

Parachuters vs. Climbers: Economic Consequences of Barriers to Political Entry in a Democracy

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Abstract

Does a legislator's career prior to joining politics impact constituency development? I compile an original dataset of politicians' biographies and use their entry routes into politics to classify them as 'parachuters' –those who are hereditary/dynastic or part of the local socio-economic or cultural elite –and 'climbers', working class politicians who have made their way by rising up the ranks. I use a close election regression discontinuity design to estimate the causal effect of politicians' identity on local economic growth, measured by night time lights. I document three key results: First, political entry barriers have perverse economic consequences. Lights-GDP elasticity estimates imply that electing parachuters leads to 0.2 percentage point lower growth of GDP per capita per year compared to constituencies where climbers are elected. Second, a candidate's background is a key determinant of political selection, even after accounting for conventional factors such as politician's sex, religion and ethnicity. Third, there is suggestive evidence that the impact is driven by misallocation of bureaucratic resources: districts with greater proportion of parachuters have higher turnover of investigating police officers, which in turn is associated with greater economic crime and lower economic growth. These findings indicate at a new mechanism via which elites maintain *de facto* power and persist over time.

Keywords: Political Economy, Political selection, Dynastic politics, Economic Development.

JEL codes: D72, O12, N45, J24, P16

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1 Introduction

In a seminal paper, Acemoglu and Robinson (2008) argued that the distribution of political power, particularly *de facto* power, is an important factor in determining economic institutions. Much of the literature has explained *de facto* power as an outcome of historical circumstances, as in the case of slavery in US South (Ager, 2013), the mining *mita* in Peru (Dell, 2010) or colonial landed elites in India (Banerjee and Iyer, 2005) etc. However, the post-colonial trajectories of many developing countries provides evidence on the transfer of power from old to new elites. Take, for example, the case of India where after independence the *Zamindari* system was swiftly abolished, and technological change in the agricultural sector led to greater democratization and creation of a class of new elites (Dasgupta, 2017). Such ‘circulation of elites’ is not uncommon and has been documented in other countries ranging from South Africa to France (Robinson, 2012). This paper attempts to understand how *de facto* power is operationalized and the consequences of elite formation and persistence by focusing on one specific channel: organizationally weak political parties. Political parties are a fundamental unit of organization in politics and provide a vehicle for players to capture power. In most parliamentary democracies where party politics exists, political selection is a two step process: first, parties nominate candidates and only then do citizens vote to elect a leader from the shortlisted pool (though, in few cases, candidates may run for office as ‘independents’ as well). So far, data constraints have prevented examining the screening of candidates and entry barriers in the first stage, but a growing body of work is beginning to addressing this gap in the literature (Dal Bó et al., 2017; Gulzar and Khan, 2018; Banerjee et al., 2017; Beath et al., 2016).

This paper studies the implication of recruitment and candidate selection strategies of political parties by examining the entry routes of politicians who run for office and those who win. Attention to understanding the “type” of politicians is not new and has been studied extensively in the past. Theoretical research in political economy has argued that when type is unobserved (as in the case of motivations of politicians, competence, honesty and character) selection issues arise and “low quality” politicians may be elected to office (Kartik and McAfee, 2007; Besley, 2007; Caselli and Morelli, 2004). When type is observed, empirical research has shown that politicians’ identity such as sex (Chattopadhyay and Duflo, 2004; Clots-Figueras, 2012; Iyer et al., 2012), religion (Bhalotra et al., 2014; Meyersson, 2014), ethnicity (Burgess et al., 2015; Kramon and Posner, 2016; Fujiwara and Wantchekon, 2013) and, in the Indian context, caste (Pande, 2003; Das et al., 2017; Dunning and Nilekani, 2013; Besley et al., 2005) informs their policy preferences thereby affecting development outcomes in their constituencies¹. Surprisingly omitted in this discussion on politician’s identity is the role of candidate’s personal background². This is odd because candidates often make ‘background ap-

¹In addition to a politician’s ascriptive identities, characteristics such as education (Jones and Olken, 2005; Besley et al., 2011; Dreher and Lamla, 2010), co-residence (Hodler and Raschky, 2014), wages (Ferraz and Finan, 2009; Gagliarducci and Nannicini, 2013), incumbency (Ferraz and Finan, 2011), party affiliation (Blakeslee, 2018; Pettersson-Lidbom, 2008; Lee et al., 2004), business connections (Fisman, 2001; Faccio, 2006) and competence (Carreri, 2017) have also been studied.

