit blocks. Gulzar and Pasquale (2017) focus on unemployment assistance from India's *National Rural Employment Guarantee Scheme* (NREGS), whereas we examine economic activity in the private sector – firm entry, employment, and consequently economic development. Moreover, we add to the identification strategy by using the boundary reforms in 2008 to employ a differences-in-discontinuity design. While Gulzar and Pasquale (2017) find unemployment assistance is lower in areas where bureaucrats answer to multiple politicians, our results indicate regions with multiple politicians have greater new firm entry and higher employment, manifesting as lower demand for unemployment assistance. We directly validate the lower demand for unemployment assistance by examining the NREGS applications data, which show 5% lower applications for unemployment benefits filed in split blocks relative to unsplit blocks. Therefore, we view our empirical results as complementing their findings. However, we argue the state machinery can be more efficient under multiple politicians than under single politician. We support this argument by documenting cost-effective supply of roads, greater provision of commercial electricity supply, better implementation of welfare programs such as constructing toilets under the Swacch Bharat Mission, and higher confidence in the local politician, local state machinery such as police and panchayats, and hospitals and schools provided by the state in areas governed by multiple politicians.

The remainder of the paper proceeds as follows: Section 2 discusses the institutional background on which the empirical investigation of this paper is based. Section 3 provides a brief description of the data. Section 4 lays down the empirical strategy and the main results. Section 5 provides the mechanism and section 6 concludes.

2 Background

This section discusses the institutional details relevant to the analysis, which includes a brief discussion of administrative structure in India, the role of local bureaucrats and politicians in implementing regulation and other development programs at the local level, haphazard overlap of electoral and administrative boundaries resulting in basic administrative units (blocks) being governed either by single or multiple politicians, and the 2008 delimitation process that defined the electoral boundaries.

2.1 Administrative Structure of India

The administrative structure of India is designed as a nested hierarchy of country subdivisions. This hierarchy includes six tiers of government, starting from the federal government of the Republic of India, followed by states, division, district, subdistrict, and finally the local governance units (see appendix Figure A.1). We refer to the local governance units or the basic administrative units in urban and rural areas as blocks. These blocks can include a single town, a village, or a cluster of smaller towns and villages and are the primary treatment unit in this paper. The policy implementation at the block level is under the jurisdiction of local bureaucrats and local politicians. Local politicians can be federal or state-level elected representatives. In this paper, we focus on state-level elected representatives because they are ultimately responsible for implementing and designing local policy and directly control local bureaucrats through their powers of evaluation and transfers of bureaucrats (Iyer and Mani (2012)).

2.1.1 Local Bureaucrats

The basic administrative units, blocks hereafter, are managed by local bureaucrats. Local bureaucrats have immense influence over the local de-facto regulatory climate that a firm needs to navigate. Bureaucrats' impact comes from their official powers, which include – (1) providing access to essential production inputs such as water, electricity, and a phone connection, (2) accepting applications for establishing new commercial entities, (3) providing business licenses, occupancy certificates, and several other permits including zoning and land use permits, property-use permits, construction permits, and health and fire safety-related permits; and (4) inspection of businesses. Additionally, local bureaucrats often act as the nodal officer for the area providing consultation to the federal and state government on implementing business-related regulation. Lastly, local bureaucrats are also responsible for constructing and maintaining essential infrastructure needs such as roads and power supply as well as implementation of welfare schemes. Although local bureaucrats enjoy a great deal of autonomy in the management of local affairs, they are eventually accountable to the elected officials and politicians at the state level.[6]

2.1.2 Politicians

India is the world's largest democracy, with over 700 million voters. Indian voters elect representatives at the federal and the state level to the Parliament and state assembly, respectively. State-level politicians, referred to as members of the Legislative Assembly (MLA), represent their constituents at the State Legislative Assembly and are elected based on a plurality rule. The jurisdiction of local politicians includes all blocks, wholly or partially, contained within the boundaries of their electoral constituency.

2.2 Electoral Boundaries

The boundaries of an assembly constituency are drawn by an independent, non-partisan, and powerful commission known as the Delimitation Commission of India.[7] The explicit goal

[6]Existing work has shown that local state-level politicians have influence over the assignment of local bureaucrats (Iyer and Mani (2012)).

[7]The voting members of the Delimitation Commission of India include a retired Supreme Court judge, the Chief Election Commissioner of India, and respective state Election Commissioners. Other members include 10 elected representatives

of the Delimitation Commission is to redraw electoral boundaries such that the population is equalized across all assembly constituencies within a state (GOI (2004)).[8] Although these electoral boundaries were drawn after each decennial census, this process was halted in 1977 until after 2001.[9]

India began the process of redrawing the boundaries of electoral constituencies in 2002, based on the 2001 census of India. On 4 January 2008, the Cabinet Committee on Political Affairs (CCPA) decided to implement the order from the Delimitation Commission following a notice from the Supreme Court of India in December 2007. The President finally approved the order from the Delimitation Commission on 19 February 2008, implying all future elections in India for states covered by the commission would be held under the newly formed constituencies. Iyer and Reddy (2013) argue that the 2008 delimitation resulted in widespread changes to the electoral boundaries since this was the first redrawing of electoral boundaries in three decades, and this process of redistricting, by and large, achieved its goal of population equalization and mainly was politically neutral.[10] Moreover, the Constitution (Eighty-fourth Amendment) Act of 2001 restricts changing of the electoral boundaries until after the year 2026.[11]

2.2.1 Overlap of Electoral and Administrative Boundaries

The governance is administered at the block level, while the representatives are elected at the assembly constituency level. The explicit goal of the Delimitation Commission is to redraw electoral boundaries such that the population is equalized across all assembly constituencies within a state. While this objective is subject to certain geographic constraints, the administrative boundaries of a block are not considered during the design of assem-

from each state acting as associate members, but they do not have voting power on the final decisions of the Commission. The Commission's final decision cannot be challenged in any court of law or be modified by the Parliament or the respective State Legislative Assemblies.

[8] This objective was subject to the constraints that assembly constituencies are geographically compact and contiguous, and lie entirely within a national parliamentary constituency.

[9] The Constitution (42nd Amendment) Act of 1976 froze all electoral boundaries until after the 2001 Census. This Constitutional amendment was enacted during the period of national emergency in India following complaints from several states that the process of delimitation based on recent population, incentivized states to attenuate the implementation of population control policies, because a large population would result in more state representatives in the Indian Parliament.

[10] Using data from the states of Rajasthan and Andhra Pradesh, Iyer and Reddy (2013) find the 2008 redistricting process was not influenced by incumbent politicians. However, they note some specific politicians in the advisory committee of the Delimitation Commission may have avoided unfavorable changes. Quantitatively, their results suggest the redistricting process did not make a considerable difference to either the advantage enjoyed by the incumbent party or the electoral prospects of incumbent politicians.

[11] The redrawing of electoral boundaries is closely tied to the schedule of the Indian census. The schedule of the decennial Indian census implies the electoral boundaries implemented in 2008 will be intact until at least 2031.

bly constituencies.[12] This results in each state being divided by two sets of boundaries - administrative block boundaries and assembly constituency boundaries.[13]

A block, whether wholly or partially, inside an assembly constituency comes under the jurisdiction of the MLA.[14] As a result of this overlap, blocks are either under the jurisdiction of multiple politicians (split blocks) or a single politician (unsplit blocks) as shown in appendix Figure A.3b. The block-level local bureaucrats are accountable to all the MLAs in charge of the block, regardless of whether a block is wholly or partially included in the assembly constituency. Figure 1 presents a microcosm of our setting using an example of adjacent split and unsplit blocks of Morshi and Warud in the district of Aamravati, Maharashtra. The haphazard overlap of assembly constituency and block boundaries generates the variation in the number of politicians governing a block. Figure 2 presents the geographic distribution of split and unsplit blocks in our sample. Split blocks constitute 40% of blocks in our sample, and do not appear to be geographically concentrated. Split blocks account for 50% of the total 2001 population and 40% of the total geographic area. This is the primary source of heterogeneity we exploit in this paper.

3 Data

This section presents novel data on firm entry in India; the geospatial information on rivers and river basins, electoral and administrative boundaries to identify split and unsplit blocks, other data sources to identify the provision of public goods, and survey data to identify trust in the state machinery.

3.1 Data on Firm Entry

We obtain novel data on the registration records of approximately 750,000 for-profit private firms established between 2003 and 2016 from the Ministry of Corporate Affairs (MCA), Government of India. The government of India uses these data to compute the private sector value-added. Hence, our sample of firms constitutes the universe of all firms registered with the MCA and account for the 100% of private sector value-added to overall gross domestic product (GDP) in India.

[12] This objective was subject to the constraints that assembly constituencies are geographically compact and contiguous, and lie entirely within a national parliamentary constituency.

[13] Appendix Figure A.2 shows a representative example of the electoral and administrative boundaries from the state of Karnataka.

[14] Note that although a block can be under the jurisdiction of multiple MLAs from different assembly constituencies, individuals can only vote for candidates in one assembly constituency depending on the village or town they reside in. Hence, the multiple MLAs governing a block do not directly compete with each other in elections.

The data provides us with the date of registration and information on the precise address of the firm's operations. We use the address information to construct a dataset of India's spatio-temporal private sector economic activity from 2003 to 2016. First, we geolocate each firm using the Pincode obtained from the firm's registered address. Our dataset contains approximately 16,000 unique pincodes. We use Google's Geocoding API to obtain spatial coordinates for each Pincode.[15] Second, we aggregate the number of firms at the desired spatial resolution – in this case, village or unit level – using the spatial coordinates for each firm. Figure B.1a illustrates the spatial distribution of new private firms registered across all blocks in India from 2003 to 2016. Column 1 of appendix table B.1 provides a summary of the number of new firms registered each year from 2003 to 2016.

3.2 Identifying Split Blocks

We obtain the geospatial data on administrative blocks from the 2001 Indian census.[16] We obtain geospatial data on electoral boundaries for the 2008 and the 1977 delimitation from the same source. We overlap the shapefiles of these two boundaries to identify split and unsplit blocks. Following the logic that a block that is either wholly or partially located in an assembly constituency is under the jurisdiction of the politician, we define a block as a split block if it is a part of more than one assembly constituency. Specifically, to account for any errors in the drawing of electoral and administrative boundaries.[17], we require each partition to occupy at least 10% of the geographic area of the block.

Figure A.2 and A.3 present a pictorial representation of the exercise described above. Figures A.2a and A.2b illustrate the administrative and electoral boundaries for one of the Indian states – Karnataka. Figure A.3a shows the overlap between electoral and administrative boundaries. Figure 2 presents the geographic distribution of split and unsplit blocks in our sample. Split blocks make up 39.43% of blocks in our sample and do not appear to be geographically concentrated. The split blocks account for 50% of the total 2001 population and 40% of the total geographic area. Moreover, 83.08% of the split blocks are governed by two politicians, three politicians govern 14.83% of split blocks, and more than three politicians govern the remaining 2.09% of the split blocks. Figure A.4 presents the distribution of blocks by the number of governing politicians in our sample.

[15]Documentation: https://developers.google.com/maps/documentation/geocoding/start

[16]We source the geospatial data on Electoral Boundaries from DataMeet DataMeet is a community of Data Science and Open Data enthusiasts. The community creates digital maps of India, sourcing data from different government websites.

[17]Our results are robust to changing this 10% cut-off.

3.3 Exogenous Block Boundaries

We further refine the identification in our RD design to address potential issues of selective sorting around the border in two ways: (1) identifying boundaries between split and unsplit blocks defined by geographic features - in this case, river segments, and (2) identifying straight-line-like boundaries separating split and unsplit blocks.

First, we identify boundaries defined by rivers and river basins. We obtain high-resolution geospatial data on river segments in India from HydroATLAS (see Linke et al. (2019)). We superimpose these river segments against the block boundaries. We then identify block boundary segments that follow the course of a river segment. We restrict our sample to block boundary segments where the river segment runs across the entire segment and are large enough to be a territorial delimiter. Specifically, we require the length of the river segment to be at least 80% of the length of the boundary segment, and the river is large enough; that is, we require the average discharge along the river segment to be greater than or equal to 200 m^3/s or cumecs. Figure 3 provides four representative examples of block boundaries separating a split and unsplit block that are defined by a river segment.

Second, we identify straight-line-like boundaries using a measure of the straightness of a boundary segment – *Sinuosity*. Sinuosity is defined as the ratio of the curvilinear length of the segment to the euclidean distance between the endpoints. We extract the spatial coordinates and the common boundary segment between neighboring blocks using GIS (geographic information system) tools. We compute sinuosity as the ratio of the length of the common boundary segment to the haversine distance between the endpoints. Border segments with sinuosity closer to 1 are more straight-line-like. Figure B.2 provides a representative example of straight-line-like boundary segment. Figure B.2b contrasts the boundary segment against a straight line joining the endpoints. The two segments overlap, yielding a sinuosity of ≈ 1. Figure B.3 provides a representative example of a squiggly boundary segment. Figure B.3b suggests the actual boundary segment deviates significantly from the straight line joining the endpoints. The sinuosity of the boundary segment is 1.59, implying a more squiggly boundary segment.

3.4 Other Data Sources

We provide a brief description of the other data sources used to construct the variable on other economic and socioeconomic outcomes.

Nighttime Lights. We use a global nighttime light dataset provided by Li et al. (2020). Li et al. (2020) integrates nighttime data from the Defense Meteorological Satellite Program (DMSP) and the Visible Infrared Imaging Radiometer Suite (VIIRS) to create a harmonized time series before and after 2013. Figure B.1b illustrates the spatial distribution of average night lights across all blocks in India from 2003 till 2016. Column 2 of appendix Table B.1 provides a summary of the average nightlights each year from 2003 to 2016.

2001 Census of India. We use the geospatial data on administrative units, namely, villages, towns, and blocks, from the 2001 population census of India, which we obtain from Meiyappan et al. (2018). Our analysis uses data on demographic characteristics from the Primary Census Abstract data series and local amenities such as access to education and health, banking and entertainment infrastructure, and geography from the Village Directory data series.

2011 Census of India. We use data on the demographic characteristics and local amenities from the 2011 Population Census of India. We obtain the data from the Socioeconomic High-resolution Rural-Urban Geographic Data Platform for India (SHRUG). We direct the readers to Asher et al. (2021) for discussion on the SHRUG dataset. We use the location identifiers in SHRUG to link the geographic units from the 2001 and the 2011 Population Census .

Assembly Constituency Electoral Data. We obtain data on electoral outcomes from SHRUG (Asher et al. (2021), Jensenius and Verniers (2017)). The dataset provides information on each contesting candidate's political party affiliation and votes in the state legislative elections between 1990 and 2018.

India Human Development Survey (IHDS). IHDS provides a household-level panel dataset with a wide range of socio-economic characteristics. The survey was carried out in two waves, IHDS-I (2004-05) and IHDS-II (2011-12). In our analyses, we focus on the respondent's confidence in institutions: government, politicians, state machinery such as police, and local governance bodies (*panchayats*), schools, and hospitals.

Pradhan Mantri Gram Sadak Yojana (PMGSY). We obtain data on the implementation of PMGSY, India's national rural roads program, from SHRUG (see Asher et al. (2021) and Asher and Novosad (2020)). The dataset provides village-level administrative data on estimated and actual costs for roads constructed under the scheme.

Swacch Bharat Mission (SBM). We obtain data on the implementation of SBM, a nationwide sanitation program, from the Department of Drinking Water and Sanitation, Government of India. The dataset provides information on funds disbursed at the village level under the scheme. To the best of our knowledge, we are the first to collect and use this data.

Capital Expenditure Database (CapEx). We obtain the Capital Expenditure (CapEx) database from the Centre for Monitoring Indian Economy (CMIE). Projects costing more than INR 100 million (approximately USD 2 million) are included in the database. The database provides detailed information on the date of project announcement, the date when the initial approvals are received, location, ownership, cost, and industry classification. We drop all projects announced by state-owned enterprises and include projects announced by private firms in our sample.

NREGS Application Data. We obtain data on individual-level applications filed for unemployment relief under the National Rural Employment Guarantee Scheme (NREGS) from 2016 to 2020 from the Ministry of Rural Development. The data provides information on the number of days for which each applicant seeks unemployment relief. We aggregate the number of days at the village and year level to create a village-year panel. To the best of our knowledge, we are the first to collect and use the application-level NREGS data.

Election Affidavits. In 2002, the Supreme Court of India required all contesting candidates to disclose their criminal, educational, and financial background by filing an self sworn affidavit with the Election Commission of India (ECI). The Association for Democratic Reforms (ADR) digitizes and publishes these affidavits on its open access repository platform, *Myneta.info*. We obtain the financial particulars of each candidate contesting the State Assembly Elections post 2008 delimitation and compute the asset growth for each candidate over the election cycle.

2011 Socio Economic Caste Census. We use the python package *Outkast*, which parses the data on more than 140 million Indians from the 2011 Socio Economic Caste Census. The package provides, for a particular surname in a state, the total number of respondents belonging to scheduled castes, scheduled tribes, and "other" caste categories. We use this data to infer the caste of politicians in each state. For a given surname of a politician, if the proportion of respondents belonging to a Scheduled Caste or a Scheduled Tribe is greater than 90%, we infer that the politician belongs to the Scheduled Caste or Scheduled Tribe.

Block Development Officer Survey. We use survey data on the opinions of local bureaucrats – Block Development Officers (BDOs) – from the states of Bihar and Kerela. The states conducted the cross-sectional survey from January-March of 2022. We use three key survey responses. First is the opinion of BDOs on the management by the politicians. The response is noted on a three-point scale where 1 indicates a lower degree of management and 3 indicates a greater degree of management. Second is the opinion of BDOs on their job difficulty. The response is noted on a ten-point scale where 1 indicates a low level of difficulty and 10 indicates a high level of difficulty. Third is the BDO's response on the availability of resources – the number of computers, permanent staff, and temporary staff. Additionally, the survey provides demographic information on BDOs, such as their education, gender, age, experience, and the block's name.

4 Impact of Multiple Politicians

The primary objective of this paper is to identify the effect of multiple politicians on local economic growth, in general, and the entry of firms, in particular. The haphazard overlap of administrative block boundaries and the electoral constituency boundaries allows us to identify blocks under the supervision of one politician (unsplit block) and blocks under the supervision of multiple politicians (split blocks). Blocks entirely subsumed within an electoral constituency are classified as unsplit blocks. By contrast, blocks that span more than one electoral constituency are classified as split blocks - split between multiple politicians.

4.1 Empirical Strategy

The empirical strategy hinges on comparing two administrative regions that are similar in all attributes but differ in the number of politicians at the helm of their administrative affairs. To do so, we follow two identification strategies. First, we employ a cross-sectional geographic regression discontinuity design by examining the differences in the outcome variable on either side of the boundary separating a split block and an unsplit block. Second, we employ a differences-in-discontinuity design by exploiting the 2008 delimitation of electoral constituencies. The redrawing of electoral constituency boundaries resulted in converting some unsplit blocks into split blocks and vice versa. The natural experiment of delimitation allows us to examine changes in differences across the border between two blocks in cases where delimitation changes the number of politicians in a block while keeping them fixed in the contiguous block.

4.1.1 Spatial Regression Discontinuity

We begin our analysis by estimating the causal effect of multiple politicians on the outcomes of interest using a regression discontinuity design. We compare outcomes of interest in a village located just inside a split block relative to villages on the other side of the boundary, within an unsplit block. We pool the outcome variables in a village across years, since 2008, and estimate the average causal effect of multiple politicians using the following regression discontinuity specification:

$$Y_{v(v \in b(B)} = \gamma \cdot Split_b + f(distance_v) + \beta \cdot X_v + \phi_B + \varepsilon_{v(v \in b)} \; for \; v \in bw \tag{1}$$

where $Y_{v(v \in b(B)}$ is the outcome of interest in a village v located within administrative block b belonging to a pair of split and unsplit blocks that share a common boundary B. $Split_b$

is a binary variable that takes a value of 1 if a block spans multiple electoral constituencies and consequently has multiple politicians in charge. X_v refers to a vector of village-level covariates such as population, area, distance to district headquarters, and compactness; ϕ_B is boundary fixed effect; and $f(location_v)$ is the RD polynomial, which controls for smooth functions of the geographic location for village v. Our baseline specification is a local linear polynomial in the distance of the village to the boundary B estimated separately on each side of the boundary, as suggested by Calonico, Cattaneo and Titiunik (2014), Cattaneo, Idrobo and Titiunik (2019), and Gelman and Imbens (2019). Following Dell and Querubin (2018), we use a triangular weighting kernel. We estimate our specification for different bandwidths bw, taking values of 5, 10, 20, and 50 km on either side of the boundary. Figure 4 illustrates this geographic RD design.[18] We check robustness to using various other forms of the RD polynomial, kernel, and bandwidths.[19]

Our coefficient of interest is γ - the effect of being just inside a split block, and governed by multiple politicians, on our outcome of interest. The interpretation of γ as a causal effect of multiple politicians requires two identifying assumptions. First, all relevant factors before the 2008 delimitation varied smoothly at the block boundaries. This assumption implies the villages located close to the boundary are similar in terms of observables such as geography, history, law, access to public goods and facilities, and unobservables such as culture, institutions, attitude, etc., before being sorted into split and unsplit blocks in 2008. Second, no selective sorting occurs across the RD threshold; that is villages cannot select in or out of a split block. This assumption ensures a village, within a narrow bandwidth of the boundary, is arbitrarily allocated into a split or an unsplit block. The two assumptions, taken together, ensure the villages, located in unsplit blocks, just outside the boundary of a split block are a valid counterfactual to villages situated just inside the split block.

The two identifying assumptions are likely to be true for our empirical design. As discussed in section 2.2, a block is defined as either split or unsplit based on the 2008 delimitation, which was largely politically neutral, devoid of gerrymandering, and focused primarily on equalizing populations across electoral constituencies. These electoral constituencies are large relative to the villages in the narrow bandwidth. Hence, villages along the boundaries did not have the ability to negotiate whether their blocks would be governed by a single or multiple politicians. Moreover, for robustness, we focus our analysis on a subset of (1) boundaries that are close to a straight line, because squiggly boundaries can in-

[18]Figure 4 illustrates a case of adjacent split and unsplit blocks in our sample. The geographic area shaded in red, is the administrative block of Morshi, in the district of Amaravati, Maharashtra. This block is split between the two assembly constituencies of Morshi and Teosa. The geographic area shaded in blue is the administrative block of Warud, an unsplit block, in the district of Amaravati, Maharashtra.

[19]We discuss these robustness tests in section 4.2.2 and present detailed results in appendix D.

dicate selective sorting (Polsby and Popper (1991), Alesina, Easterly and Matuszeski (2011)), and (2) boundaries defined by salient geographic characteristics, in this case, rivers and river basins. Additionally, we assess the similarity of villages across split and unsplit blocks by estimating specification 1 for important geographic variables and pre-2008 delimitation characteristics using data from the 2001 Indian Census. Table 1 reports these results across several important dimensions that include population, access to education and health, banking and entertainment infrastructure, and geography. We find balance on these geographic and pre-existing characteristics, suggesting the villages inside and outside the split blocks are comparable along the border.

4.1.2 Time Series Difference in Spatial Discontinuity

This section exploits the exogenous delimitation of electoral constituencies to exploit time-series variation in the number of politicians governing a block. This differences-in-discontinuity design allows us to control unobservables across villages and boundaries by including village fixed effects and boundary × year fixed effects.

The electoral boundaries were redrawn in 2008 for the first time since 1973. An independent and non-partisan body - the Delimitation Commission of India, changed the boundaries of the state (and national) electoral constituencies to equalize the population according to the 2001 census. The new boundaries are expected to remain unchanged until 2031. Iyer and Reddy (2013) show the redistricting process was largely devoid of any political motivation. Therefore, the 2008 delimitation provides an exogenous shock to the electoral boundaries and changes the number of politicians in charge of a block, by altering the overlap between electoral and block boundaries. The redrawing of electoral constituency boundaries resulted in converting some unsplit blocks into split blocks and vice versa. Specifically, the natural experiment of delimitation allows us to examine changes in differences across the border between two blocks in cases where delimitation changes the number of politicians in a block while keeping them fixed in the contiguous block. We estimate the following differences-in-discontinuity regression specifications:

$$Y_{v(v \in b(B),t)} = \gamma \cdot (Unsplit \rightarrow Split)_b \times Post_t + f(distance_v) + \beta_v + \phi_{Bt} + \varepsilon_{v(v \in b,t)} \ \forall \ v \in bw \tag{2}$$

$$Y_{v(v \in b(B),t)} = \gamma \cdot (Split \rightarrow Unsplit)_b \times Post_t + f(distance_v) + \beta_v + \phi_{Bt} + \varepsilon_{v(v \in b,t)} \ \forall \ v \in bw \tag{3}$$

Here $Y_{v(v \in b(B),t)}$ is the time-varying outcome of interest in a village v located in administrative block b belonging to a pair of split and unsplit blocks that share a boundary B in the period t. In regression specification 2, $(Unsplit \rightarrow Split)_b$ is a binary that takes a value of 1 for blocks that transitioned from being unsplit to split between multiple politicians following the 2008 delimitation. We compare these unsplit to split blocks with blocks that remained unsplit throughout. In regression specification 3, $(Split \rightarrow Unsplit)_b$ is a binary that takes a value of 1 for blocks that transitioned from being split to unsplit following the 2008 delimitation. We compare these split to unsplit blocks with blocks that remained split throughout. $Post_t$ is a dummy variable taking the value of 1 for the years following the 2008 delimitation. The coefficient of interest is γ, which captures the effect of changing the split status of an administrative block relative to the control group. ϕ_{Bt} controls for the time-varying boundary fixed effect that allows γ to be estimated from the differences between split and unsplit blocks sharing the same boundary. β_v denotes the village fixed effect which controls for both observable and unobservable time-invariant village-level characteristics. This also allows the estimation to come from the time-series variation of the same village and consequently the administrative block switching its split status. Finally, the inclusion of the RD polynomial $f(distance_v)$ allows γ to capture the difference in geographic discontinuity over time.

4.2 Spatial Discontinuity Results

This section examines the effect of multiple politicians. Specifically, we compare the spatial difference in the propensity of firms to enter and the consequent impact on local economic activity measured through nightlight intensity in a split block compared with an unsplit block.

Figure 5 presents the RD plot for these outcomes of interest with distance to the boundary as the running variable and a local linear trend to each side of the discontinuity. Figure 5a and 5b present the RD plots for firm entry and nightlight intensity, respectively. We observe a clear discontinuity at the boundary; this is, both firm entry and nightlight intensity exhibit a discontinuous jump when moving from an unsplit block to a split block.

Table 2 reports estimates for specification 1 using the natural logarithm of 0.001 plus firm entry and nightlight intensity as the dependent variables in Panel A and B, respectively. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in columns (1), (2), (3), and (4), respectively. Across all specifications, the coefficient of interest is positive and statistically significant. Panel A of Table 2 indicates the number of new firms is 3% higher in villages just inside a split block than in villages in unsplit blocks just outside the boundary. Similarly, the estimates reported in Panel B indicate that villages just inside a split block experience 7% higher nightlight intensity than villages in unsplit blocks just outside the boundary. The estimate in Panel B is greater than the estimate in Panel A, because nightlights capture the effect of multiple politicians on the formal and the informal sector activity. By contrast, firm entry captures the effect of multiple politicians on the formal sector alone. Next, we analyze the effect on employment. Using census data, we find 6% higher employment in villages just inside a split block than in villages in unsplit blocks just outside the boundary (see appendix Table C.1). Lastly, we document 5% lower applications for unemployment benefits filed under National Rural Employment Guarantee Scheme (NREGS), suggesting lower demand for unemployment benefits (see appendix Table C.2).

Further, we relax the homogeneity assumption of the treatment effects by including dummies for the number of politicians in split blocks. Table 3 reports cross-sectional heterogeneity based on the number of politicians in a split block. The magnitude of the coefficients increases in the number of politicians, and it is the highest for split blocks with four or more politicians. The results suggest the number of new firms in villages in split blocks governed by two, three, and four or more politicians are higher by 2.6%, 5.2%, and 36.6%, respectively, than the number of new firms in villages in unsplit blocks just outside the boundary.

These RD estimates from comparing firm entry, nightlight intensity, and employment level across villages in split and unsplit blocks within a narrow bandwidth around the boundary indicates positive effects of multiple politicians.

4.2.1 Exploiting Exogenous Block Boundaries

Although the electoral constituency borders are drawn to equate population across electoral constituencies, the boundaries between blocks could still be non-random. A potential concern with our identification strategy is that the boundary separating two blocks could be drawn to place certain villages in split or unsplit blocks. This possibly poses a severe threat to the selective sorting assumption of our RD design. We address this concern in two ways. First, we restrict our sample to straight-line boundaries separating split and unsplit blocks. Second, we focus on boundaries between split and unsplit blocks that are defined by salient geographic characteristics, in this case, rivers and river basins.

First, we restrict estimation to a sample of split and unsplit blocks partitioned by straight-line-like borders. The intuition behind this estimation is that more straight-line-like boundaries are more likely to be arbitrary than the more squiggly ones as discussed in Polsby and Popper (1991) and Alesina, Easterly and Matuszeski (2011). We define a boundary as a straight line if the Sinuosity Index (SI) measure for the boundary is less than 1.05.[20] Panel

[20]Sinuosity Index (SI) is defined as the ratio of the actual length of the curve and the Euclidean distance (shortest distance) between the endpoints of the curve. An SI value closer to one is an almost straight line, whereas a value greater than one is meandering. Our restriction of including boundaries with SI value less than 1.05 results in the inclusion of 6.24% of boundaries and 10.68% of blocks from the original sample. Our results are robust to considering an alternative cut-off value of 1.1.

A of Table 4 reports the results restricting attention to units partitioned by boundaries that follow relatively straight lines. The magnitude of the estimate is greater than the magnitude reported in Panel A of Table 2 indicating the bias is positive; that is, the selective sorting bias under-biases the estimate in our baseline analysis. However, these estimates are not statistically different from the estimates reported in Table 2.

Second, we restrict the sample to boundaries between split and unsplit blocks defined by geographic features, in this case, rivers, and river basins. The intuition of this estimation is that boundaries defined by geographic features are likely to be devoid of selective sorting. Figure 3 provides four representative examples of block boundaries separating a split and unsplit block that are defined by rivers or river basins.[21] Panel B of Table 4 reports the results restricting attention to units partitioned by boundaries defined by rivers and river basins. The estimate is positive, statistically significant, and greater in magnitude than the ones reported in Panel A of Table 2 indicating the selective-sorting bias to be negative. However, as before, these estimates are not statistically different from the estimates reported in Table 2.

Overall, the two results using straight-line-like boundaries and boundaries defined by rivers and river basis indicate our results are unlikely to be plagued by selective sorting of villages into split and unsplit blocks.

4.2.2 Robustness

We conduct a battery of robustness tests to ensure our results are not driven by a particular econometric specification, specific sample or transformation of the dependent variable, differences across villages along the boundary and covariates, firm exit, spatial auto-correlation, and spurious correlation.

First, we verify our results are robust to alternative econometric specifications. Appendix Table D.1 shows the results are robust to using a local quadratic polynomial instead of a local linear polynomial. The results are robust to using a uniform kernel as shown in appendix Table D.2. Appendix Table D.3 shows that the results are robust to modification of $f(.)$ in specification 1 to be a bivariate function of the latitude and the longitude of the village. Appendix Figure D.1 shows the results are robust to choosing any bandwidth between 2 km and 50 km. Appendix Table D.4 reports that the results are robust to inference based on Conley (1999) standard errors, which allows for spatial dependence of an unknown form, with cutoff distances of 2 km, 5 km, 10 km, and 20 km.

[21] We only consider rivers and river basins with an average discharge greater than or equal to 200 m^3/s or cumecs. We describe a boundary to be defined by a river or river basin if the boundary strictly follows a river for at least 80% of its length. This definition results in the inclusion of 3.02% of boundaries and 5.74% of blocks from the original sample.

Second, we verify that the results are not an artifact of sample and transformation of the key dependent variable. Panel A of appendix Table D.5 shows the results are robust to dropping small and large blocks, indicating the outliers are unlikely to drive our results.[22] Panel B of appendix Table D.5 shows results are robust to using inverse hyperbolic sine (IHS) transformation of the key dependent variable, in alternative samples, instead of $LN(0.001 + x)$ transformation.[23] In appendix Table D.7, we verify that the results are not driven by aggregating observations across time at the village level, by running a non-pooled regression using village-year as the unit of observation. Lastly, we verify that the results are not driven by using the village as the primary unit of analysis. Villages are a predetermined unit of aggregation and could potentially influence our results. For robustness, we create arbitrary grids of cell size - 1×1, 2×2, and 5×5 and aggregate data on firm entry at the cell level. Appendix Table D.8 shows the results are robust to using these arbitrarily defined cells.

Third, we address the concern that the villages located close to the border on either side of the boundary can be different in characteristics, and thereby, the observed impact of having multiple politicians would just be an artifact of such difference in characteristics. Our first defense to this concern is in Table 1 where we show various pre-existing village specific characteristics such as population, education, health, infrastructure, and geography are largely similar across villages along the border. Moreover, we document that firm entry and nightlights vary smoothly across these boundaries before the 2008 delimitation (see appendix Table D.9). Next, we include several covariates in the regression specification 1 to account for several other differences across villages and blocks. These covariates include the 2001 Census population, geographic area of the village, the geographic distance of the village from the district headquarters, and block compactness measured as in Harari (2020).[24] Appendix Table D.10 shows the results are robust to inclusion of these covariates. Another potential concern with our analysis is that the bordering split and unsplit blocks may systematically differ by the quality of the politician. We address this issue by augmenting our baseline specification with constituency fixed effects. Appendix Table D.11 reports these results and finds similar results, indicating differences in politician quality are unlikely to drive our

[22] A block is defined as a small block if the total number of firms entering the block during our sample period is less than 0, 5, 10, and 20. A block is defined as a large block if the total number of firms entering the block during our sample period is greater than 1000.

[23] Manipulations of the variables such as adding a small number before log transformation, can change the original structure of the data (Duan et al. (1983)) and substantially affect the empirical results (N'guessan et al. (2017)). Johnson (1949) and Burbidge, Magee and Robb (1988) suggest usage of IHS transformation instead of the log transformation to avoid such issues. Moreover, the IHS transformation has been used to overcome problems in regression analyses with right-skewed censored dependent variables like ours (Carboni (2012)).

[24] Michalopoulos and Papaioannou (2014) highlight the role of a region's distance to capital as a determinant of growth. Similarly, Bardhan (2002), and Asher, Nagpal and Novosad (2018) argue a state's capacity to provide the necessary infrastructure and growth opportunities in an area can be restricted by the physical distance between administrators and citizens. Harari (2020) highlights the impact of a city's shape on growth - the more compact the shape of the city, the greater is the growth potential.

results.

Fourth, we verify that the firms that enter split blocks are not more likely to exit. This test addresses the concern that additional firms entering split blocks are of poor quality and hence less likely to survive. We examine the probability of a firm exiting within six months, one year, and two years of its entry as a function of the block being split or unsplit. Appendix Table D.12 presents these results. The estimate of interest is negative and mostly statistically insignificant. This provides weak evidence that firms entering in split blocks are more likely to survive than firms entering in unsplit blocks. Hence, we can rule out the possibility that firms entering in unsplit blocks are of systematically lower quality and less likely to survive.

Fifth, using a falsification and a placebo test, we show our main regression is capturing an effect that only appears as we cross the actual boundary between split and unsplit blocks, and not just spatial autocorrelation, as warned by Kelly (2019). As a falsification test, we rerun the analysis using arbitrary borders. In particular, we draw fake borders inside each block in our sample such that these borders divide a block into three concentric zones of equal area, as shown in appendix Figure D.2. Appendix Table D.13 presents the results of comparing villages in the two inner concentric zones. This test compares villages within a block that are only separated by fake borders and have the same number of politicians. The coefficients are insignificant in every case, both economically and statistically. As a placebo test, we randomly define a block as split or unsplit and rerun our analysis using the fake split status assignment. We repeat this exercise and estimate the RD coefficient 10,000 times. Figure D.3 reports these results and finds insignificant results. Hence, the null effects in the falsification and the placebo test indicate our baseline estimation captures an effect that only appears as we cross the actual boundary between split and unsplit block and is unlikely to be spurious or driven by spatial autocorrelation.

4.3 Differences-in-Discontinuity Results

Next, we examine the effect of the exogenous change in the number of politicians governing a block, following the 2008 delimitation, on firm entry as discussed in section 4.1.2.

Panel A of Table 5 reports estimates from specification 2 associated with a block switching from being unsplit to split following the 2008 delimitation – the treatment group. The control group comprises of blocks that are always unsplit both before and after the delimitation and share a common boundary with the treatment group. The specification includes village and boundary × year fixed effects, comparing villages in the treatment group before and after delimitation with the villages in the control group while controlling for boundary-specific shocks to investment opportunities. We use different bandwidths of 5, 10, 20, and

50 km on either side of the boundary, separating the treatment and the control group in columns (1), (2), (3), and (4), respectively. Across all specifications, the coefficient of interest is positive and statistically significant. Specifically, the estimate indicates the transition of a block from being governed by a single politician to multiple politicians is associated with a 1.1% - 1.6% increase in the entry of new firms.

Similarly, Panel B of Table 5 reports estimates from specification 3 associated with a block switching from being split to unsplit following the 2008 delimitation – the treatment group. The control group comprises blocks that are always split among multiple politicians before and after the delimitation and share a common boundary with the treated group. As before, the specification includes village and boundary $\times$ year fixed effects and is estimated for different bandwidths of 5, 10, 20, and 50 km on either side of the boundary. The estimate of interest is negative and indicates a reduction in firm entry by 0.7% - 1.0% when a block switches from being governed by multiple politicians to a single politician.