²One exception is Carnes (2012) who analyzed roll-call voting data and found that legislators in the US with a working-class background were more likely to vote on liberal economic legislation

peals', drawing from their personal histories, in attempts to connect with voters (Arbour, 2007). A new study found that two out of five ads aired during the 2008, 2010 and 2012 US House and Senate elections focused on "personal content, either as their primary focus or mixed with policy content. While ads with a policy focus are the majority, this nevertheless shows the importance politicians place on advertising their personal background, broadly construed" (Goggin, 2017).

In order to understand the main motivation behind this research, consider the case of Meira Kumar vs. Mayawati, two Indian politicians, who contested against each other in the 1985 election in Bijnor, Uttar Pradesh. Meira Kumar, daughter of veteran leader Jagjivan Ram, had quit the elite Indian Foreign Services and was parachuted by the Congress party to make her electoral debut in a constituency, more than 800 km. away from her hometown. On the other hand, mounting a challenge from below, was Mayawati, daughter of a post office employee, who had been active in dalit politics since her youth, working at the grassroots, going from village to village on a cycle, building the organizational base of the Bahujan Samaj Party (BSP) for the past half a decade or so, and earning the reputation of 'calling a spade a shovel' (Bose (2009) cited in Narayan (2014))³. Despite being an 'outsider', Meira Kumar won her first election with 38 percent of the votes and Mayawati finished in third place, with just enough votes (18 percent) to avoid forfeiture of her election deposit money. Both Meira Kumar and Mayawati belonged to same caste group, same sex, same religion; they also had similar education levels when they contested their first election⁴ — but they had two very different entry routes: one was hereditary and the other made her way by climbing up the party ranks.

The objective of this paper is to study the economic consequences of such a political selection process, where some candidates are anointed and others promoted by rising up the organizational ranks. In doing so it seeks to build on the recent literature that is considering non-ascribed identities of politicians such as dynastic linkages⁵, social ties like college alumni associations and other elite networks and other background attributes such as criminal antecedents of politicians (Dal Bó et al., 2009; Folke et al., 2017; Fafchamps and Labonne, 2017; Querubin et al., 2016; Jia et al., 2015; Prakash et al., 2014). One important distinction is that I take a broader view of political selection by investigating *all possible* entry routes of politicians. If candidates belong to multiple elite groups then simply considering

³Interestingly, Mayawati contested as an 'independent' for the Election Commission hasn't allotted the BSP a party symbol yet, even though the party was formed an year earlier

⁴Mayawati's first election was a year earlier than Meira Kumar's; Mayawati made her electoral debut in 1984 contesting from Kairana (Muzaffarnagar district), which she also lost. Mayawati was a law graduate (L.L.B.) from University of Delhi and was preparing for the civil service exams, the same one that Meira Kumar had cleared, before she joined politics. Meira Kumar also had a post-graduate degree (M.A.), in addition to her law degree (L.L.B.) from University of Delhi

⁵Dynastic persistence is a significant feature of politics in South Asia such as India (20-30 percent), Pakistan (44 percent in 2013), Nepal (Koiralas), Sri Lanka (Senanayekes and Bandaranaiakes), Bangladesh (Sheikh Hasina and Khaleda Zia), and Burma (Aung San Suu Kyi) (Chandra and Umaira, 2011). There is also anecdotal evidence to suggest that legislators have dynastic links in other Asian countries like in the case of China (the princelings), Japan, Singapore, Indonesia and Thailand. Dynasties also exist in other developing countries like Haiti, Argentina, Mexico and even in developed countries like the US (6 percent), UK (7 percent), Canada (7 percent), Norway (10 percent), Belgium (11 percent), Iceland (30 percent) and Italy Smith (2012).

a businessperson/non-business binary or dynastic/non-dynastic binary would not capture the true impact of the ‘power elite’, who typically have overlapping backgrounds. In India, dynastic legislators (Members of Parliaments who had multiple family connections in politics) in 2009 were the wealthiest politicians, with their mean value of assets being even more than Members of Parliaments who were industrialists or had a business background (Dar, 2012). In such a context, it is important to conceptualize a definition that captures all the variation in “paths to power” (Bohlken, 2016) and I propose a classification of politicians based on their background and careers before they joined politics. I define ‘parachuter’ politicians as those who are part of the local political, social, economic and cultural elite (parachuters = dynasties + elites) and ‘climbers’ as those who are not. An alternative approach would be to study occupation of politicians but in India, for example, majority of the politicians are either ‘social activists’ or ‘agriculturalists’⁶ and these categories mask information about candidates’ careers, non-farm sources of income, grassroots experience, political connections etc. I overcome this challenge by conducting an original primary data collection exercise where I compiled ‘mini-biographies’ of over 1,300 politicians entering and exiting politics in Bihar, a state in northern India, over a 25-year period (1990-2015). By combining this data with a rich set of economic outcomes, I am able to test whether elites favor growth or redistribution and the various mechanisms at play.