Figure 6 plots the RD estimate between split and unsplit blocks for each year before and after the 2008 delimitation. Panel A plots the yearly RD estimates between the treatment blocks that switched from being unsplit to split following the 2008 delimitation and the control group that remained unsplit throughout. Panel B offers two key takeaways. First, we do not find discontinuity between the treatment and the control group before 2008, indicating an absence of pre-trends. Second, we find evidence of discontinuity between the treatment and the control group after 2008 that develops slowly over time. Panel B plots the yearly RD estimates between the treatment blocks that switched from being split to unsplit following the 2008 delimitation and the control group that remained split throughout. Again, we do not find discontinuity between the treatment and control groups in the years before 2008. However, we find a discontinuous decrease in firm entry in the years following the delimitation.

5 Mechanism

Theoretically, multiple politicians can either reduce or increase economic growth. The results discussed in Section 4 provide robust evidence that multiple politicians increase firm entry and, consequently, economic growth. This section probes the underlying mechanism through which multiple politicians positively affect firm entry. We show the increase in the entry of firms is driven by reduction in regulatory impediments, reduction in cronyism, and overall improvement in the efficiency of the state in providing public good aiding the entry of new firms. We argue these improvements result from greater checks and balances imposed by the existence of multiple politicians.

5.1 What Drives Firm Entry in Regions with Multiple Politicians?

This section exploits several dimensions of cross-sectional heterogeneity in industry and firm characteristics to evaluate the causal pathways underlying the higher entry of firms in blocks with multiple politicians. We particularly focus on regulatory costs, which can be a strong impediment to the entry of new firms, especially smaller firms. Better governance in the presence of multiple politicians can increase efficiency by reducing procedural delays and lowering the costs of regulatory procedures. Alternately, an increase in the number of firms in places governed by multiple politicians could result from higher corruption greasing the wheel and reducing procedural bottlenecks. We document that the efficiency channel drives the higher entry of new firms in blocks with multiple politicians. Additionally, we show that having multiple politicians reduces a firm's indulgence in rent extraction, consequently reducing the entry of crony firms.

5.1.1 Multiple Politicians Reduce Regulatory Costs

Regulatory costs emanating from high procedural bottlenecks can account for a significant difference in firm entry across regions as discussed in Djankov et al. (2002).[25] Regulatory costs can either be a direct outcome of an inefficient regulation or an inefficient implementation of the regulatory process. Whereas the regulatory framework is designed at the federal or state level, the implementation of the regulatory framework lies with local bureaucrats who are accountable to local MLAs. Hence, due to the variation in the number of governing politicians, local differences in procedural efficiencies in implementing the regulatory framework can potentially drive the observed differences in firm entry. Better management of the block can result in lower regulatory costs, subsequently resulting in greater firm entry.

We test this hypothesis by exploiting the industry-level heterogeneity in regulatory costs. Specifically, we examine the differences in firms' entry in industries with high (low) regulatory costs in split blocks relative to unsplit blocks. We test this by augmenting regression specification 1 with Split × Regulated along with village and boundary × industry fixed effects. Regulated is a binary variable that takes a value of 1 for firms operating in industries subject to high regulatory costs and 0 otherwise.[26] This test compares the entry of firms

[25]We direct the readers to Djankov (2009) for a review on the literature on regulation and firm entry.

[26]We define industries with high regulatory costs following the methodology for the classification of regulated industries in the United States based on Pittman (1977) augmented with India specific regulations and factors as discussed in Awasthi

operating in an industry with high regulatory cost with the entry of firms operating in an industry with the low regulatory cost within the same village and estimates this difference for split blocks relative to unsplit blocks. Panel A of Table 6 reports these results. Across all columns, the estimate of interest is positive and statistically significant. The results indicate the entry of firms in industries with high regulatory costs is 3.5% greater than the entry of firms operating in industries with low regulatory costs in split blocks relative to unsplit blocks.

Next, we provide direct evidence showing firms face lower regulatory costs in areas governed by multiple politicians. Specifically, we examine the time taken by private firms to receive regulatory approvals for their projects. The CapEx database, provided by the CMIE, allows us to compute the time taken for each project to obtain regulatory approvals. We compute approval time as the difference between the date when the initial approvals have been received and the date of project announcement. We examine the effect of the presence of multiple politicians in the location where the project is announced on approval using a differences-in-discontinuity design following equation 2 and 3. Table 8 reports the results examining the relationship between time for regulatory approvals and the transition of a block from split to unsplit. Results indicate the time for regulatory approvals for projects declines by 80% when a block switches from being governed by a single politician to multiple politicians. Conversely, time to regulatory approval increases by 57% when a block switches from being governed by multiple politicians to a single politician.

Regulatory costs can impose a high fixed cost that is likely to deter the entry of firms in general and entry of small firms in particular. We exploit the cross-sectional heterogeneity in the size of new firms to examine the effect of multiple politicians on firm entry by size. We group firms into size deciles with first decile referring to firms in the smallest size group, and the tenth decile referring to the firms in the largest size group. We estimate our baseline RD coefficient for each size decile relative to the 10^{th} decile. Our data structure in this specification allows us to include village fixed effects and boundary × size decile fixed effects. Figure 7 presents these estimates. The relative RD estimates monotonically decline with size deciles; that is, the largest effect of the presence of multiple politicians on firm entry is observed among the smallest firms that are likely to find the fixed regulatory costs more prohibitive.

The results taken together show that lower regulatory costs in areas governed by multiple politicians are a potential driver of higher firm entry in these areas.

et al. (2019). Appendix Table E.1 presents the list of industries classified as industries with high regulatory costs in our sample.

5.1.2 Multiple Politicians Reduce Cronyism

The higher entry of new firms in the areas governed by multiple politicians could be driven by greater checks and balances or higher cronyism. Greater checks and balances can lead to increases in efficiency, whereas higher cronyism can act as "*grease in the wheels*" fostering greater entry for crony firms. The lower regulatory costs effect documented in section 5.1.1 is consistent with both the checks and balances and the cronyism channel. We distinguish between the two channels by investigating the effect of the presence of multiple politicians on the entry of crony firms. Lower entry of crony firms would support the checks and balances channel, whereas higher entry of crony firms would support the cronyism channel. Also, investigating the entry of crony firms is important because the quid pro quo between crony firms and politicians can crowd out the entry of other firms (Zingales (2017)).

We exploit the industry-level heterogeneity in seeking rents by engaging in a quid pro quo with the elected politicians. We refer to firms in high rent-seeking industries as crony firms.[27] We augment the regression specification 1 with the interaction term of crony and split, boundary $\times$ industry fixed effects, and village fixed effects. Crony is a binary variable taking a value of 1 if the firm belongs to an industry prone to high crony capitalism. This test compares the entry of high-crony firms with the entry of low-crony firms within the same village and estimates this difference for split blocks relative to unsplit blocks. Panel B of Table 6 reports these results. The estimate of interest is negative and statistically significant across all columns. The results indicate the entry of high-crony firms is 5% lower than the entry of low-crony firms in split blocks relative to unsplit blocks.

The results thus support the premise that greater firm entry is driven by increased efficiency, potentially through improved checks and balances, and not driven by higher corruption greasing the wheels.

5.1.3 Multiple Politicians Improve Provision of Public Goods

The efficiency of state machinery is crucial for firm operations. Businesses rely on state machinery not only to get licenses and permissions but also to improve the overall business climate by providing public goods such as roads and power. Munnell (1992) argues public capital investment in infrastructure can expand the productive capacity of an area by increasing resources and enhancing the productivity of existing resources. Gupta, Hasan and Kumar (2008) and Gupta and Kumar (2010) point to the importance of infrastructure

[27] Specifically, we use the index of industry-level cronyism created by "*Economist*" using the methodology developed by *Transparency International* to classify firms as a high crony and low crony firms. The detailed description of the method to classify industries as crony can be found in the article in The Economist, Planet Plutocrat. Appendix Table E.2 presents the list of high crony industries in the sample.

development for the manufacturing sector's growth to accelerate in India. We posit that multiple politicians can increase the efficiency of local state machinery, thereby increasing the quantity of public goods and decreasing the time and the cost required to provide public goods. We test this hypothesis in the context of public goods that are crucial for a firm's operation and foster the entry of new firms – roads and power supply. Roads and power are two important public capital investments facing severe infrastructure constraints, especially in India.

We investigate the effect of multiple politicians on the efficiency of infrastructure provision by examining a large nationwide road construction program - *Pradhan Mantri Gram Sadak Yojna* (PMGSY).[28] Specifically, we examine the effect of multiple politicians on the cost-effectiveness of road construction. We construct a variable for cost overruns associated with road construction in a village, using estimated and actual cost data for each road. Our measure of cost overrun may be driven by three factors. First, local bureaucrats may consistently underestimate the cost of a project, suggesting their incompetency for on-the-ground implementation. Second, local bureaucrats may shirk their responsibilities or siphon off money, contributing to cost overruns.[29] Both of these factors are indicators of the inefficiency of state machinery. Third, idiosyncratic geographic shocks can cause cost overruns in the construction of roads. We control for such shocks in our estimation strategy by including boundary × year fixed effects.

We exploit the 2008 delimitation using the differences-in-discontinuity specification discussed in Section 4.1.2. Panels A and B of Table 7 report the results from estimating specifications (2) and (3), respectively, with boundary × year and block fixed effects.[30] The estimates in Panel A across all bandwidths are negative and statistically significant. This finding indicates the transition of a block from being governed by a single politician to multiple politicians is associated with a 16% decline in cost overruns on a conservative note. The estimates reported in Panel B are positive and indicate an increase in a cost overrun of 3-5% when a block switches from being governed by multiple politicians to a single politician. Broadly, the results from Table 7 suggest the cost overruns are lower in split blocks indicating the local state machinery is more efficient in the presence of multiple politicians.

We supplement this analysis by examining the provision of another public good - electricity supply for commercial use. We focus on the commercial power supply because it is imperative for firm growth and is controlled by the state. Appendix Table F.1 reports

[28] We direct the readers to Asher and Novosad (2020) for a detailed discussion on the road construction scheme – PMGSY – and Asher et al. (2021) for detailed discussion on the data spanning from 2001 to 2014.

[29] Olken (2007) argues that the difference between actual and estimated expenditure reflects the *missing expenditure* and indicates the level of theft by public officials or corruption.

[30] We cannot use village fixed effects as only one road is constructed per village under the PMGSY scheme during our sample period spanning from 2001 until 2014.

results using high power supply for commercial purposes as the dependent variable.[31] The estimate of interest is positive and statistically significant. The results suggest that a village in a split block is 0.8-1% more likely to receive power for more than 70% of time relative to villages in unsplit blocks.

The results so far support the mechanism whereby checks and balances imposed by multiple politicians on each other increase firm entry by reducing regulatory costs, reducing cronyism, and increasing the efficiency and quantity of public good provision most relevant to firms.

5.2 How Do Multiple Politicians Encourage Firm Entry?

Section 5.1 documents the differences in characteristics across regions, governed by single and multiple politicians, that facilitate greater entry of firms. This section highlights the underlying mechanism through which multiple politicians provide a better environment for firms to operate. We show multiple politicians, particularly from opposing political dispensation or from different castes, impose checks and balances on each other, manifesting as better conditions that foster firm entry.

5.2.1 Checks and Balances

We begin by examining if multiple politicians positively affect firm entry by imposing checks and balances on each other. Our premise of checks and balances between multiple politicians will be highest if it is difficult for multiple politicians to collude to extract rents. Specifically, collusion between politicians would require the net benefit from collusion to be higher than the net benefit from deviation. We use two measures that can potentially affect the benefits of collusion or deviation – non-alignment in political parties and non-alignment in caste. Opposition in political parties increases the benefit of deviation. Differences in caste can increase the cost of collusion through lower cultural proximity, resulting in lower trust or high information frictions (Fisman, Paravisini and Vig (2017)).

We investigate the checks and balances hypothesis by estimating specification (1) augmented with the interaction term of split blocks and the fraction of non-aligned politicians, boundary $\times$ year, and village fixed effects. The unit of observation is village-year. Specifically, the estimation exploits the within-village variation in a split block after 2008; that is, the coefficient of interest is estimated by changes in the fraction of non-aligned politicians within a split block over time while controlling for boundary-specific changes in investment

[31] We define a village as a high-power-supply village if the village receives commercial power more than 70% of time.

opportunities. Panel A of Table 9 reports results from the estimation exercise in which non-alignment is measured as the difference in political parties. Panel B of Table 9 measures non-alignment in terms of caste. We use different bandwidths of 5 km, 10 km, 20 km, and 50 km on either side of the boundary, separating a split block from an unsplit block in columns (1), (2), (3), and (4), respectively. The coefficient of interest is positive across all columns. Moreover, the estimate is statistically significant in all columns, except column (1). The results show split blocks with non-aligned politicians are likely to have greater firm entry than split blocks with all the politicians belonging to the same political party. Overall, these results support our proposition of checks and balances imposed by multiple politicians among each other.

5.2.2 Private Returns of Politicians

We investigate the mechanism of checks and balances by examining the private returns that the politicians make through the power of their public office. Bhavnani (2012) and Fisman, Schulz and Vig (2014) show a relatively high rate of growth in assets of the winning politician (winner's premium) reflects rent-seeking by the winner. Moreover, they argue the rent-seeking behavior of winners is likely to be greater when corruption is higher. Shleifer and Vishny (1993) show corruption can increase in the presence of multiple politicians if they act as independent monopolies. However, corruption can decrease when multiple politicians exert checks and balances on each other. Consequently, in the presence of multiple politicians, a politician's assets are less likely to grow higher than the runner-up when checks and balances are the dominant force.

We examine the differences in the winner's premium for politicians across constituencies with a varying share of the population living in split blocks. An essential challenge in estimating the value of the winner's premium is to account for the unobserved skills or resources available to politicians regardless of whether they are elected. Therefore, we focus on the subset of elections in which both the winner and runner-up from the same constituency run in the subsequent election, allowing us to compare the asset growth of plausibly similar political candidates. Moreover, we restrict the sample to very close elections, wherein the winner's premium is unlikely to be driven by unobserved ability differences between the winner and the runners-up.

Table 10 reports the results for the winner's premium in close elections for which the margin of victory was less than 5%. Columns (1) and (2) report the results from the following regression specification:

$$ln\Big(\frac{FinalAsset_w}{FinalAsset_R}\Big)_c = \beta_0 + \beta_1 \times Splitness_c + ln\Big(\frac{InitialAsset_w}{InitialAsset_R}\Big)_c + \epsilon_c$$

The dependent variable is the difference in the natural logarithm of net assets acquired by the winner (w) of the electoral race and the runner-up (r) at the end of the five-year electoral term in constituency (c). The primary variable of interest, *splitness*, is defined as a binary variable taking a value of 1 if more than 50% of the population in the constituency resides in a split block and zero otherwise. In column (2), splitness is a continuous variable defined as the normalized proportion of the population residing in split blocks. In addition, we include the asset difference at the start of the electoral period as a control. We find the difference in the asset growth of the winner and the runner-up is significantly lower in electoral constituencies with a larger share of split blocks.

In columns (3) and (4), we run the following regression specification separately for electoral constituencies where splitness dummy = 1 (column (3)) and splitness dummy = 0 (column (4)).

$$ln(FinalAsset)_{kc} = \beta_0 + \beta_1 \times Winner_{kc} + ln(InitialAsset)_c + \beta_c + \epsilon_{ck}$$

Here, we regress the natural logarithm of the end of period assets of candidate k in electoral constituency c. The primary explanatory variable – $Winner_{kc}$ – takes a value of 1 if candidate k is a winner and 0 if the candidate is the runner-up. In addition, we include electoral constituency fixed effect β_c to control for any unobservable characteristics of a constituency. Specifically, constituency fixed effects allow us to identify the difference in the asset growth of the winner and the first runner-up within the same constituency. Our results indicate a 16% increase in the assets of the winner relative to the runner-up in constituencies with splitness dummy = 0 (column (3)). However, we do not find any significant effect in the asset growth of the winner relative to the runner-up in constituencies with splitness dummy = 1 (column (4)). The results indicate the winner's premium is primarily driven by politicians operating in constituencies with low share of split blocks.

Next, we combine the two samples to identify the relative differences in the winner's premium across constituencies with high and low shares of the population in split blocks, by estimating the following regression specification:

$$ln(FinalAsset)_{ck} = \beta_0 + \beta_1 \times Winner_{ck} + \beta_2 \times Winner_{ck} \times Splitness_c + ln(InitialAsset)_{ck} + \beta_c + \epsilon_{ck}$$

Columns (5) and (6) of Table 10 report the results from the estimation of this specification.

In column (5), the primary variable of interest is the interaction of the winner dummy and splitness dummy. Column (6) uses the interaction between the winner dummy and the continuous measure of splitness as the primary independent variable. In both specifications, we find a lower winner's premium in constituencies with a high share of the population living in split blocks. Overall, our results indicate private returns to public office are lower in constituencies with a high share of split blocks indicating the dominance of the checks and balances channel.

5.3 Multiple Politicians and State Efficiency

This section provides supplementary evidence indicating multiple politicians improve the overall state efficiency, which manifests as better implementation of government programs, greater trust in the state and state machinery, and a higher likelihood of incumbent re-election.

First, we present direct evidence showing multiple politicians improve bureaucratic efficiency through better management. Table 11 presents these results. Using survey data on the opinions of local bureaucrats – Block Development Officers (BDOs) – from the states of Bihar and Kerela, we that BDOs operating in split blocks report greater management by politicians (MLAs) and their job being more difficult. However, we find no differences in resources such as computers and other staff available across split and unsplit blocks. The results indicate greater active management by politicians in split blocks. Since our specification includes assembly constituency fixed effects, the results suggest the same politician provides active management to the BDO in the spilt block than the BDO in her constituency's unsplit block.

We document higher state efficiency in another government infrastructure program – the *Swachh Bharat Mission* (SBM). SBM is a nationwide program initiated by the Government of India in 2014 to eliminate open defecation and improve solid waste management. Using village-level data on disbursal of public funds under the SBM at the village level, we find a greater disbursal of funds in split blocks than in unsplit blocks. Appendix Table F.2 present the results. Specifically, the estimates show that the public funds' disbursal under the SBM is 9-12% higher in villages governed by multiple politicians relative to villages governed by a single politician.

Next, using the survey data from the 2001 and 2011 survey waves of the India Human Development Survey, we document that the greater state efficiency manifests as higher confidence in the local politician (see appendix Table F.3). Additionally, we find households report higher confidence in the local arms of state machinery directly managed by the local politician, such as police and the local governance body referred to as *panchayat*. Moreover, these results are not driven by the popularity of the government at the state level.

Furthermore, we examine the difference in confidence for the same good provided by the private sector and the government – schools and hospitals. The local politician and bureaucrat manage government schools and hospitals, and a direct comparison of these goods with those provided by the private sector can indicate the relative efficiency of the government. Appendix Table F.4 reports these results. This table provides two key takeaways. First, people generally have low confidence in government schools and hospitals to provide education and health care, respectively. However, people in districts with a greater share of split blocks report higher confidence in government schools and hospitals than in private schools and hospitals, respectively.

Lastly, we find that higher confidence in local politicians and the various public goods provided by them in districts with a higher fraction of split blocks manifests as higher likelihood of incumbent's reelection (see appendix Table F.5). This result implies voters reward local politicians governing alongside other politicians for better management of the state machinery.

6 Conclusion

Political institutions play a vital role in shaping the economy. Hence, understanding what type of political institutions are relatively better at fostering economic growth is of utmost importance. In this paper, we examine a particular feature of political-institutional design – multiple politicians governing an area. Our empirical investigation is motivated by the theoretical ambiguity surrounding the potential effect of multiple politicians. Multiple politicians can hurt the local economy due to issues of coordination, free-rider problem, common agency problems, and too many grabbing hands. Alternately, multiple politicians can improve the local economy by reducing the overall concentration of power, imposing checks and balances on each other, bringing different skills to the table, and the division of labor. Using a geographic regression discontinuity design across a boundary separating a unit governed by a single politician and multiple politicians, we show that multiple politicians improve the local economy, evidenced by greater firm entry and economic growth. Additionally, we use a differences-in-discontinuity design using delimitation of electoral constituency in 2008 to show firm entry increases when an area transitions from being governed by a single politician to multiple politicians. Furthermore, we find the results are driven by an increase in checks and balances in the presence of multiple politicians, as manifested by a higher impact when they belong to different political parties. The increased checks and balances among multiple politicians boost the local economy by improving state efficiency and reducing regulatory costs and cronyism.

The results expand our understanding of a specific feature of the political-institutional design that is particularly relevant in understanding the effect of horizontal decentralization, common across several decentralized governance systems. Our results strengthen the faith in the conjecture that imposing checks and balances on agents with authority can result in better governance. Moreover, our results expand our understanding of the costs and benefits of multiple principals and a potential channel through which multiple principals can have a positive impact. Additionally, our results can potentially inform our understanding of the efficiency of a coalition government, as we compare regions where multiple politicians provide governance with regions where a single politician provides governance.

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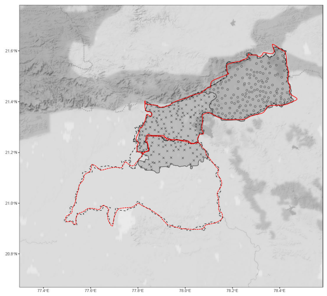
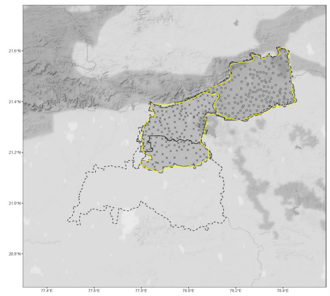
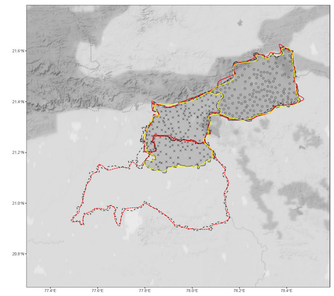
Figure 1: Split and Unsplit Blocks - Overlap of Administrative and Electoral Boundaries



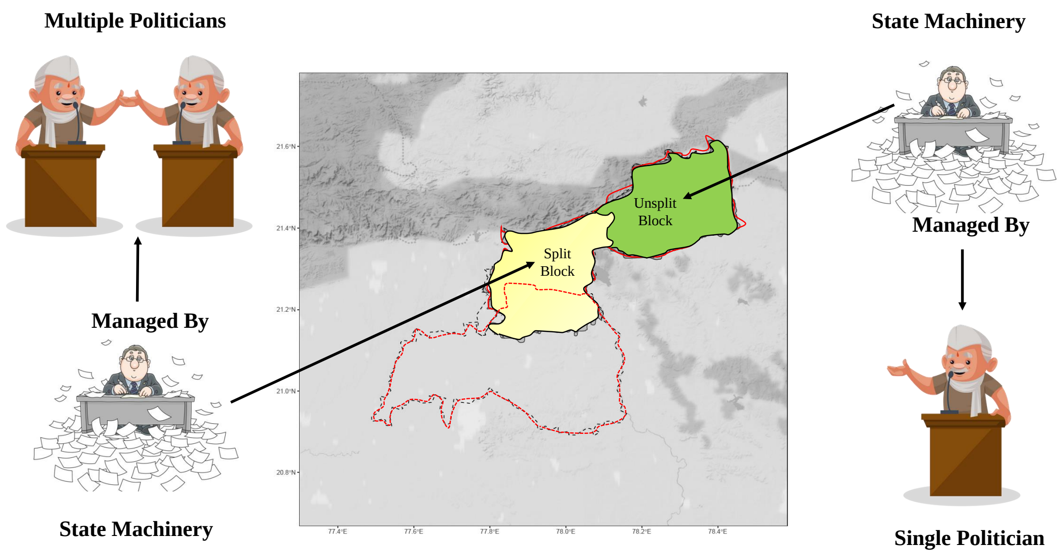
(a) Electoral Boundaries



(b) Administrative Boundaries (Blocks)



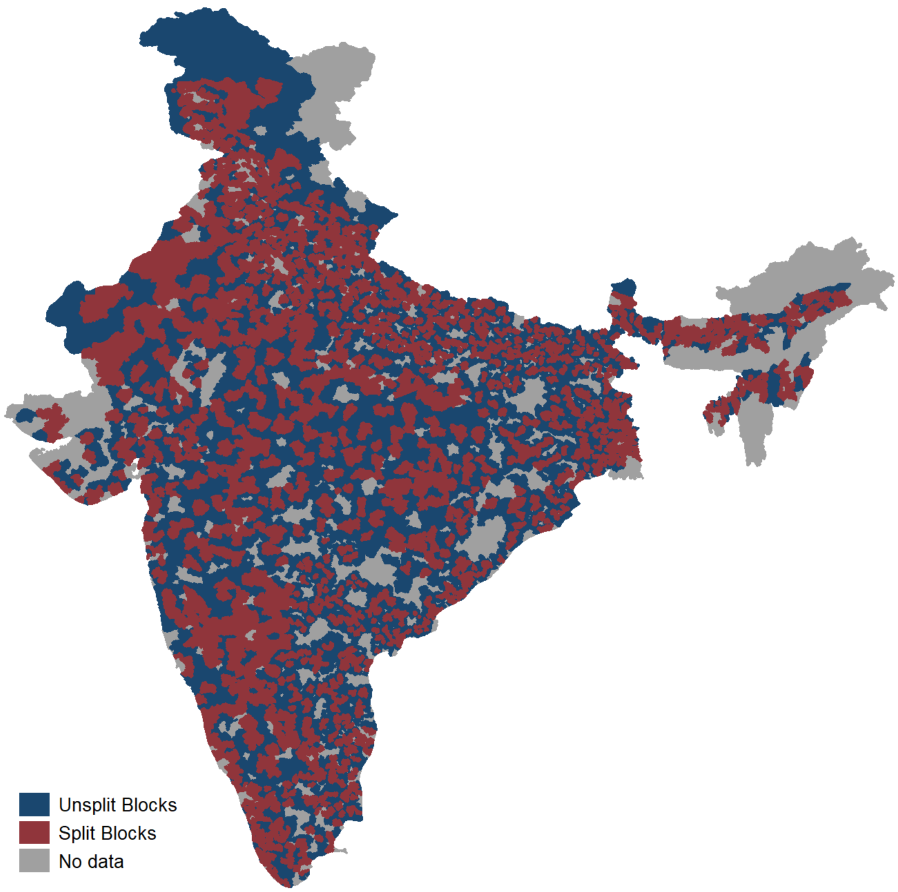
(c) Overlap



(d) Split & Unsplit Blocks

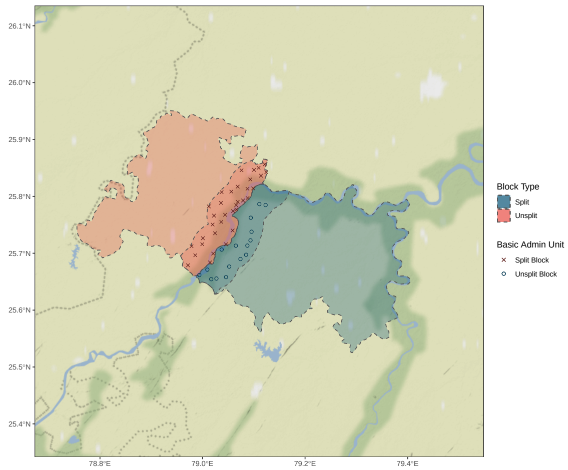
The figure illustrates a case of adjacent split and unsplit blocks in our sample. The split block is the administrative block of Morshi, in the district of Amaravati, Maharashtra. This block is split between the two assembly constituencies of Morshi and Teosa. The neighbouring unsplit block is the administrative block of Warud, in the district of Amaravati, Maharashtra. Figure 1a shows the assembly constituency boundaries of Morshi and Teosa in red. Figure 1b shows the block boundaries of Morshi and Warud in yellow. Figure 1c shows the overlap of assembly constituency boundaries of Morshi and Teosa in red with the block boundaries of Morshi and Warud in yellow. Figure 1d presents a microcosm of our setting showing the formation of split and unsplit blocks due to the overlap of assembly and block boundaries and the state machinery being managed by multiple and single politicians, respectively.

Figure 2: Geography of Blocks Administered by Multiple Politicians

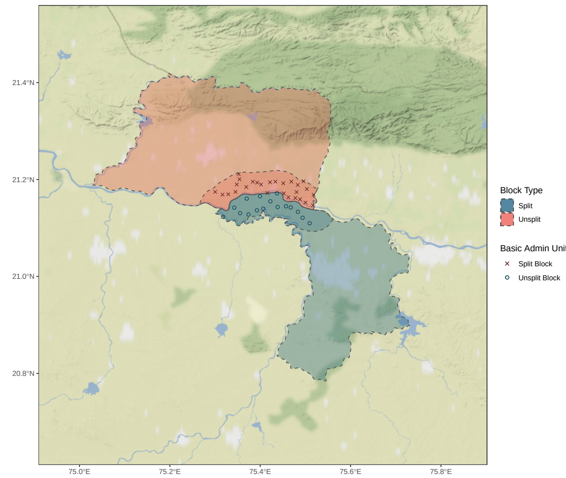


This figure plots the geographic distribution of split and non-split blocks across all blocks in India. A block is defined as a split block if it is split across two or more state legislative assembly constituencies, with at least two constituencies, each accounting for at least 10% of the geographic area of the block based on 2008 assembly constituency boundaries.

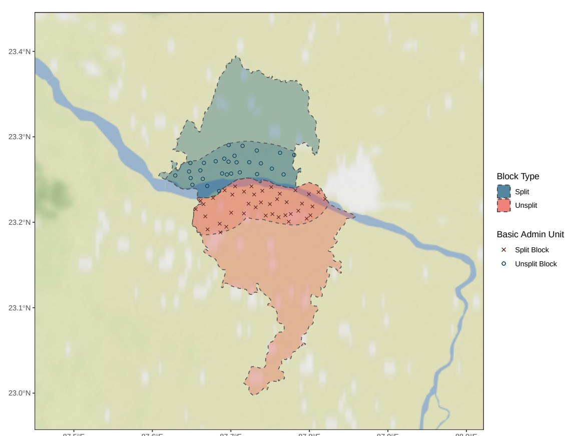
Figure 3: Block Boundaries Delimited by Natural Features



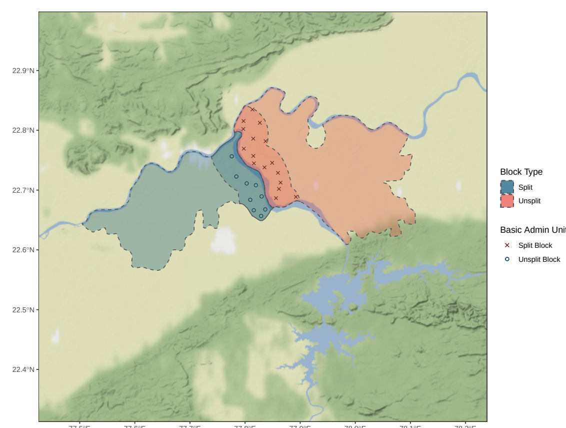
(a) Example 1



(b) Example 2



(c) Example 3

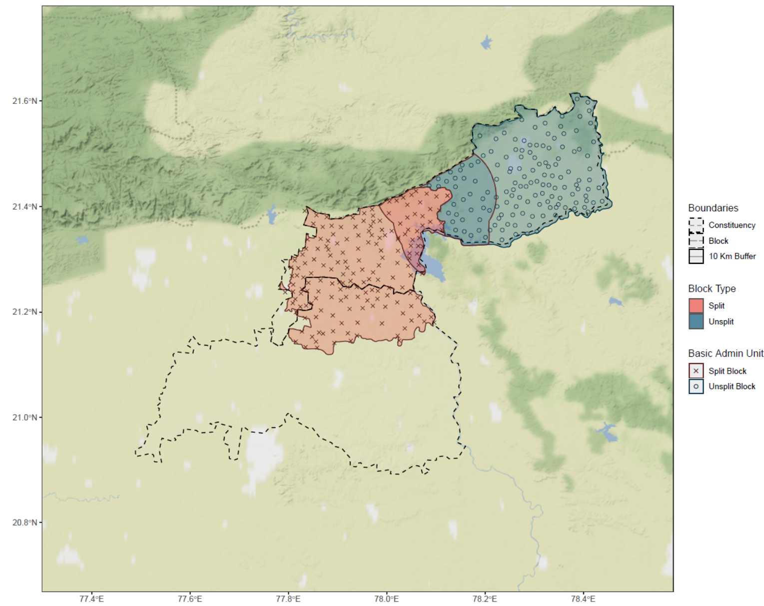


(d) Example 4

This figure presents four representative examples from the sample of boundaries that are delimited by geographic features, in this case, river segment. Example 1 illustrates River Betwa [a] delimiting the boundary between the blocks, Bamaur and Moth, in the district of Jhansi, Uttar Pradesh. Example 2 illustrates River Tapi [b] delimiting the boundary between the blocks, Jalgaon and Chopda, in the district of Jalgaon, Maharashtra.Example 3 illustrates River Damodar [c] delimiting the boundary between the blocks, Galsi II and Khandaghosh, in the district of Purba Bardhaman, West Bengal;. Example 4 illustrates River Tawa [d] delimiting the boundary between the blocks, Babai and Hoshangabad, in the district of Hoshangabad, Madhya Pradesh.

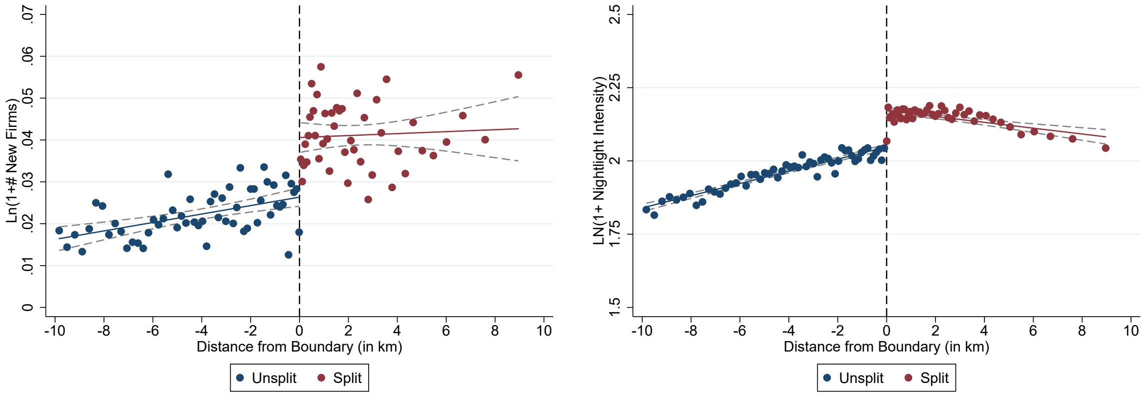
[a]Map for Example 1: https://goo.gl/maps/7XpnSGZ1wh2pc2Vd7
[b]Map for Example 2: https://goo.gl/maps/nLmwwrDhJBve8Je19
[c]Map for Example 3: https://goo.gl/maps/PH5qayLnNQ9A57B46
[d]Map for Example 4: https://goo.gl/maps/a1q5oUrAMB7HaWQu5

Figure 4: Illustration of Empirical Strategy



This figure illustrates a case of adjacent split and unsplit blocks in our sample. The geographic area shaded in red, is the administrative block of Morshi, in the district of Amaravati, Maharashtra. This block is split between the two assembly constituencies of Morshi and Teosa. The geographic area shaded in blue is the administrative block of Warud, in the district of Amaravati, Maharashtra, and is an unsplit block.

Figure 5: RD Plots for Firm Entry and Nightlights

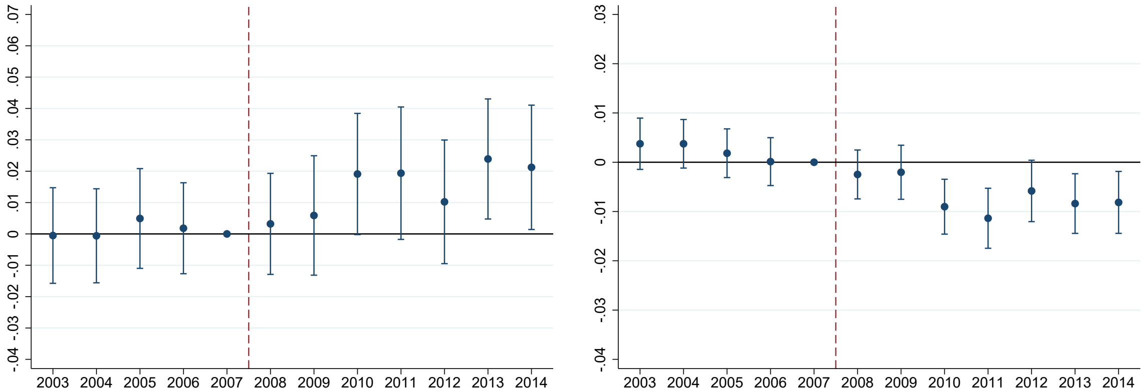


(a) Firm Entry

(b) Nightlights

The figure presents RD plots for our main outcomes and the mean value of each outcome variable at different bins along the running variable (distance to boundary) as well as with a local linear trend estimated separately, along with 95% confidence intervals, on each side of the discontinuity. The unit of observation is a village. The red dots indicate villages in the split blocks and the blue dots indicate villages in the unsplit blocks. Figure 5a presents the RD plots for firm entry. Firm Entry is defined as the total number of firms that have entered a village from 2008 to 2016. Figure 5b presents the RD plots for nightlights. Nightlights is defined as the average nightlight intensity in a village from 2008 to 2016.