A priori, there is no reason to believe that parachuters are a boon or a curse. It is possible that they facilitate development because they have to protect their reputation and typically have access to extra resources to do so (as they are well connected/networked). Moreover, they could avoid time/dynamic inconsistency problems by planning for the long run. On the other hand, it is equally possible that they channel less resources because of adverse selection or that they do not value public goods and under-invest in their provision. Parachuters could also use their name-recognition advantage to undermine local institutions (like capturing organization of political parties at the grassroots) and exacerbate rent-seeking activities, which in turn could have a negative impact on economic development. I use a close election regression discontinuity (RD) design to compare local economic growth in constituencies where parachuters narrowly win with places where they narrowly lose. Growth is proxied by luminosity scores derived from satellite night-time lights, which despite its limitations, is one of the few reliable sources of data suited for this analysis. I show that this research design is internally valid by verifying covariate balance on a wide range of economic and political controls. The results of the RD exercise show that parachuters have perverse economic consequences. Estimates of GDP-to-night-lights elasticity show that electing parachuters leads to 0.2 percentage point lower GDP growth per year compared to constituencies where climbers are elected. Parachuters also establish fewer schools when they win close elections vis-a-vis climbers, and insofar as this measure of public goods provision accurately reflects investments in human capital, the findings suggest that

⁶In the study sample, 31 percent of legislators (N=972, pooled across 1990, 2000, 2005 and 2010) did not report their occupation and of the legislators that did, 70 percent reported an occupation related to agriculture or an agricultural allied sector, 11 percent a professional or technical occupation (like teacher, lawyer, doctor etc.), 8 percent simply reported ‘politics’ and 5 percent reported ‘social work’

elites perform poorly on both fronts of growth and redistribution. I also find that the leader's entry route is a significant feature of political selection, even after controlling for conventional ascriptive identities such as sex, religion and ethnicity/caste.

This paper contributes, more generally, to the literature on deeper determinants of economic growth. There is now a consensus among economists that institutions play a crucial role and that economic development is an outcome of the dynamic interaction between economic institutions (like delineation of property rights and incentive structures in society) and political institutions (those that determine distribution of political power) (Acemoglu et al., 2005). While it is understood that extractive institutions are undesirable, the mechanisms through which they continue to have persisting effects is still an open question. By studying how political selection occurs and which type of politicians run for office, this paper sheds light on the barriers to political entry and provides evidence of a new channel through which institutions matters. Based on evidence from candidate choice experiments in three countries, Carnes and Lupu (2016) argue that, contrary to popular perceptions, voters in the US, UK and Argentina viewed "hypothetical candidates from the working class as equally qualified, more relatable, and just as likely to get their votes". If voters do not exhibit class bias then the 'blame' falls squarely on political parties where the lack of intra-party democracy, non-meritocratic promotion and weak organization leave the door open for elite capture. This paper also speaks to the literature on the impact of historical legacies and pushes back against the literature that over-emphasizes the role of colonial institutions. It is important to clarify that very few of the elites being studied in this paper are the royal notables (remnants of the British colonial land tenure policy). The biographies of politicians point to 'homegrown elite persistence' and as such this throws up paradoxes because of the implications of such a pattern in a setting that serves as an example of a vibrant democracy.

The paper also adds to the studies on political competition and elite persistence (Acemoglu et al., 2014). What are the strategies that elites could use to preserve own power? The literature outlines three key suspects: Firstly, elites could regulate technology adoption to block progress (Kuznets et al., 1968; Mokyr, 1992; Krusell and Rios-Rull, 1996; Parente and Prescott, 1999). I do not find evidence for any differences in the depths of groundwater (a proxy for the use of tubewells, an irrigation technology in an agricultural setting) in places where parachuters narrowly win compared to where they narrowly lose. Secondly, elites could also exert their influence and maintain their power by manipulating factor prices (Acemoglu, 2006). A district-level analysis shows that there is little correlation between wages of male laborers and the proportion of parachuters, suggesting that alternative mechanisms might be at play. Finally, it is possible that corruption and revenue extraction is the underlying mechanism that depresses growth (Acemoglu, 2006). In the Indian context, bureaucratic control via 'transfers and posting' is a major source of revenue of rent seeking and one in which MLAs can play an important role (Ghosh, 1997; Saksena, 1993). I analyze data on over 50,000 transfers of investigating police officers (who form backbone of policing system) and show that places

with greater proportion of elites have higher bureaucratic turnover, which in turn reduces efficiency of police investigation, increases crime rates and leads to lower growth. The lower growth rates do not appear to be driven by explanations relying on inexperience and incompetence, and thus this leads me to conclude that rent seeking and the subsequent mis-allocation of (bureaucratic) resources is a key mechanism through which institutions matter.