Figure 6: Differences-in-Discontinuity Design

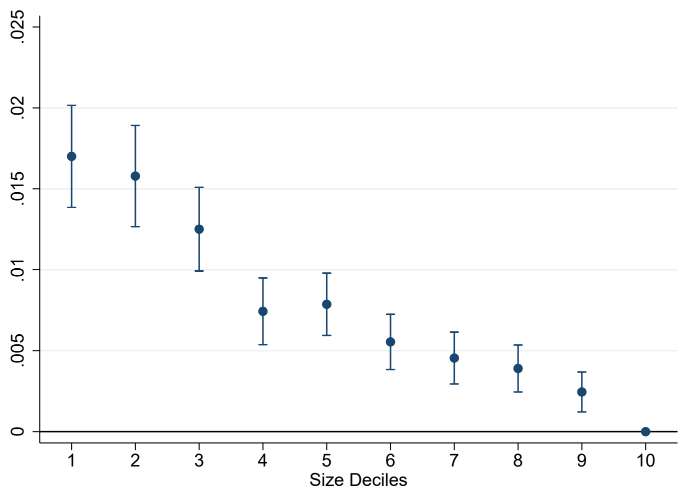


(a) Unsplit → Split

(b) Split → Unsplit

The figure presents the yearly RD estimates between split and unsplit blocks for each year before and after the 2008 delimitation. Panel (a) plots the yearly RD estimates from specification 2 between the treated blocks that switched from being unsplit to split following the 2008 delimitation and the control group that remained unsplit throughout. Panel (b) plots the yearly RD estimates from specification 2 between the treated blocks that switched from being split to unsplit following the 2008 delimitation and the control group that remained split throughout. The unit of observation is a village-year. The dependent variable is the natural logarithm of 0.001 plus the number of new firms in a village during the year. The estimates are plotted with the 95% confidence interval based on clustering the standard errors at the block level. The specification is estimated for the bandwidth of 10 km. All regressions include boundary × year and village fixed effects, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel.

Figure 7: RD Estimates by Size Deciles



This figure presents the estimates for specification 1 using the natural logarithm of 0.001 plus firm entry as the dependent variable. The estimates are obtained by running the baseline specification 1 augmented to include the interaction terms of size-decile and split binary variable. All estimates are reported relative to the estimate for the firms in 10^{th} decile. We measure firm size based on the book value of assets reported by the firm in the year of entry. We group firms into size deciles with 1^{st} decile referring to firms in the smallest size group, and 10^{th} decile referring to the firms in the largest size group. The unit of observation is a village-size decile. The dependent variable is the natural logarithm of 0.001 plus the number of new firms in a village within a size-decile. The estimates are plotted with the 95% confidence interval based on clustering the standard errors at the block level. The specification is estimated for the bandwidth of 10 km. All regressions include village and boundary × size decile fixed effects, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel.

Table 1: Balance on Pre-existing Characteristics

	Full Sample		Split Block (Pre Delim)		Unsplit Block (Pre Delim)	
	(1)	(2)	(3)	(4)	(5)	(6)
	Estimate	SE	Estimate	SE	Estimate	SE
Population						
Ln(0.001 + Population)	0.0153	(0.0251)	0.0278	(0.0301)	0.0833	(0.0840)
Education						
Ln(1 + Schools)	-0.0037	(0.0036)	-0.0027	(0.0044)	0.0178	(0.0139)
Ln(1 + Colleges)	-0.0002	(0.0003)	-0.0003	(0.0004)	-0.0014	(0.0011)
Demographics						
Ln(0.001 + Female)	0.0123	(0.0245)	0.0257	(0.0295)	0.0825	(0.0822)
Ln(0.001 + Lower Caste)	0.0172	(0.0325)	0.0237	(0.0396)	0.1620	(0.1172)
Health						
Ln(1 + Hospital)	-0.0001	(0.0005)	0.0000	(0.0006)	-0.0017	(0.0016)
Ln(1 + Dispensaries)	0.0014	(0.0012)	0.0009	(0.0015)	-0.0005	(0.0027)
Infrastructure						
Ln(1 + Banks)	0.0005	(0.0012)	-0.0007	(0.0013)	0.0038	(0.0070)
Ln(1 + Cinemas)	0.0008	(0.0011)	-0.0012	(0.0011)	0.0047	(0.0068)
Ln(1 + Auditorium)	0.0039	(0.0021)	0.0020	(0.0031)	0.0096	(0.0084)
Geography						
Ln(Area)	-0.0090	(0.0086)	-0.0039	(0.0103)	0.0238	(0.0350)
Ln(Forest Land)	-0.0173	(0.0267)	0.0021	(0.0327)	-0.0263	(0.1101)

This table presents the test for balance on pre-existing characteristics for split and unsplit blocks. Columns (1) and (2) report the RD estimate and the associated standard errors for the full sample. Column (3) and (4) report the RD coefficient on the split variable – defined using the 2008 delimitation – and the standard errors for the sample of blocks that were split before the 2008 delimitation. Column (5) and (6) report the RD coefficient on the split variable – defined using the 2008 delimitation – and the standard errors for the sample of blocks that were unsplit before the 2008 delimitation. The unit of observation is a village that lies within the 10 km bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. The data on the key variables used in the table comes from the 2001 Indian Census. Village-level characteristics are divided into population, education, demographics, health infrastructure, other infrastructure, and geography. Population includes the natural logarithm of the number of people. Education includes the natural logarithm of the number of schools and colleges. Demographics includes the natural logarithm of female, and lower caste population. The latter includes scheduled castes (SC) and scheduled tribes (ST). Health infrastructure includes the natural logarithm of the number of hospitals and dispensaries. Other infrastructure includes the natural logarithm of the number of banks, cinema halls, and auditoriums. Geography includes the natural logarithm of geographic area and area under forest land.

Table 2: RD Estimate: Firm Entry, Nightlights, and Split Block

Panel A: Number of Firms

Dep Var: LN(0.001+# New Firms)	(1)	(2)	(3)	(4)
Split(=1)	0.0331***	0.0326***	0.0312***	0.0309***
	(0.0071)	(0.0060)	(0.0056)	(0.0055)
#Obs	263,307	356,260	416,694	436,980
R^2	0.1537	0.1293	0.1147	0.1062
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary FE	Yes	Yes	Yes	Yes

Panel B: Nightlights

Dep Var: LN(0.001+Nightlight)	(1)	(2)	(3)	(4)
Split(=1)	0.0703***	0.0782***	0.0773***	0.0661***
	(0.0085)	(0.0100)	(0.0114)	(0.0127)
#Obs	257,787	348,539	407,616	427,659
R^2	0.6054	0.5736	0.5453	0.5239
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary FE	Yes	Yes	Yes	Yes

This table presents estimates for specification (1) using the natural logarithm of 0.001 plus firm entry and nightlight intensity as the dependent variables in Panels A and B, respectively. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in columns (1), (2), (3), and (4), respectively. The unit of observation is a village that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. Firm entry is defined as the total number of firms that entered a village from 2008 to 2016. Nightlight is defined as the average nightlight intensity in a village from 2008 to 2016. All regressions include boundary fixed effects, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Number of Politicians in Split Blocks and Firm Entry

Dep Var: LN(0.001+# New Firms)	(1)	(2)	(3)	(4)
Politician (=2)	0.0261***	0.0256***	0.0236***	0.0229***
	(0.0072)	(0.0060)	(0.0056)	(0.0054)
Politician (=3)	0.0524***	0.0472***	0.0487***	0.0502***
	(0.0180)	(0.0163)	(0.0173)	(0.0185)
Politician (>=4)	0.3661***	0.3956***	0.4322***	0.4526***
	(0.1099)	(0.1163)	(0.1095)	(0.1088)
#Obs	263,307	356,260	416,694	436,980
R^2	0.1541	0.1297	0.1151	0.1066
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary FE	Yes	Yes	Yes	Yes
Politician (=3) - Politician (=2)	0.0263	0.0216	0.0251	0.0273
Politician (=4) - Politician (=2)	0.340	0.370	0.4086	0.4297
F-Stat	5.80	5.89	7.98	8.85
Prob > F	0.0030	0.0028	0.0003	0.0001

This table presents estimates for specification (1) augmented for the number of politicians in split blocks using the natural logarithm of 0.001 plus firm entry as the dependent variable. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in columns (1), (2), (3), and (4), respectively. The unit of observation is a village that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. We further segregate split blocks based on the number of politicians governing the block. Politician (=2) is a binary variable taking a value of 1 for split blocks with exactly two politicians. Politician (=3) is a binary variable taking a value of 1 for split blocks with exactly politicians. Politician (>=4) is a binary variable taking a value of 1 for split blocks with four or more politicians. Firm Entry is defined as the total number of firms that have entered a village from 2008 to 2016. All regressions include boundary fixed effects, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: RD Estimate: Using Exogenous Block Boundaries

Panel A: Boundaries defined by Straight Lines				
Dep Var: LN(0.001+# New Firms)	(1)	(2)	(3)	(4)
Split(=1)	0.1763***	0.1360***	0.1106***	0.1076***
	(0.0606)	(0.0485)	(0.0406)	(0.0379)
#Obs	7,018	10,394	13,426	14,328
R^2	0.2012	0.1698	0.1471	0.1331
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary FE	Yes	Yes	Yes	Yes

Panel B: Boundaries defined by Geographic Features (Rivers & River Basins)				
Dep Var: LN(0.001+# New Firms)	(1)	(2)	(3)	(4)
Split (=1)	0.0965**	0.0913***	0.0819***	0.0777***
	(0.0428)	(0.0343)	(0.0309)	(0.0295)
# Obs	7,137	9,804	11,372	11,792
R^2	0.0823	0.0711	0.0618	0.0562
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary FE	Yes	Yes	Yes	Yes

This table presents estimates for specification 1 using the natural logarithm of 0.001 plus firm entry as the dependent variables. Panel A restricts the sample to boundaries between split and unsplit blocks that are straight lines. We define a boundary as a straight line if the Sinuosity Index (SI) is less than 1.05. Sinuosity Index is defined as the ratio of the length of the curve and the Euclidean distance between the endpoints of the curve. Panel B restricts the sample to boundaries between split and unsplit blocks defined by geographic features – rivers and river basins. We only consider rivers and river basins with an average discharge greater than or equal to 200 m^3/s or cumecs. We describe a boundary to be defined by a river or river basin if the boundary follows a river for at least 80% of its length. Figure 3 provides four representative examples of block boundaries separating a split and unsplit block that are defined by rivers or river basins. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in columns (1), (2), (3), and (4), respectively. The unit of observation is a village that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. Firm Entry is defined as the total number of firms that have entered a village from 2008 to 2016. All regressions include boundary fixed effect, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Firm Entry, Change in the Number of Politicians, and 2008 Delimitation

Panel A : Unsplit to Split

Dep Var: LN(0.001+# New Firms)	(1)	(2)	(3)	(4)
Treat x Post	0.0157**	0.0136**	0.0123**	0.0113**
	(0.0074)	(0.0062)	(0.0055)	(0.0051)
# Obs	687,792	975,312	1,185,816	1,263,456
R^2	0.6489	0.6329	0.6203	0.6129
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary × Year FE	Yes	Yes	Yes	Yes
Village FE	Yes	Yes	Yes	Yes

Panel B : Split to Unsplit

Dep Var: LN(0.001+# New Firms)	(1)	(2)	(3)	(4)
Treat x Post	-0.0104***	-0.0086***	-0.0074***	-0.0073***
	(0.0023)	(0.0020)	(0.0018)	(0.0018)
# Obs	2,469,408	3,297,648	3,812,364	3,978,144
R^2	0.6888	0.6861	0.6817	0.6769
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary × Year FE	Yes	Yes	Yes	Yes
Village FE	Yes	Yes	Yes	Yes

This table presents estimates for specification (2) and (3) using the natural logarithm of 0.001 plus firm entry as the dependent variable in Panels A and B, respectively. In Panel A the treated group is the set of blocks that switched from being unsplit to split following the 2008 delimitation, whereas the control group comprises of blocks that were always unsplit both before and after the delimitation and border the treated group. In Panel B, the treated group is the set of blocks that switched from being split to unsplit following the 2008 delimitation, whereas the control group comprises blocks that are always split among multiple politicians both before and after the 2008 delimitation and border the treated group. The variable *Post* takes a value of 1 for all years since 2008. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating the treatment and the control groups in columns (1), (2), (3), and (4), respectively. The unit of observation is a village-year that lies within the narrow bandwidth of the boundary separating the treatment and the control group. Firm entry is defined as the total number of firms that have entered a village during the year. All regressions include village and boundary × year fixed effects, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Firm Entry by Industry Type

Panel A: Industries with High Regulatory Costs

Dep Var: LN(0.001+# New Firms)	(1)	(2)	(3)	(4)
Regulated x Split(=1)	0.0349*	0.0346**	0.0359**	0.0343**
	(0.0208)	(0.0172)	(0.0156)	(0.0150)
#Obs	328,104	419,364	465,966	478,656
R^2	0.3623	0.3574	0.3538	0.3524
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary × Industry FE	Yes	Yes	Yes	Yes
Village FE	Yes	Yes	Yes	Yes

Panel B: Crony Industries

Dep Var: LN(0.001+# New Firms)	(1)	(2)	(3)	(4)
High Crony x Split(=1)	-0.0494**	-0.0607***	-0.0599***	-0.0578***
	(0.0210)	(0.0170)	(0.0155)	(0.0150)
#Obs	328,104	419,364	465,966	478,656
R^2	0.3623	0.3574	0.3538	0.3524
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary × Industry FE	Yes	Yes	Yes	Yes
Village FE	Yes	Yes	Yes	Yes

This table presents estimates for specification 1 augmented for the interaction term of split with regulated and high crony industries in Panels A and B, respectively. The dependent variable is the natural logarithm of 0.001 plus firm entry. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in columns (1), (2), (3), and (4), respectively. The unit of observation is the village-industry that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. Firm entry is defined as the total number of firms in an industry entering a village from 2008 to 2016. All regressions include boundary × industry fixed effect, village fixed effects, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. We define industries with a high regulatory cost following the methodology for the classification of regulated industries in the United States based on Pittman (1977) augmented with India specific regulations and factors as discussed in Awasthi et al. (2019). Appendix Table E.1 presents the list of industries classified as industries with high regulatory costs in our sample. We use the index of industry-level cronyism created by *Economist* using the methodology developed by *Transparency International* to classify firms as high crony and low crony. The detailed description of the method to classify industries as crony can be found in the article in The Economist titled: Planet Plutocrat. Appendix Table E.2 presents the list of high crony industries in the sample. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Multiple Politicians and Cost Overruns in Road Construction

Panel A : Unsplit to Split

Dep Var: $LN(\frac{ActualCost}{EstimatedCost})$	(1)	(2)	(3)	(4)
Treat × Post	-0.2586***	-0.1947**	-0.1658**	-0.1647**
	(0.0980)	(0.0925)	(0.0821)	(0.0770)
# Obs	5,819	8,754	11,124	11,897
R^2	0.7154	0.6898	0.6646	0.6492
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary × Year FE	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes

Panel B : Split to Unsplit

Dep Var: $LN(\frac{ActualCost}{EstimatedCost})$	(1)	(2)	(3)	(4)
Treat × Post	0.0313	0.0514*	0.0532**	0.0538**
	(0.0316)	(0.0269)	(0.0230)	(0.0227)
# Obs	22,796	32,363	38,527	40,638
R^2	0.6713	0.6462	0.6319	0.6192
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary × Year FE	Yes	Yes	Yes	Yes
Block FE	Yes	Yes	Yes	Yes

This table presents estimates for specification (2) and (3) using the natural logarithm of actual cost minus the natural logarithm of estimated cost as the dependent variable in panels A and B, respectively. In Panel A the treated group is the set of blocks that switched from being unsplit to split following the 2008 delimitation, whereas the control group comprises of blocks that were always unsplit both before and after the delimitation and border the treated group. In Panel B, the treated group is the set of blocks that switched from being split to unsplit following the 2008 delimitation, whereas the control group comprises of blocks that are always split among multiple politicians both before and after the 2008 delimitation and border the treated group. The variable *Post* takes a value of 1 for all years since 2008. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating the treatment and the control groups in columns (1), (2), (3), and (4), respectively. The unit of observation is a village-year spanning from 2001 to 2014 that lies within the narrow bandwidth of the boundary separating the treatment and the control group. A village appears only once in the dataset because only one road could be constructed under the PMGSY per village. All regressions include block and boundary × year fixed effects, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 8: Multiple Politicians and Time for Regulatory Approvals

LN(Days to obtain approval)	(1)	(2)
Treat x Post	-0.8084***	0.5706*
	(0.2122)	(0.3461)
Sample	Unsplit to Split	Split to Unsplit
# Obs	2284	9091
R^2	0.2449	0.2745
Bandwidth	10 KM	10 KM
Boundary x Year FE	Yes	Yes
Block FE	Yes	Yes

This table presents estimates for specification (2) and (3) using the natural logarithm of "Days taken to obtain regulatory approvals" as the dependent variable. In column (1) the treated group is the set of blocks that switched from being unsplit to split following the 2008 delimitation, whereas the control group comprises blocks that were always unsplit both before and after the delimitation and border the treated group. In column (2), the treated group is the set of blocks that switched from being split to unsplit following the 2008 delimitation, whereas the control group comprises of blocks that are always split among multiple politicians both before and after the 2008 delimitation and border the treated group. The variable *Post* takes a value of 1 for all years since 2008. We use a bandwidths of 10 km on either side of the boundary, separating the treatment and the control groups. The unit of observation is a project, announced between 2003 and 2016 that lies within the narrow bandwidth of the boundary separating the treatment and the control group.. All regressions include block and boundary $\times$ year fixed effects, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 9: Political Alignment and Firm Entry

Panel A: Political Alignment

Dep Var: LN(0.001+# New Firms)	(1)	(2)	(3)	(4)
Frac. Non Aligned x Split	0.0053	0.0094**	0.0114***	0.0117***
	(0.0056)	(0.0045)	(0.0041)	(0.0039)
# Obs	1,813,190	2,497,757	2,958,673	3,120,412
R^2	0.7637	0.7581	0.7521	0.7466
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary × Year FE	Yes	Yes	Yes	Yes
Village FE	Yes	Yes	Yes	Yes

Panel B: Caste Alignment

Dep Var: LN(0.001+# New Firms)	(1)	(2)	(3)	(4)
Frac. Non Aligned x Split	0.0122	0.0157**	0.0148***	0.0142***
	(0.0083)	(0.0070)	(0.0057)	(0.0052)
# Obs	1,387,788	1,917,496	2,284,232	2,422,849
R^2	0.7468	0.7447	0.7402	0.7352
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary × Year FE	Yes	Yes	Yes	Yes
Village FE	Yes	Yes	Yes	Yes

This table presents estimates for specification (1) augmented for the interaction term of split and the fraction of non-aligned politicians using the natural logarithm of 0.001 plus firm entry as the dependent variable. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in columns (1), (2), (3), and (4), respectively. The unit of observation is a village-year that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. Firm Entry is defined as the total number of firms entering a village in that year. The time period spans 2008 to 2016. Panel A of Table 9 reports result from the estimation exercise where non-alignment is measured as difference in political parties. Panel B of Table 9 measures non-alignment in terms of caste. The fraction of non-aligned politicians is a continuous variable taking a value between 0 and 1. It takes a value of 0 when all politicians are affiliated with the same political party or the same caste, and a value of 1 when all politicians are affiliated with different political parties or different castes. It always takes a value of 0 for unsplit blocks. All regressions include boundary × year fixed effect, village fixed effects, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 10: Asset Growth of Winners vs. Runner-up