The rest of the paper is organized as follows: section 2 provides a conceptual framework for the study; section 3 discusses the context and the data used in the empirical analysis; section 4 explains the identification strategy adopted for the study; section 5 reports the main findings and conducts the robustness tests; and finally, 6 provides some insights into the underlying mechanisms.

2 Conceptual Framework

In order to study political selection at the sub-national level in India, I focus on the role of a legislator's background before she or he entered into politics. Since data on past occupations of politicians are coarse masking substantial heterogeneity (for example, the National Classification of Occupation/NCO 1968 considers all types of farmers, big and small, in the same category as landless agricultural laborers), I propose to use information on politician's career histories to infer candidate's class background and classify them as either 'parachuters' or 'climbers':

2.1 Parachuters

I define parachuter politicians as those who are part of the political, economic and socio-cultural elite:

Political elite: A politician is considered part of the political elite if any member in their immediate or extended family was an elected member of a public office in the past (either a Member of Parliament (MP), Member of Legislative Assembly (MLA), Member of Legislative Council (MLC) or district/block/village president). A politician with a family background could either have a single 'hereditary' connection (first generation) or have multiple family connections, in case they were second/third generation families in politics. Also included here are a minor category of politicians who were sons/daughters/relatives of politicians who were active in electoral politics, regularly contested elections but did not win. Finally, the definition also includes a small minority of politicians connected via family ties to famous leaders (who may not have contested elections themselves but wielded significant influence in the political party) or renowned personalities such as writers, actors, doctor etc. For example, Padam Parag Roy 'Venu' who was son of Phanishwar Nath 'Renu', prominent writer from Araria would also fall under this category⁷ Any politician that meets the above

⁷Padam Parag Roy's complete mini-biography reads: "son of Phanishwar Nath 'Renu', famous writer from Araria. Renu was author of *Maila Anchal*, which ranks as one of the most significant pieces of writing in modern Hindi literature.

description are coded as having a *P-Family* background.

Economic elite: A politician is defined as part of the economic elite if they were landlords or have a business background. According to the Agricultural Census, in Bihar (the state where the study is being conducted), less than 2 percent of the over 10 million land holdings have a size more than 5 hectares. Any politician with medium or large landholdings (more than 5 ha.) was considered to be part of the landed elite and classified as a *P-Landlord*. Also included in this category are the class of landlords (*Zamindars*) whose families continue to persist from the British era, or those new landed elites who came to acquire large tracts of land when the colonial land tenure system was abolished. A second type of economic elite are politicians belonging to *P-Business* background. These refer to politicians are an industrialist or contractor or owning any large business before joining politics. Typical examples of business interests in the context of a low-income setting like Bihar are transporters (bus or truck owner), owner of cinema halls, factories, cold storages, brick-kilns and real estate. Also included in this category are owner of gas agency, PDS dealer⁸, wholesale traders and medical shop owners.

Socio-cultural elite: The socio-cultural elite was conceptualized in two ways. A politician was classified as having a *P-Social ties* background if they were connected to top party leadership (those involved in distribution of tickets) via an elite network (such as college alumni) or past social interactions (such as being a close friend, neighbor etc.). This category is useful to document “cozy arrangements” and identify connected politicians. Also included here are politicians who do not have any significant political experience but are handpicked for elections. Kanti Singh is a good example of such a politician; she was inducted into the party because of her looks (her mini-biography is described in Appendix C.4. Witsoe (2013) describes her as “essentially an outsider, her reputation depended on her perceived proximity with Lalu Yadav [...] had no real territorial links with Bhojpur [...] had to rely heavily on a whole range of local caste leaders to effectively connect with her constituency. While campaigning, these leaders always accompanied her, and they were given prominence while in public view.”. The final type was *P-Parachuter occupations*. Carnes and Lupu (2015) note, “Even after decades of research, ‘reasonable people [still] disagree about the best way to define’ (Lareau 2008, 4) social classes. Still, most class analysts agree that any measure of class should be rooted in occupational information. Occupational backgrounds tend to be strong predictors of other measures, such as income, social status, and the class labels people assign to themselves (Hout 2008; Katz 1972, 63).” I adapt the code-list provided by the National Classification of Occupation (NCO 1968) in India to identify occupations that would be classified as ‘parachuter’ type. By and large, I retain all occupations included in the National Classification of Occupations (NCO 1968) under Di-

One of his other novels was also adapted to a Raj Kapoor starring movie *Teesri Kasam*. A lot of politicians were regular visitors at Renu’s house. Padam Parag was a one term MLA; he was also a *Mukhiya*.”