	$ln\left(\frac{FinalAsset_{winner}}{FinalAsset_{Runner-up}}\right)$		ln(Final Asset)			
	(1) (All)	(2) (All)	(3) (Unsplit)	(4) (Split)	(5) (All)	(6) (All)
Split Dummy	-0.2688**					
	(0.1187)					
Split Continuous		-0.1471**				
		(0.0608)				
Winner Dummy			0.1605**	-0.0799	0.1589*	0.0578
			(0.0809)	(0.0921)	(0.0811)	(0.0606)
Winner Dummy×Split Dummy					-0.2347*	
					(0.1225)	
Winner Dummy×Split Continuous						-0.1413**
						(0.0615)
Constituency FE	No	No	Yes	Yes	Yes	Yes
Adjusted R^2	0.5019	0.5035	0.6357	0.6437	0.6435	0.6455
# Obs	291	291	330	252	582	582

This table relates the difference in asset growth of winner vis-a-vis runner up to the degree of splitness of an electoral constituency. Columns (1) and (2) present the result of the regression specification: $ln\left(\frac{FinalAsset_w}{FinalAsset_R}\right)_c = \beta_0 + \beta_1 \times Splitness_c + ln\left(\frac{InitialAsset_w}{InitialAsset_R}\right)_c + \epsilon_c$. The supscript c refers to an electoral constituency and supscripts W and R refers to winner and runner-up respectively. In column (1), splitness is defined as a dummy variable taking a value of 1 if more than 50% population in the constituency resides in split block. In column (2) splitness is continuous variable, defined as the normalized proportion of population that resides in split blocks. In column (3) and (4) we report the results from the following regression specification performed separately for electoral constituency where split Dummy is 1 and 0 respectively: $ln(FinalAsset)_c = \beta_0 + \beta_1 \times Winner_c + ln(InitialAsset)_c + \beta_c + \epsilon_c$. In columns (5) and (6) we run the following regression specification using both the winner and runner-up (k) of the same electoral constituencies: $ln(FinalAsset)_{ck} = \beta_0 + \beta_1 \times Winner_{ck} + \beta_2 \times Winner_{ck} \times Splitness_c + ln(InitialAsset)_{ck} + \beta_c + \epsilon_{ck}$. In column (5) splitness is defined as a dummy variable taking a value of 1 if more than 50% of the population in the constituency resides in split block. In column (6) splitness is continuous variable, defined as the normalized proportion of population that resides in split blocks. Robust standard errors reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 11: Effect of Multiple Politicians on Block Development Officers

	(1)	(2)	(3)	(4)	(5)
	Greater Management by Politicians	Job Difficulty	Resources		
			# Computers	# Permanent Staff	# Temporary Staff
Split(=1)	0.6574**	0.8014**	0.0559	0.0047	-0.0495
	(0.3144)	(0.3333)	(0.0711)	(0.0294)	(0.1562)
Assembly FE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
Model	Ordered Probit	Ordered Probit	Poisson	Poisson	Poisson
# Obs	360	365	354	363	357
Psuedo R^2	0.5697	0.3982	0.2582	0.6799	0.6547

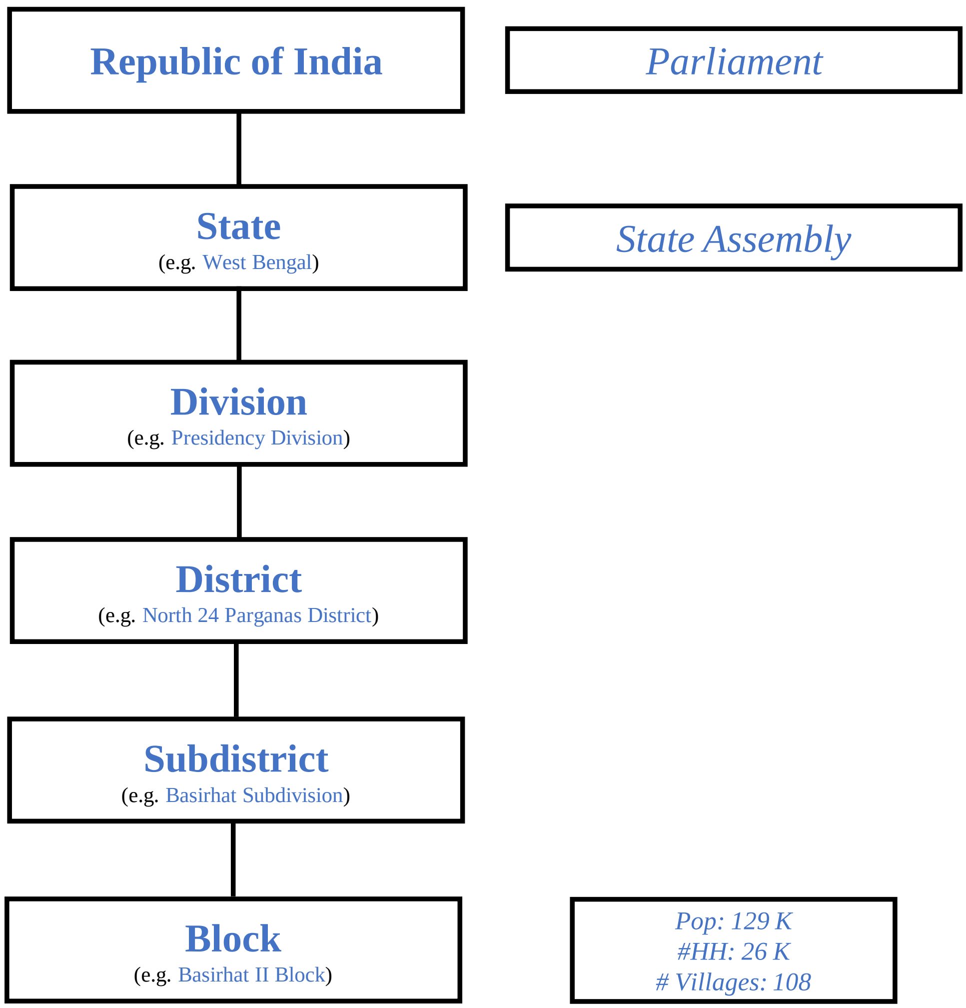
This table presents estimates the differences in the management and the resources for Block Development Officers (BDO's) across split and unsplit blocks. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. Column (1) uses the response of the opinion of BDO's on the management by the politicians. The response is noted on a three point scale 1 to 3 where 1 indicates lower management and 3 indicates greater management. Column (2) uses the response of the opinion of BDO's on their job difficulty. The response is noted on a ten point scale 1 to 10 where 1 indicates low difficulty and 10 indicates high difficulty. Column (3)-(5) uses the BDO's response on the availability of resources. Columns (3)-(5) use the number of computers, number of permanent staff, and the number of temporary staff as the dependent variable. Columns (1) and (2) estimate the relationship using an ordered probit model. Columns (3)-(5) estimate the relationship using a Poisson model. All regressions include assembly constituency fixed effects and BDO specific controls. Controls include education fixed effects, gender fixed effects, age, and experience. Robust standard errors reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Internet Appendix for:

"Political Power-Sharing, Firm Entry, and Economic Growth: Evidence from Multiple Elected Representatives"

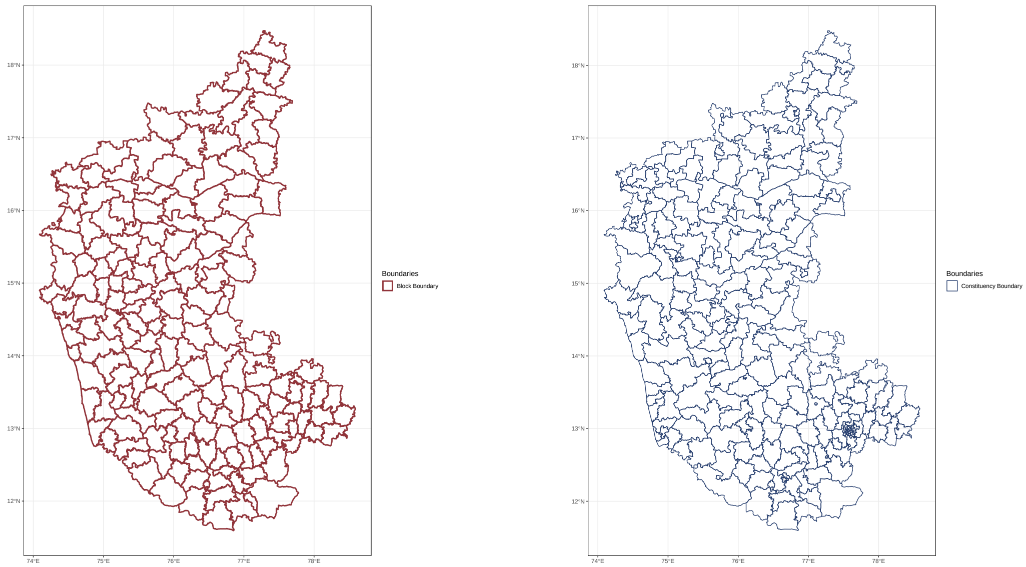
Appendix A Background & Institutional Details

Figure A.1: The Six Tiers of Government in India



The figure illustrates the six tiers of government in India. This hierarchy includes six tiers of government, starting from the federal government of the Republic of India, followed by states, division, district, sub-district, and finally, the local governing bodies. We refer to the local governing bodies in urban and rural areas as blocks which include towns, villages, or clusters of towns and villages. India has a parliamentary system as defined by its constitution, with power distributed between the central government (Parliament) and the states (State Assembly).

Figure A.2: Administrative and Electoral Boundaries

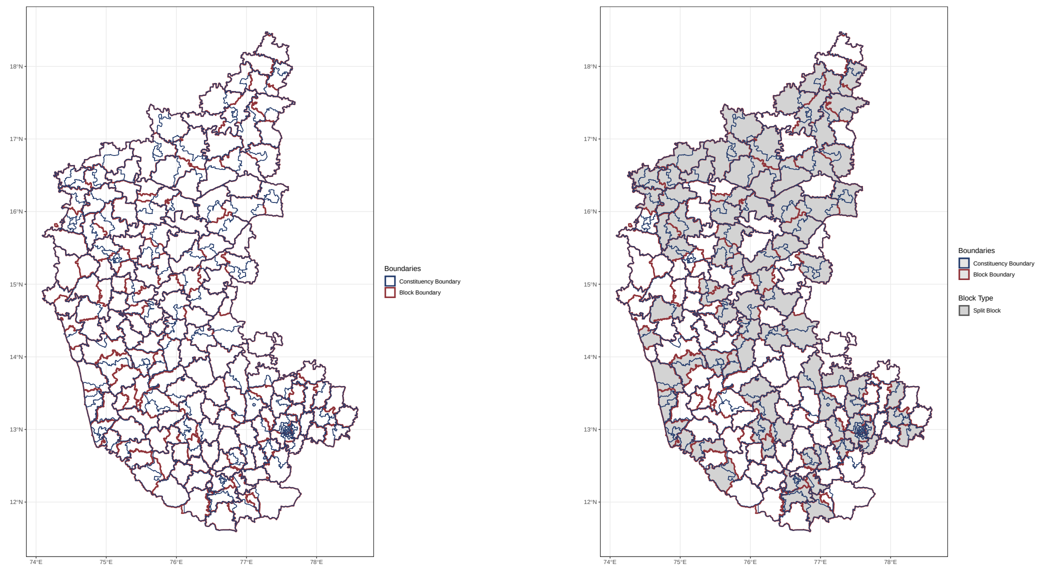


(a) Administrative Boundaries (Blocks)

(b) Electoral Boundaries (Assembly Constituency)

The figure presents the administrative and electoral boundaries, as an example, from the state of Karnataka. The administrative boundaries shown in Figure A.2a in red are based on the basic administrative unit - block. The electoral boundaries shown in Figure A.2b in blue are based on the 2008 delimitation.

Figure A.3: Overlap of Administrative and Electoral Boundaries

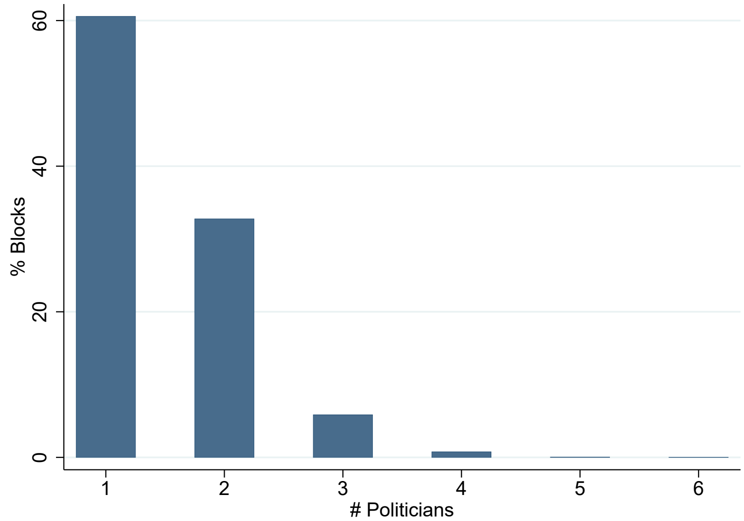


(a) Overlap of Boundaries

(b) Split & Unsplit Blocks

The figure presents the overlap of the administrative and electoral boundaries, as an example, from the state of Karnataka and the formation of split and unsplit blocks. The administrative boundaries in red are based on the basic administrative unit - block. The electoral boundaries shown in blue are based on the 2008 delimitation. Figure A.3a shows the overlap of the electoral and administrative boundaries. Figure A.3b presents a graphic depiction of split blocks in grey and unsplit blocks in white.

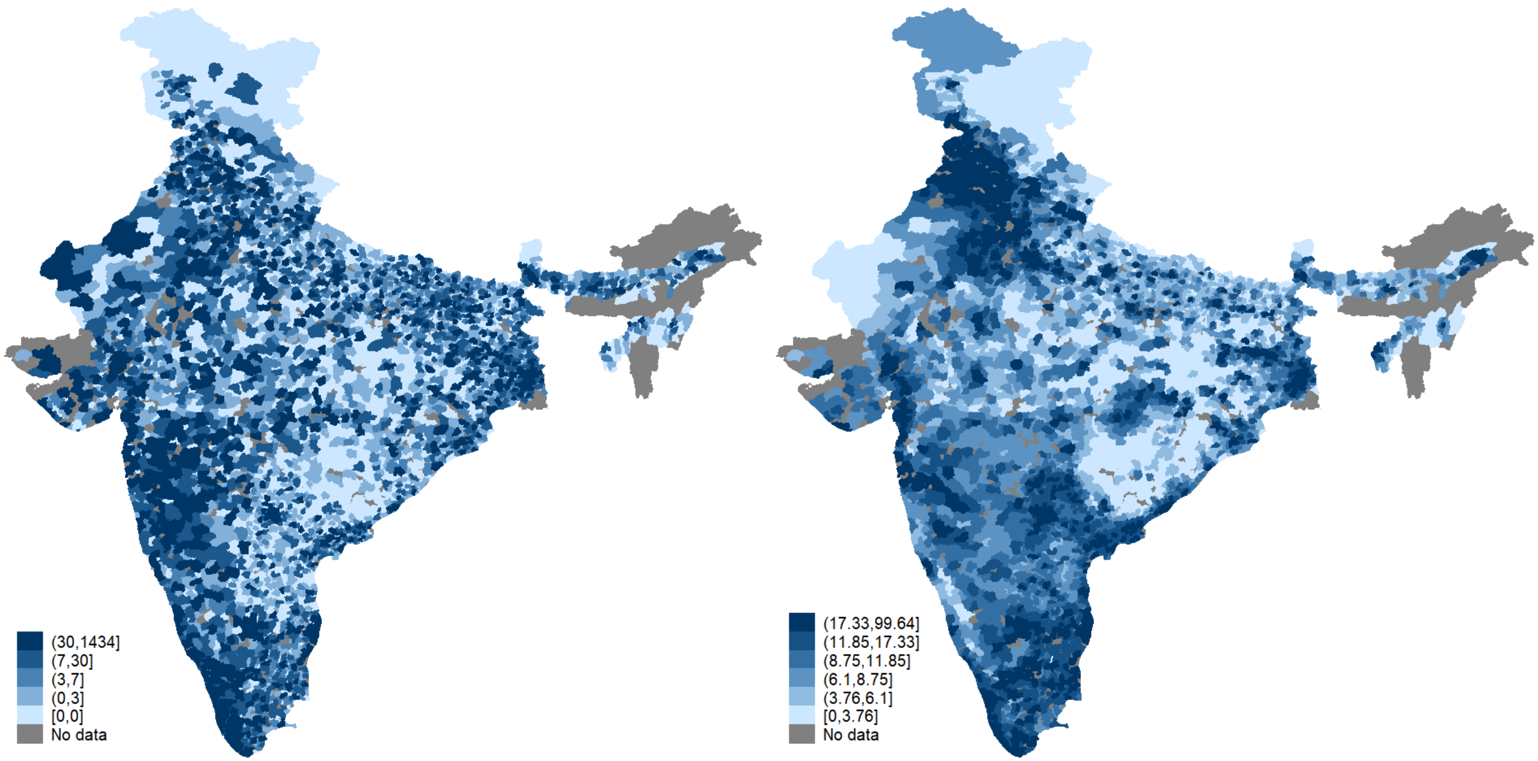
Figure A.4: Distribution of Blocks by Number of Governing Politicians



The figure illustrates the distribution of blocks by the number of governing politicians. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation.

Appendix B Data

Figure B.1: Geography of Firm Entry and Nightlights

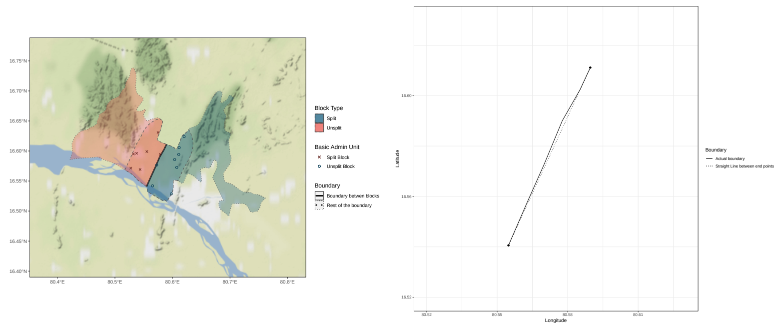


(a) # New Private Firms

(b) Average Nightlights

The figure panel B.1a plots the geographic distribution of the number of new private firms registered across all blocks in India from 2003 to 2016. The figure panel B.1b plots the geographic distribution of average night lights across all blocks in India from 2003 to 2016. The sample of private firms includes the universe of all for-profit firms in India registered from 2003 to 2016. The nightlights are standardized to take a minimum value of zero and a maximum value of 100 across blocks for each year. The standardized nightlights in a block are averaged over the period from 2003 to 2016. Note that we have not verified any boundaries and do not claim authenticity of the same. We do not endorse the geographic boundaries shown here.