⁸The Public Distribution System (PDS) is India’s flagship food subsidy program and PDS dealers are shopkeepers who are responsible for distribution of the food grains to eligible households. PDS dealers have a local monopoly over the sale of food grains and are considered part of the local economic elite.

vision 1: Professional, technical and related workers and Division 2: Administrative, Executive and Managerial Workers as part of *P-Parachuter occupations*. I exclude code '137-labour, social welfare and political workers' from this list of *P-Parachuter occupations*. NCO (1968) also includes all elected and legislative officials in Division 2 and for obvious reasons I exclude this occupation as well. The original classification of 9 divisions and the two digit code occupations under them is presented in Appendix C.4. The occupations most relevant in the context of Bihar are professor, teacher, actor, singer, cricketer, journalist, bureaucrat, doctor or lawyer.

Not included in the current definition of parachuters are the military elite, and is only mentioned here for the sake of completeness. There is no politician in Bihar in the study period who entered politics after spending time at the upper echelons in the military. If an officer rank ex-army men were to enter into politics they would be classified as *P-Military*.

2.2 Climbers

I define climber politicians as those who espouse a 'politics of below', have political or organizational experience at the grassroots and do not have any parachuter-type characteristics. They include the following entry routes:

Activist: Any politicians who actively participated in social movements or any issue-based struggle such as the anti-caste struggle, environmental movements, campaigns for land, forest and water rights were coded as *C-Activist*. Also included in this are political movements, caste-based movements, campaigns for raising minimum wage of workers, labor or trade unions leaders, freedom fighters (those who participated in the independence movement, before 1947) In the context of Bihar, the primary social movements were the JP movement, Naxalite struggle and the cooperative movement.

Local representative: Experience at local government allows candidates to build political capital for democratic leadership (Dahl, 1973). A politician who started her or his political career at the village/block/district level was classified as *C-Local rep*. Local elected representatives could be municipal corporator, district panchayat/*Zila Parishad* member, Block panchayat/*Panchayat samiti* member or village panchayat president/*Mukhiya*.

Political worker: Politicians who started their careers as a party worker and were promoted to contest for MLA elections were considered as *C-Party worker*. Typically, ideologically committed political parties have a dedicated cadre (Communist or Rashtriya Swayamsevak Sangh/RSS) but it is not unusual to find cadres for Congress, RJD and even the JDU, to some extent. Also included in this category is the group of *Naya neta*, political actors that are not necessarily affiliated with any single party but are involved in solving local governance issues (Krishna, 2012).

Student politics: Politicians who started politics at the university/college, with organizations such as National Students' Union of India/NSUI (student wing of the Indian National Congress), Akhil Bharatiya Vidyarthi Parishad/ABVP, Students' Federation of India/SFI (student wing of the Communist Party of India (Marxist)/CPI(M)), All India Students Association/AISA (student wing of the Communist Party of India (Marxist–Leninist) Liberation/CPI(ML)) etc. are coded as *C-Student politics*. Also included here are politicians previously active in youth groups.

Strongman: These refer to local muscle-men or criminally accused politicians. They are coded as *C-Strongman* not because the use of violence can also be 'emancipatory' but because as Kohli (1990) points out, the "turmoil in Bihar is best seen as a product of two related but independent struggles: a political struggle for control of state pitting the forward castes against the backward castes, and a socioeconomic struggle of the landless lower castes against landowning forward and backward castes". A limitation of the current study is that the data, in its present form, do not allow one to distinguish between 'good' and 'bad' criminal.

Climber occupations: These include list of occupations mentioned in NCO- Division 3: Clerical and related workers, Division 4: Sales workers, Division 5: Service workers, Division 6: Farmers, fishermen, hunters, loggers and related workers; Division 7: Production and related workers, Division 8-Transport equipment operators and Division 9: Labourers. I, however, exclude any occupation that has been included as part of the parachuter but is also covered in Divisions 3-9. For example, the category of large farmers (who would be classified by NCO in Division 6) is not considered as *C-Climber occupations*.

A politician was allowed to have multiple entry routes and having any one parachuter-type entry route was used to classify them as a parachuter. In an extensive review of community development programs, Mansuri and Rao (2012) find that elite capture is a significant concern and therefore if, say, a politician has two entry routes: P-family and C-local rep then the politician is considered a parachuter. Appendix C.4 describes the method adopted to collect these data and also provides few examples for illustrative purposes.

Having described the two different types of politicians, consider how the politicians may impact economic outcomes. The toy model in Appendix C.1 provides an intuition for the implications of elites who enjoy greater initial endowments and a name recognition advantage that they have earned from outside of politics. Assuming politicians are rent seeking then in equilibrium parachuters will extract more rents (which is a direct consequence of their popularity advantage). Before turning to testing the predictions of the model, the context of the study and data are described in the following section.

3 Context and Data

I study the implications of political selection at the sub-national level because states play a critical role in a federal country like India (Chhibber et al., 2004). There are significantly more legislators at the state level (4,120 Members of Legislative Assemblies (MLAs) across the country) than members of the bicameral parliament (545 directly elected Members of Parliament (MPs) and 245 indirectly elected members). In India's three tier system of governance, jurisdiction over defense, foreign affairs, banking, communications and currency rests with the Center/federal government. Police, agriculture, irrigation, labor markets, land rights, money lending, and retail taxes are 'state subjects'. Policy on education and health, inter alia, can be influenced by both states and the Center⁹. The third tier of governance consists of local councils at the district, sub-district and village and town level. Elected representatives in over 600 districts, 6000 sub-districts and 250,000 villages and towns administer local infrastructure, identify targeted welfare recipients, and can collect property taxes and local fees. There is, however, mounting evidence that school building, electricity provision, road construction, performance of workfare programs and even non-agricultural employment is influenced by state level politics (Vaishnav, 2012; Min, 2009; Asher and Novosad, 2014; Mukhopadhyay et al., 2015; Novosad and Asher, 2012). MLAs play a critical role in this process and more crucially, citizens hold state governments and their elected representatives (i.e. the MLAs) responsible for allocation and distribution of public goods. Oldenburg (2018) notes, "Compared with Members of Parliament, however, Members of Legislative Assemblies (MLAs) are more significant channels of influence and power, linking local elites with state governments (if they are the party in power), but more importantly nursing their constituencies by dealing with concerns at the local level (e.g., police troubles, entries into educational institutions and good hospitals, obtaining loans)".

Within India, the study is based in the state of Bihar. If Bihar was a country it would be ranked in the top 20 worldwide in terms of population size (99 million in 2012) but in the bottom 20 in terms of per capita income (the state average is \$360; national Indian average is \$1,265). The last decade, though, has been transformative and Gross State Domestic Product has grown by around 10 percent. Elections in Bihar were held every 5 years. In the period of our study, the last 25 years, there were 6 elections: 1990, 1995, 2000, Feb 2005, Nov 2005, 2010 and are marked by two distinct regimes: Lalu Prasad Yadav from 1990 to 2005 and Nitish Kumar from 2005 to present. (The former is considered to be a period of low growth with resurgence happening after 2005.) Election results from the Feb 2005 election are not considered in this paper because no government was formed due to a 'hung assembly' after Feb/Mar 2005. It is also important to clarify that a new state (Jharkhand) was carved out from the tribal regions of south Bihar in 2000 and I do not include constituencies belonging to this region in our sample. Therefore, I have a panel of 243 Assembly Constituencies (AC) – the level of our analysis – for the period under study¹⁰.

⁹Forest, trade unions, marriage and succession are some of the other items in the 'Concurrent List'

¹⁰There were 324 assembly constituencies in undivided Bihar; 81 went to Jharkhand after the partition

Table 12 provides an overview of data used in this study and it is summarized below:

Candidate characteristics: Candidates' identity and background were collected through extensive fieldwork conducted over multiple years. Appendix C.4 describes the research methodology adopted and provides examples of some of the 'mini-biographies'. For candidate $i \in \{winner, runnerup\}$ in assembly constituency $ac \in \{1, 2, \dots, 243\}$ at time $t \in \{1990, 1995, 2000, 2005, 2010\}$, the following characteristics are observed: (a) sex which is either female or male; (b) ethnicity/*jati* which is recoded to a social group: lower castes (Scheduled Tribes/ST, Scheduled Castes/SC and Extremely Backward Castes/EBCs), middle castes (Backward Castes/BC) or upper castes; (d) religion: Hindu or Muslim; (e) party: national (Indian National Congress/INC, Bharatiya Janta Party/BJP, Communist Party of India/CPI) or regional (Rashtriya Janta Dal/RJD, Janta Dal United/JDU etc.) or independent/no affiliation; (f) political background: parachuter or climber. Sex, religion and ethnicity are part of the candidate's identity; party affiliation is important as well because 'narrow ethnic parties' have been associated with lower public spending (Thachil and Teitelbaum, 2015). In the context of Bihar, the definition of regional party should be considered synonymous to that of 'narrow ethnic parties'.