Figure B.2: Sinuosity of Straight-Line-Like Block Boundary Segment

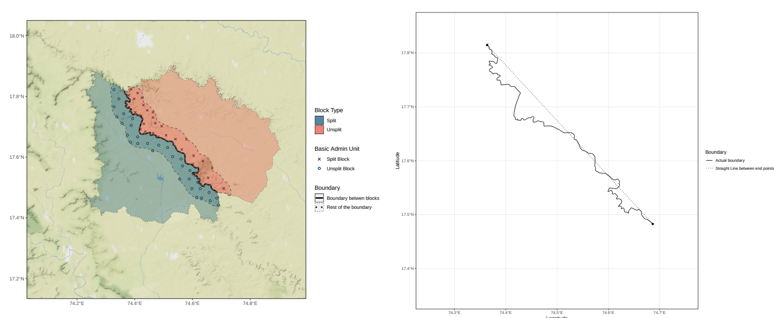


(b) Schematic Diagram

(a) Representative Example

Figure B.2 illustrates the measure of straightness, *Sinuosity*, using a representative example of straight-line-like boundary. Figure B.2a illustrates the boundary between the blocks, Ibrahimpatnam and Vijayawada (Rural), located in Krishna District, Andhra Pradesh. Figure B.2b compares the block boundary and straight line joining the endpoints of the boundary. The length of the boundary segment is 8.69 km, whereas the shortest distance between the endpoints is 8.68 km. The *Sinuosity* of the segment is 1.000965.

Figure B.3: Sinuosity of a Wiggly Block Boundary Segment



(b) Schematic Diagram

(a) Representative Example

B.3 illustrates the measure of straightness, *Sinuosity*, using a representative example of wiggly boundary segment. Figure B.3a illustrates the boundary between the blocks, Khatav and Phaltan located in Satara District, Maharashtra. Figure B.3b compares the block boundary and straight line joining the endpoints of the boundary. The length of the boundary segment is 80.41 km, whereas the shortest distance between the end-points is 50.38 km. The *Sinuosity* of the segment is 1.59.

Table B.1: Number of Firms

Year	# New Firms	Nightlights
2003	10,980	5.98
2004	15,856	7.52
2005	23,051	6.72
2006	39,138	6.20
2007	58,735	7.73
2008	65,299	7.39
2009	55,855	8.10
2010	80,075	8.14
2011	88,833	8.10
2012	94,213	8.96
2013	83,100	9.01
2014	62,858	14.64
2015	72,375	15.47
2016	75,612	15.26
Total/Average	825,980	9.22

This table presents the number of new firms and the average nightlights index for each year from 2003 and until 2016.

Appendix C Employment and Multiple Politicians

Table C.1: Employment and Multiple Politicians

Dep Var: LN(0.001+ Employment)	(1)	(2)	(3)	(4)
Split (=1)	0.0595***	0.0597***	0.0599***	0.0587***
	(0.0197)	(0.0180)	(0.0179)	(0.0183)
# Obs	226,010	304,539	355,420	372,431
R^2	0.4420	0.4286	0.4188	0.4107
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary FE	Yes	Yes	Yes	Yes

This table presents estimates for specification 1 using the natural logarithm of 0.001 plus the total number of people employed. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in columns (1), (2), (3), and (4), respectively. The unit of observation is a village that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. The data on employment comes from the 2013 Economic Survey of India and includes the number of people employed in all non-farm activities. All regressions include boundary fixed effects, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table C.2: Applications for Employment Benefits under NREGS and Multiple Politicians

Dep Var: LN(Days Applied)	(1)	(2)	(3)	(4)
Split (=1)	-0.0622**	-0.0543**	-0.0543**	-0.0561**
	(0.0284)	(0.0256)	(0.0255)	(0.0255)
# Obs	131,620	189,722	228,799	241,962
R^2	0.3454	0.3378	0.3327	0.3325
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary × Year FE	Yes	Yes	Yes	Yes

This table presents estimates for specification (1) using the natural logarithm of the total number of days for which unemployment relief is applied for under the National Rural Employment Guarantee Scheme (NREGS). We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in columns (1), (2), (3), and (4), respectively. The unit of observation is a village that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. The data on applications for unemployment relief applied under the National Rural Employment Guarantee Scheme (NREGS) comes from the Ministry of Rural Development and spans from 2016 to 2020. All regressions include boundary × year fixed effect, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Appendix D Robustness Tests

This section presents results for several robustness tests discussed in section 4.2.2.

Table D.1: RD Estimate on Firm Entry with Polynomial of Degree 2

Dep Var: LN(0.001+# New Firms)	(1)	(2)	(3)	(4)
Split (=1)	0.0282***	0.0322***	0.0297***	0.0281***
	(0.0101)	(0.0080)	(0.0070)	(0.0064)
# Obs	263,307	356,260	416,694	436,980
R^2	0.1537	0.1293	0.1147	0.1062
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary FE	Yes	Yes	Yes	Yes
Polynomial Degree	2	2	2	2

This table presents estimates for specification (1) using the natural logarithm of 0.001 plus firm entry as the dependent variable. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in columns (1), (2), (3), and (4), respectively. The unit of observation is a village that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. Firm Entry is defined as the total number of firms that have entered a village from 2008 to 2016. All regressions include boundary fixed effect, a local quadratic specification estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D.2: RD Estimate with Uniform Kernel

Dep Var: LN(0.001+# New Firms)	(1)	(2)	(3)	(4)
Split(=1)	0.0334***	0.0294***	0.0308***	0.0307***
	(0.0073)	(0.0062)	(0.0057)	(0.0056)
# Obs	257,787	348,539	407,616	427,659
R^2	0.6054	0.5736	0.5453	0.5239
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary FE	Yes	Yes	Yes	Yes
Kernel	Uniform	Uniform	Uniform	Uniform

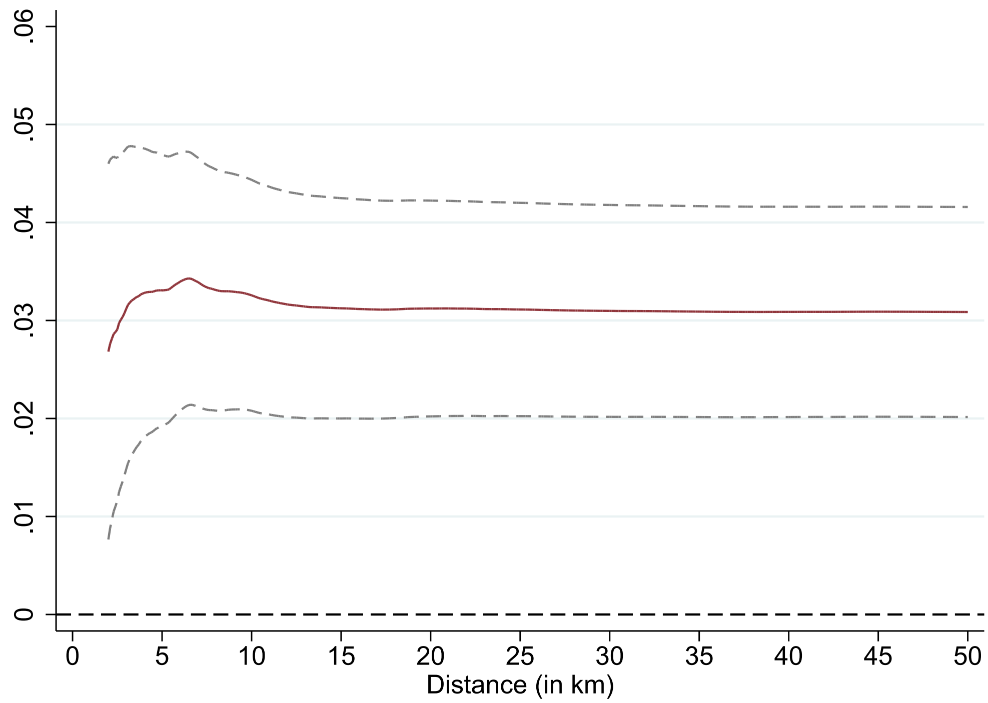
This table presents estimates for specification (1) using the natural logarithm of 0.001 plus firm entry as the dependent variable. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in columns (1), (2), (3), and (4), respectively. The unit of observation is a village that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. Firm Entry is defined as the total number of firms that have entered a village from 2008 to 2016. All regressions include boundary fixed effect, a local linear specification estimated separately on each side of the boundary, and use a uniform kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D.3: RD Estimates with Spatial Polynomial

Dep Var: LN(0.001+# New Firms)	(1)	(2)	(3)	(4)
Split(=1)	0.2456***	0.2867***	0.3184***	0.3314***
	(0.0821)	(0.0742)	(0.0707)	(0.0706)
# Obs	263,307	356,260	416,694	436,980
R^2	0.1537	0.1293	0.1146	0.1061
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary FE	Yes	Yes	Yes	Yes
Spatial Polynomial	Yes	Yes	Yes	Yes

This table presents estimates for specification (1) using the natural logarithm of 0.001 plus firm entry as the dependent variable. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in columns (1), (2), (3), and (4), respectively. The unit of observation is a village that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. Firm Entry is defined as the total number of firms that have entered a village from 2008 to 2016. All regressions include boundary fixed effect, a local linear specification with latitude and longitude estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Figure D.1: RD Estimates for various Bandwidth choices



This table presents RD estimates and 95% confidence interval for specification (1) using the natural logarithm of 0.001 plus firm entry as the dependent variable. We estimate specification (1) for several bandwidths between 2 km and 50 km in increments of 0.1 km. The Y-axis reports the RD estimate, and the X-axis reports the bandwidth used to estimate the RD coefficient. The unit of observation is a village that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. Firm Entry is defined as the total number of firms that have entered a village from 2008 to 2016. All regressions include boundary fixed effect, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. The solid red line reports the RD estimate, and the dashed grey lines indicate the 95% confidence bands calculated based on standard errors clustered at the block level.

Table D.4: RD Estimates with Conley (1999) Standard Errors

Bandwidth ↓	(1)	(2)	(3)	(4)
5 KM	0.0331***	0.0331***	0.0331***	0.0331***
	(0.0077)	(0.0077)	(0.0078)	(0.0079)
10 KM	0.0326***	0.0326***	0.0326***	0.0326***
	(0.0063)	(0.0063)	(0.0064)	(0.0067)
20 KM	0.0312***	0.0312***	0.0312***	0.0312***
	(0.0056)	(0.0056)	(0.0057)	(0.0060)
50 KM	0.0309***	0.0309***	0.0309***	0.0309***
	(0.0053)	(0.0053)	(0.0054)	(0.0058)
Conley Cutoff →	2 KM	5KM	10 KM	20 KM

This table presents estimates for specification (1) using the natural logarithm of 0.001 plus firm entry as the dependent variable. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in rows (1), (2), (3), and (4), respectively. The unit of observation is a village that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. Firm Entry is defined as the total number of firms that have entered a village from 2008 to 2016. All regressions include boundary fixed effect, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are Conley (1999) standard errors, estimated for cutoff values of 2, 5, 10, and 20 km in columns (1), (2), (3), and (4), respectively. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D.5: RD Estimate with Alternative Sample

Bandwidth ↓	(1)	(2)	(3)	(4)	(5)	(6)
5 KM	0.0331***	0.0462***	0.1113***	0.1606***	0.1824***	0.0270***
	(0.0071)	(0.0108)	(0.0220)	(0.0322)	(0.0464)	(0.0068)
10 KM	0.0326***	0.0443***	0.1107***	0.1575***	0.1825***	0.0245***
	(0.0060)	(0.0092)	(0.0191)	(0.0283)	(0.0411)	(0.0057)
20 KM	0.0312***	0.0421***	0.1031***	0.1464***	0.1727***	0.0229***
	(0.0056)	(0.0086)	(0.0181)	(0.0265)	(0.0389)	(0.0052)
50 KM	0.0309***	0.0411***	0.1009***	0.1428***	0.1726***	0.0226***
	(0.0055)	(0.0084)	(0.0177)	(0.0258)	(0.0381)	(0.0050)
Sample	Full Sample	Firms > 0	Firms > 5	Firms > 10	Firms > 20	Firms <= 1000

This table presents estimates for specification (1) using the natural logarithm of 0.001 plus firm entry as the dependent variable in panel A, and the inverse hyperbolic sine (IHS) transformation of the number of firms in panel B. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in rows (1), (2), (3), and (4), respectively. The unit of observation is a village that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. Firm Entry is defined as the total number of firms that have entered a village from 2008 to 2016. All regressions include boundary fixed effect, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Column (1) includes the baseline sample. Column (2) drops all blocks with no firm entry. Columns (3), (4), and (5) drops blocks where less than five, ten, and twenty firms, respectively, entered during the sample period. Column (6) drops all large blocks with number of new firms greater than 1000. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D.6: RD Estimate with Alternative Transformation

Panel A : Poisson Pseudo Maximum Likelihood						
Bandwidth ↓	(1)	(2)	(3)	(4)	(5)	(6)
5 KM	0.2117***	0.1667***	0.2545***	0.2653***	0.2487***	0.1731***
	(0.0515)	(0.0525)	(0.0649)	(0.0728)	(0.0835)	(0.0523)
10 KM	0.1856***	0.1332***	0.1912***	0.2015***	0.1606**	0.1411***
	(0.0430)	(0.0443)	(0.0551)	(0.0624)	(0.0713)	(0.0435)
20 KM	0.2003***	0.1444***	0.2046***	0.1938***	0.1589**	0.1555***
	(0.0385)	(0.0401)	(0.0505)	(0.0568)	(0.0659)	(0.0389)
50 KM	0.2011***	0.1424***	0.2016***	0.1978***	0.1741***	0.1535***
	(0.0369)	(0.0387)	(0.0492)	(0.0560)	(0.0654)	(0.0370)
Sample	Full Sample	Firms > 0	Firms > 5	Firms > 10	Firms > 20	Firms <= 1000

Panel B : Outcome - IHS(#New Firms)						
Bandwidth ↓	(1)	(2)	(3)	(4)	(5)	(6)
5 KM	0.0126***	0.0196***	0.0440***	0.0628***	0.0757***	0.0102***
	(0.0022)	(0.0035)	(0.0078)	(0.0119)	(0.0178)	(0.0021)
10 KM	0.0128***	0.0196***	0.0432***	0.0616***	0.0753***	0.0096***
	(0.0020)	(0.0031)	(0.0069)	(0.0107)	(0.0160)	(0.0017)
20 KM	0.0121***	0.0186***	0.0402***	0.0571***	0.0704***	0.0088***
	(0.0019)	(0.0030)	(0.0067)	(0.0103)	(0.0155)	(0.0016)
50 KM	0.0120***	0.0183***	0.0396***	0.0562***	0.0709***	0.0087***
	(0.0019)	(0.0030)	(0.0067)	(0.0102)	(0.0155)	(0.0016)
Sample	Full Sample	Firms > 0	Firms > 5	Firms > 10	Firms > 20	Firms <= 1000

This table presents estimates for specification (1) using the natural logarithm of 0.001 plus firm entry as the dependent variable. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in rows 1, 2, 3, and 4, respectively. The unit of observation is a village that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. Firm Entry is defined as the total number of firms that have entered a village from 2008 to 2016. All regressions include boundary fixed effect, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Column (1) includes the baseline sample. Column (2) drops all blocks with no firm entry. Columns (3), (4) and (5) drops blocks where less than 5, 10, and 20 firms, respectively, entered during the sample period. Column (6) drops all large blocks with more than 1000 firms. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D.7: RD Estimates with Non-Pooled Data

Dep Var: LN(0.001+# New Firms)	(1)	(2)	(3)	(4)
Split(=1)	0.0215***	0.0214***	0.0199***	0.0198***
	(0.0036)	(0.0032)	(0.0031)	(0.0031)
# Obs	1,813,190	2,497,757	2,958,673	3,120,412
R^2	0.1219	0.0997	0.0873	0.0805
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary × Year FE	Yes	Yes	Yes	Yes
Spatial Polynomial	Yes	Yes	Yes	Yes

This table presents estimates for specification (1) using the natural logarithm of 0.001 plus firm entry as the dependent variable. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in columns (1), (2), (3), and (4), respectively. The unit of observation is a village-year that lies within the narrow bandwidth of the boundary separating a split and an unsplit block from 2008 to 2016. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. Firm Entry is defined as the total number of firms that have entered a village during the year. All regressions include boundary fixed effect, a local linear specification with latitude and longitude estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D.8: RD Estimates with Alternative Grids

Bandwidth ↓	Grid Size		
	(1)	(2)	(3)
	1×1	2×2	5×5
5 KM	0.0150***	0.0480***	0.2244***
	(0.0028)	(0.0094)	(0.0480)
10 KM	0.0163***	0.0556***	0.2045***
	(0.0025)	(0.0084)	(0.0348)
20 KM	0.0184***	0.0636***	0.2266***
	(0.0025)	(0.0082)	(0.0292)
50 KM	0.0226***	0.0783***	0.2693***
	(0.0022)	(0.0072)	(0.0248)

This table presents estimates for specification (1) using the natural logarithm of 0.001 plus firm entry as the dependent variable. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in rows 1, 2, 3, and 4, respectively. The unit of observation is an arbitary grid of size $x \times x$ that lies within the narrow bandwidth of the boundary separating a split and an unsplit block from 2008 to 2016. Columns 1, 2 and 3 use a grid size of 1×1, 2×2 and 5×5, respectively. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. Firm Entry is defined as the total number of firms that have entered in the cell during the period. All regressions include boundary fixed effect, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D.9: RD Estimates before the 2008 Delimitation

Dep Var ↓	(1)	(2)	(3)	(4)
LN(0.001+# New Firms)	0.0142	0.0114	0.0064	0.0046
	(0.01310)	(0.01170)	(0.01120)	(0.01090)
LN(0.001+Nightlights)	0.0059	0.0442	-0.0408	-0.0763
	(0.13170)	(0.15160)	(0.16380)	(0.16900)
Bandwidth →	5 KM	10 KM	20 KM	50 KM

This table presents estimates for specification (1) using the natural logarithm of 0.001 plus firm entry and nightlights as the dependent variable. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in columns (1), (2), (3), and (4), respectively. The unit of observation is a village-year that lies within the narrow bandwidth of the boundary separating a split and an unsplit block from 2003 until 2007. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. Firm Entry is defined as the total number of firms that have entered a village during the year. All regressions include boundary fixed effect, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D.10: RD Estimate with Additional Controls – Dep Var: LN(0.001+# New Firms)

Bandwidth ↓	(1)	(2)	(3)	(4)	(5)	(6)
5 KM	0.0331***	0.0291***	0.0292***	0.0474***	0.0317***	0.0416***
	(0.0071)	(0.0069)	(0.0069)	(0.0097)	(0.0070)	(0.0093)
10 KM	0.0326***	0.0277***	0.0283***	0.0464***	0.0308***	0.0382***
	(0.0060)	(0.0058)	(0.0058)	(0.0084)	(0.0060)	(0.0080)
20 KM	0.0312***	0.0264***	0.0273***	0.0424***	0.0293***	0.0337***
	(0.0056)	(0.0054)	(0.0054)	(0.0083)	(0.0056)	(0.0078)
50 KM	0.0309***	0.0263***	0.0269***	0.0401***	0.0289***	0.0325***
	(0.0055)	(0.0052)	(0.0052)	(0.0082)	(0.0054)	(0.0078)
Controls	None	Population	Area	Distance to HQ	Compactness	All

This table presents estimates for specification (1), augmented for controls, using the natural logarithm of 0.001 plus firm entry as the dependent variable. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in rows 1, 2, 3, and 4, respectively. The unit of observation is a village that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. Firm Entry is defined as the total number of firms that have entered a village from 2008 to 2016. All regressions include boundary fixed effect, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Column (1) includes no controls. Columns (2), (3), and (4) include a linear and quadratic term for the 2001 population, geographic area, and the distance to district headquarters for a village. Column (5) controls for compactness of the block measured as in Harari (2020). Column (6) includes all controls included in columns (2)-(5). Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D.11: RD Estimates Controlling for Politician Quality