Electoral data: Data on candidate characteristics are then combined with election data. For each constituency, the following measures of political competition were constructed: (a) margin of victory, (b) voter turnout, (c) effective number of candidates, and (d) total number of candidates. Additionally, polling station level data (available only for 2005 and 2010) was used to construct a measure of 'vote inequality' (see Appendix C.4 for details). The measure captures how spread out the votes received by a candidate are i.e. higher vote inequality implies that there was greater inequality in the distribution of votes within the constituency and that votes received by the winning candidate across polling stations had a higher variance (as opposed to being equally distributed across polling stations).

Outcomes:

Local economic growth: The primary outcome variable considered in this paper comes from satellite images recorded by the Defense Meteorological Satellite Program in the National Geophysical Data Center (NGDC) at a 30 arc-second grid resolution. Night time lights data has been successfully used to proxy for economic growth at the country level and sub-national level (Henderson et al., 2012; Doll et al., 2000, 2006; Elvidge et al., 1997). The raster files available from NGDC have a pixel that records a luminosity score ranging from 0 to 63; data is available yearly from 1992 to 2012 and is aggregated to the AC level. The measure used in the analysis is: growth rate of total luminosity score per 100,000 voters, where total luminosity score per capita is the sum of all light values in a constituency divided by total electors (registered voters). The main outcome variable is calculated for every year and the night lights are then aggregated and averaged over the following election ye-

ars: 1992-1995; 1996-2000; 2001-2005; 2006-2010; 2011-2013. The main advantages of the nightlights data are that it allows researchers to study settings with weak statistical capabilities that might mis-report economic activity either willingly or unwillingly and conduct their analysis at geographical units for which conventional sources are not available (Michalopoulos and Papaioannou, 2013, 2014; Hodler and Raschky, 2014). In the Indian context, Min (2009) has used them to study the politics of electricity provision and Novosad and Asher (2012) and Prakash et al. (2014) have relied on it to measure local economic development. In 21a and 21b, I compare trends in both the levels and growth rates of lights with Bihar's Net State Domestic Product and find that the elasticity of NSDP to lights is 0.13. It should be noted that these data, however, are not without drawbacks and these include spatial autocorrelation when units are small, saturation (luminosity score is top-coded), skewness (due to fires) and quality of sensors (Donaldson and Storeygard, 2016). Given the caveats associated with the lights data, a secondary outcome variable was also considered.

School construction: Secondary outcome variables comes from an administrative dataset from the State Education Society, Bihar which has details on the year in which schools were established. The attribute data was then matched with spatial coordinates of over 80,000 schools (around 80 percent of the data were successfully merged) and the same procedure that was adopted for aggregation of the lights data was applied. The constituency-year level panel data on school construction from 1990 to 2013 is used as a proxy for public good provision, to complement the lights data. Vaishnav and Sircar (2011) also use a similar approach to study pork barrel politics in the southern state of Tamil Nadu.

Technology adoption: In an agricultural-based society such as Bihar, irrigation is an important input in the production process and technology facilitating groundwater development has significant potential. In the neighboring state of eastern Uttar Pradesh, Sekhri (2014) shows that access to mechanized pumps reduced poverty and improved welfare. In Bihar, the pump density increased after the 1990s (Kishore, 2004) and I use the depth of water tables as a proxy for investments in irrigation technology (tubewells/mechanized pumps). Greater depths may be considered to be reflecting agrarian dynamism because the hydrogeological structure for much of Bihar is very similar (with the exception of few parts in south Bihar) and has a common aquifer system. Data on the groundwater depths comes from CGWB. It is an unbalanced quarterly panel of 20,166 wells, a majority of which are monitoring wells, over 1996-2012. Each year, observations are taken from the monitoring well at four points of time in the: post-monsoon *Rabi* season (typically corresponding to January), pre-monsoon season (this could be either April, May or June), monsoon season (generally August) and post-monsoon *Kharif* season (generally November). Since the data are spatial in nature, they were aggregated to the constituency-election cycle level.