Dep Var: LN(0.001+# New Firms)	(1)	(2)	(3)	(4)
Split (=1)	0.0239***	0.0164***	0.0130**	0.0121**
	(0.0073)	(0.0062)	(0.0057)	(0.0056)
#Obs	263,156	356,101	416,528	436,814
R^2	0.1965	0.1670	0.1497	0.1394
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary FE	Yes	Yes	Yes	Yes
Constituency FE	Yes	Yes	Yes	Yes

This table presents estimates for specification (1) using the natural logarithm of 0.001 plus firm entry as the dependent variable. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in columns (1), (2), (3), and (4), respectively. The unit of observation is a village that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. Firm Entry is defined as the total number of firms that have entered a village from 2008 to 2016. All regressions include boundary fixed effect and constituency fixed effect.a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table D.12: Probability of Firm Exit

Dep Var: Firm exits within x time	(1)	(2)	(3)	(4)
6 months	-0.0008	-0.0004	-0.0003	-0.0002
	(0.0007)	(0.0004)	(0.0003)	(0.0002)
1 year	-0.0017	-0.0003	-0.0003	-0.0005
	(0.0014)	(0.0008)	(0.0007)	(0.0006)
2 year	-0.0044	-0.0008	-0.0010	-0.0022
	(0.0028)	(0.0019)	(0.0017)	(0.0016)
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary X Cohort Year FE	Yes	Yes	Yes	Yes

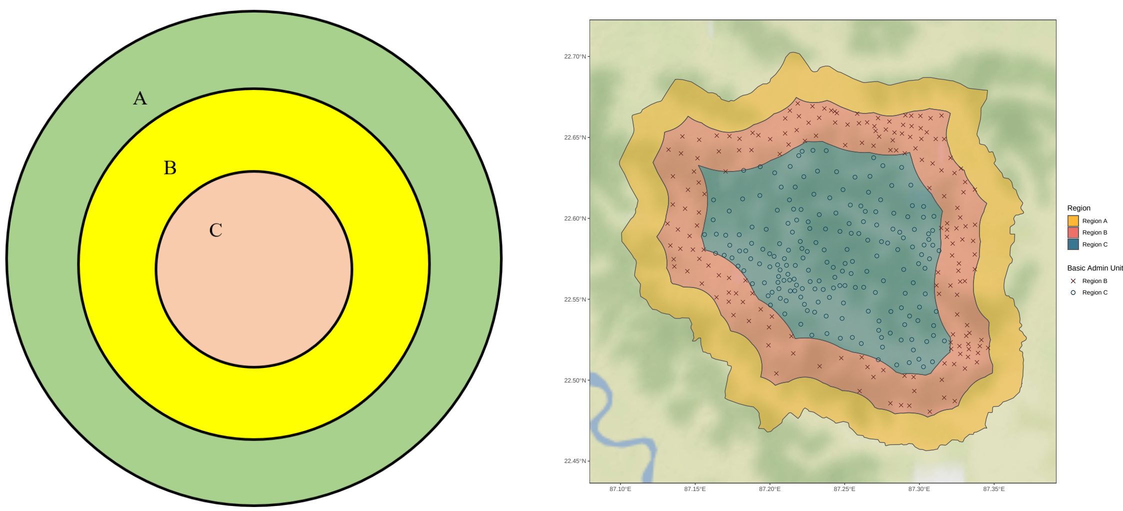
This table presents results from a firm-level regression, estimating the relationship between the probability of firm exit and split variable. It uses an RD specification similar to equation (1), but the data is at the firm level. For each firm that started between 2008 and 2016, we estimate the probability of it closing within six months, one year, and two years of its start as a function of the split status of the block. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in columns (1), (2), (3), and (4), respectively. The unit of observation is a firm that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. All regressions include boundary × cohort fixed effects. All firms that entered during the same year are considered part of the same cohort. Each row of the table comes from a different regression. Rows 1, 2, and 3 estimate the probability of firm exit within six months, one year, and two years of firm entry, respectively. a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

D.1 Falsification and Placebo Tests

This section provides details of the falsification and the placebo tests discussed in section 4.2.2.

We first describe the methodology to construct the falsification sample. We divide each block into three regions A, B and C, as shown in Figure D.2. These regions are equal in area and account for one-third of the entire block area. Our falsification exercise compares villages in region B with villages in region C within a narrow bandwidth of the boundary separating the two regions. The intuition of this test is that crossing from region B to region C does not change the number of politicians governing the area. Hence, if our baseline results capture the effect of the change in the number of politicians and not spatial correlation as warned by Kelly (2019), we should observe a null effect when moving from region B to region C.

Figure D.2: Falsification Test: Sample Construction



(a) Schematic Diagram

(b) Representative Example

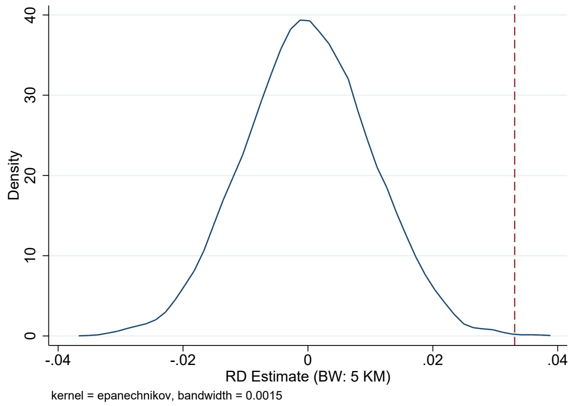
Figure D.2a presents the schematic diagram of a block that is split into three regions A, B and C. These regions are equal in area and account for one-third of the entire block area. Our falsification exercise compares villages in region B with villages in region C within a narrow bandwidth of the boundary separating the two regions. Figure D.2b presents the schematic diagram using a representative example using the block of Salbani in the West Medinipur district in the state of West Bengal.

Table D.13: Falsification Test: Results

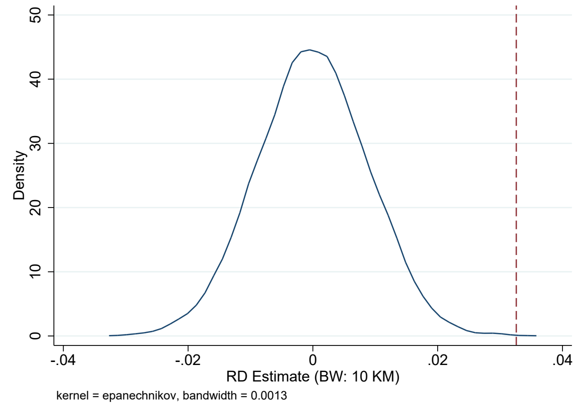
Dep Var: LN(0.001+# New Firms)	(1)	(2)	(3)	(4)
Inside Region C (=1)	-0.0007	-0.0037	-0.0058	-0.0047
	(0.0088)	(0.0067)	(0.0058)	(0.0055)
# Obs	200,843	278,097	320,484	332,161
R^2	0.1587	0.1306	0.1190	0.1157
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary FE	Yes	Yes	Yes	Yes

This table presents estimates for specification (1) for the falsification sample using the natural logarithm of 0.001 plus firm entry as the dependent variable. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary in columns (1), (2), (3), and (4), respectively. The unit of observation is a village that lies within the narrow bandwidth of the boundary separating region B and region C within a block. A block is divided into three regions, A, B, and C, which are equal in area as shown in Figure D.2. The falsification test compares villages in region B and region C. Firm Entry is defined as the total number of firms that have entered a village from 2008 to 2016. All regressions include boundary fixed effect, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

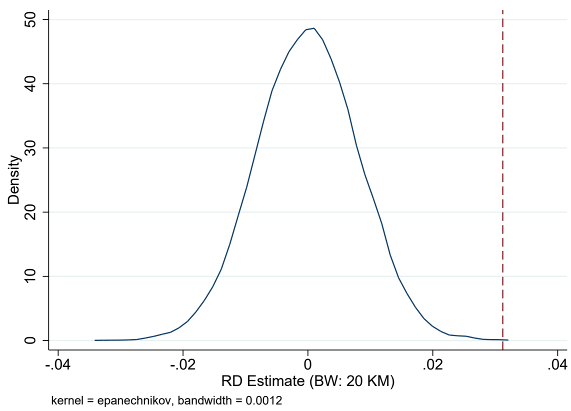
Figure D.3: Placebo Test



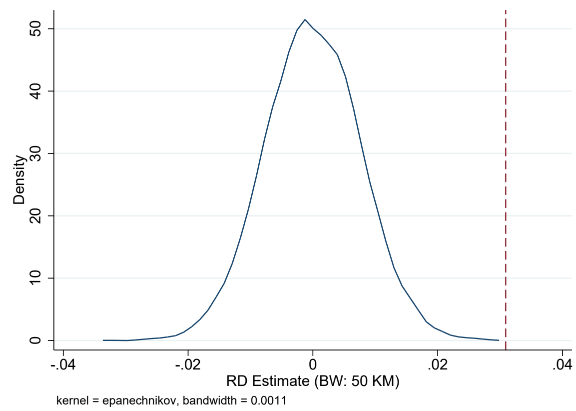
(a) Bandwidth: 5 KM



(b) Bandwidth: 10 KM



(c) Bandwidth: 20 KM



(d) Bandwidth: 50 KM

The figure plots the kernel density of the RD estimates for specification (1) for the randomly assigned split status obtained from the 10,000 Monte-Carlo simulations. The dependent variable is the natural logarithm of 0.001 plus firm entry. We randomly assign each block to be a split block or an unsplit block. Hence, a placebo split binary variable is generated for each block. Every block has a probability of 0.411 to be assigned as a split block. This is based on the fraction of total split blocks in the sample. We repeat this process 10,000 times and estimate the RD specification (1) with the placebo split variable for different bandwidths of 5 (Figure D.3a), 10 (Figure D.3b), 20 (Figure D.3c), and 50 km (Figure D.3d) on either side of the boundary. The dashed red line shows the point estimate from the corresponding bandwidth as in Panel A of Table 2.

Appendix E Industry Classification

Table E.1: List of Industries with High Regulatory Costs in the Sample

NIC Code	Industry Name	Broad Industry
1	Crop and animal production, hunting and related service activities	Agriculture, forestry and fishing
2	Forestry and Logging	Agriculture, forestry and fishing
5	Mining of coal and lignite	Mining and quarrying
19	Manufacture of coke and refined petroleum products	Manufacturing
35	Electricity, gas, steam and air conditioning supply	Electricity, gas, steam and air conditioning supply
36	Water collection, treatment and supply	Water supply; sewerage, waste management and remediation activities
41	Construction of buildings	Construction
45	Wholesale and retail trade and repair of motor vehicles and motorcycles	Wholesale and retail trade; repair of motor vehicles and motorcycles
50	Water transport	Transportation and storage
51	Air transport	Transportation and storage
52	Warehousing and support activities for transportation	Transportation and storage
61	Telecommunications	Information and communication
64	Financial service activities, except insurance and pension funding	Financial and insurance activities
65	Insurance, reinsurance and pension funding, except compulsory social security	Financial and insurance activities
66	Other financial activities	Financial and insurance activities
70	Activities of head offices; management consultancy activities	Professional, scientific and technical activities
72	Scientific research and development	Professional, scientific and technical activities
73	Advertising and market research	Professional, scientific and technical activities
74	Other professional, scientific and technical activities	Professional, scientific and technical activities

This table presents the list of industries with high regulatory costs in our sample. We define industries with a high regulatory cost following the methodology for the classification of regulated industries in the United States based on Pittman (1977) augmented with India specific regulations and factors as discussed in Awasthi et al. (2019).

Table E.2: List of Industries with High Rent Seeking or Crony-Capitalism

NIC C ode	Industry Name	Broad Industry
1	Crop and animal production, hunting and related service activities	Agriculture, forestry and fishing
2	Forestry and Logging	Agriculture, forestry and fishing
5	Mining of coal and lignite	Mining and quarrying
19	Manufacture of coke and refined petroleum products	Manufacturing
20	Manufacture of chemicals and chemical products	Manufacturing
36	Water collection, treatment and supply	Water supply; sewerage, waste management and remediation activities
41	Construction of buildings	Construction
52	Warehousing and support activities for transportation	Transportation and storage
64	Financial service activities, except insurance and pension funding	Financial and insurance activities
65	Insurance, reinsurance and pension funding, except compulsory social security	Financial and insurance activities
66	Other financial activities	Financial and insurance activities
93	Sports activities and amusement and recreation activities	Arts, entertainment and recreation

This table presents the list of industries with high rent-seeking or high degree of crony-capitalism in our sample. We use the index of industry-level cronyism created by *Economist* using the methodology developed by *Transparency International* to classify firms as high crony and low crony firms. The detailed description of the method to classify industries as crony can be found in The Economist: Planet Plutocrat.

Appendix F Mechanism

Table F.1: Multiple Politicians and Power Supply

Dep Var: High Power Supply	(1)	(2)	(3)	(4)
Split (=1)	0.0083*	0.0102**	0.0117**	0.0109**
	(0.0048)	(0.0046)	(0.0046)	(0.0047)
# Obs	105,264	143,320	168,952	177,819
R^2	0.7026	0.6944	0.6854	0.6791
Boundary FE	Yes	Yes	Yes	Yes

This table presents estimates for specification (1) using high power supply as the dependent variable. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in columns (1), (2), (3), and (4), respectively. The unit of observation is a village that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. A village is defined as a high power supply village if it receives commercial electricity supply for more than 70% of time, both during winter and summer seasons, and is defined as low power supply village otherwise. The data on village level commercial power supply comes from the 2011 Indian Census. All regressions include boundary fixed effect, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table F.2: Multiple Politicians and Swachh Bharat Mission

Dep Var: LN(1 + Funding Received)	(1)	(2)	(3)	(4)
Split (=1)	0.0931*	0.1066**	0.1165**	0.1163**
	(0.0514)	(0.0485)	(0.0480)	(0.0486)
# Obs	220,665	298,546	349,219	366,325
R^2	0.2959	0.2912	0.2887	0.2884
Bandwidth	5 KM	10 KM	20 KM	50 KM
Boundary FE	Yes	Yes	Yes	Yes

This table presents estimates for specification (1) using the natural logarithm of funding disbursed under the Swachh Bharat Mission (SBM) as the dependent variable. We use different bandwidths of 5, 10, 20, and 50 km on either side of the boundary, separating a split block from an unsplit block in columns (1), (2), (3), and (4), respectively. The unit of observation is a village that lies within the narrow bandwidth of the boundary separating a split and an unsplit block. A block is defined as a split block based on the haphazard overlap of block boundaries with electoral boundaries as per the 2008 delimitation. The data on village level funding disbursed under SBM is the sum of all funding received from 2015 until 2018. All regressions include boundary fixed effect, a local linear specification estimated separately on each side of the boundary, and use a triangular kernel. Standard errors reported in parentheses are clustered at the block level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table F.3: Confidence in Local Politician and State Machinery

Dep Var: Confidence Level	(1) Local Politician	(2) State Machinery: Police	(3) State Machinery: Panchayats	(4) State Government
Fraction of Split Blocks	0.2841**	0.1659**	0.2112***	-0.0109
	(0.1389)	(0.0786)	(0.0812)	(0.1424)
Sample Mean	1.4257	1.9617	2.1107	2.0751
Standard Deviation	0.5249	0.3397	0.3075	0.4709
# Obs	686	686	686	686
R^2	0.6277	0.7125	0.5592	0.5192
District FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

This table presents estimates from the regression of confidence in local politicians, state machinery, and the state government on the fraction of split blocks in the district. The unit of observation is district-year. The data on confidence comes from the two survey waves of the India Human Development Survey (IHDS) conducted in 2001 and 2011. Each respondent is asked, "How much confidence do you have in X?", where "X" denotes local politicians, police, panchayat, and the government at the state level. A respondent can say - (1) No Confidence coded as 1, (2) Intermediate level of confidence coded as 2, or (3) High level of confidence coded as 3. We collapse the respondent level data at the village level using survey weights to create a new variable that measures the district-level average confidence in "X." For each district, we create a variable - fraction of split blocks. It is calculated as the ratio of the number of split blocks to the total number of blocks in the district. We define a block as split in 2001 and 2011 based on 1977 and 2008 delimitation. Columns (1), (2), (3), and (4) use confidence in the local politician, police, panchayat, and the state government as the dependent variable. We also present the average and the standard deviation of the dependent variables. Robust standard errors are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table F.4: Difference in Confidence among Government and Private Schools and Hospitals

Dep Var: Confidence Level	(1) Schools	(2) Hospitals
Govt × Fraction of Split Blocks	0.2061**	0.2089**
	(0.0956)	(0.1022)
Govt	-0.2456**	-0.3635**
	(0.1178)	(0.1456)
Sample Mean	2.5856	2.5535
Standard Deviation	0.2646	0.2937
District FE	Yes	Yes
# Obs	688	688
R^2	0.6986	0.6950

This table presents estimates from the regression of confidence in schools and hospitals on the interaction term of schools and hospitals provided by the government and the fraction of split blocks in the district. The unit of observation is district-provider; that is, for each district, we have two observations, one indicating the confidence in the government good and another in the private sector good. The data on confidence comes from the 2011 survey wave of the India Human Development Survey (IHDS). Each respondent is asked - "How much confidence do you have in X?", where "X" denotes government and private schools and hospitals. A respondent can say - (1) No Confidence coded as 1, (2) Intermediate level of confidence coded as 2, or (3) High level of confidence coded as 3. We collapse the respondent level data at the village-provider level using survey weights to create a new variable that measures the district-provider-level average confidence in "X." Provider is either the private sector or the government. For each district, we create a variable - fraction of split blocks. It is calculated as the ratio of the number of split blocks to the total number of blocks in the district. We define a block as a split block based on the 2008 delimitation. Columns (1) and (2) use confidence in schools and hospitals as the dependent variable. We also present the average and the standard deviation of the dependent variables. Robust standard errors are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table F.5: Likelihood of Incumbent's Re-election

Dep Var: Incumbent Re-elected	(1)	(2)	(3)
Fraction of Split Blocks	0.0545***	0.0518***	0.0517***
	(0.0183)	(0.0184)	(0.0184)
State × Year FE	Yes	Yes	Yes
Reservation FE		Yes	Yes
By-Election FE			Yes
# Obs	4,667	4,667	4,667
R^2	0.0798	0.0809	0.0812

This table presents estimates from the regression of the likelihood of the incumbent's reelection and the fraction of split blocks in the assembly constituency (AC). The unit of observation is AC-year from 2008 until 2018. The data on election outcomes comes from the Election Commission of India. For each AC, we create a variable - fraction of split blocks. It is calculated as the ratio of the number of split blocks to the total number of blocks in the AC. We define a block as a split block based on the 2008 delimitation. Column (1) includes state × year fixed effect. Column (2) adds reservation fixed effect, which controls for whether the AC is reserved for lower castes. Column (3) adds a by-election fixed effect and controls for the election being outside the normal election cycle. Standard errors reported in parentheses are clustered at the AC level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.