Overall, there are 1,215 constituency-election observations (243×5) in the final dataset, with information on 2,430 candidates ($243 \times 5 \times 2$). It is also important to clarify that two versions of the outcome variables were calculated: one for the 5-year election window and another for a 4-year

election window. Table 1 presents the descriptive statistics for winners and first runner-ups, disaggregated by election year. Categorized biographies are available for more than 95 percent of the sample. There is a steady increase in the proportion of parachuters from around 64 percent in the 1990s to 77 percent by the end of the study period. The increase is driven by the rise of hereditary politicians (which increased from 23 percent in 1990 to 40 percent in 2010). It is also important to point out that more than 85 percent of the female candidates are hereditary or related to a strongman. One in thirteen legislators are Muslims and around two out of five legislators belong to the middle castes (backward castes/BCs).

Table 2 presents the means of the above defined variables, disaggregated by election year. Elections in Bihar have increasingly become competitive as the margin of victory has steadily reduced (with the exception of 2010) and the effective number of candidates contesting elections has increased.

4 Empirical Strategy

To begin estimating the effect of a politician’s background on economic outcomes, first consider the following simple OLS regression:

$$y_{c,t} = \alpha_1 + \alpha_2 Parachuter_{c,t} + e_{c,t} \quad (1)$$

where, $y_{c,t}$ is the outcome of interest (local economic growth, school construction, groundwater depths) in constituency c at time t ; $Parachuter_{c,t}$ is an indicator variable that is 1 if the winner is part of the political, social, economic or cultural elite, and 0 otherwise. The coefficient of interest is $\alpha_2 = \partial y_{c,t} / \partial Parachuter_{c,t}$. In the data, the average difference in the growth rate of lights between constituencies where parachuter and climber politicians won, calculated over the 5- and 4-year election window was -0.02 and -0.01 respectively. These estimates are 10 percent less (5-year window) and 4 percent less (4-year window) than the average growth rate in constituencies where climbers won. These unconditional estimates have obvious omitted variable bias and endogeneity concerns. The former may be addressed by including time-varying constituency specific controls like margin of victory, turnout and effective number of candidates, in addition to constituency and year fixed effects but one might, justifiably, still worry that constituencies which elect parachuter politicians might be different from those where climbers win on unobservables like voters’ preferences or ideology. Reverse causality is also a concern as it is possible that parachuters may be elected from poor places and that low development outcomes guide election of such politicians rather than the other way around.

In order to circumvent some of these challenges, I rely on a close election regression discontinuity design and compare outcomes in constituencies where parachuters barely won (treatment) with those

they narrowly lost (control). The central idea behind the RD is that victories of parachuters/climbers in elections where margin of victory is very small is driven by issues orthogonal to characteristics that one worries might affect growth. In other words, close elections, where results are determined by a coin toss serve as natural experiments to study the consequences of different type of politicians. Despite the attractiveness of such an identification strategy, it is important to remember that RD only ‘solves’ problems stemming from selection on observables and uncover local average treatment effects.

The key estimating equations are:

$$y_{c,t} = \beta_1 + \beta_2 1(movParachuter_{c,t} > 0) + \beta_3 movParachuter_{c,t} + \beta_4 1(movParachuter_{c,t} > 0) \times margin + Z_{c,t} + e_{c,t} \quad (2)$$

$$y_{c,t} = \beta_1 + \beta_2 1(movParachuter_{c,t} > 0) + f(margin) + 1(movParachuter_{c,t} > 0) \times g(margin) + Z_{c,t} + e_{c,t} \quad (3)$$

where, $y_{c,t}$ is the outcome of interest in constituency c at time t , as defined earlier; $f(\cdot)$ and $g(\cdot)$ are quadratic or cubic polynomial functions; $movParachuter_{c,t}$ is the forcing/running variable; $Z_{c,t}$ are constituency- or candidate-level controls and $e_{c,t}$ is the idiosyncratic error term that is clustered at the constituency level. The forcing/running variable and defined as follows:

$$movParachuter_{c,t} = \frac{votes_{c,t}^{Parachuter} - votes_{c,t}^{Climber}}{votes_{c,t}^{total}} \quad (4)$$

The two main identification assumptions for a RD design are that: (a) there should be a discontinuity in the treatment when the forcing variable is greater than zero, and (b) constituencies on either side of the cutoff are similar to each other on pre-determined characteristics. Since this is a sharp RD set up, by definition, the treatment i.e. assignment of parachuter politician is 1 when $movParachuter$ is positive and 0 when it is negative. Figure 1 also tests there is any sorting around the cutoff and illustrates the density of the running variable, $movParachuter$. A test of continuity in the density of the running variable around the treatment threshold of zero (McCrary 2008) does not reject the null hypothesis that the threshold cannot be manipulated. In Figure 2 the treatment variable for close elections is plot on a map and it provides a visual representation of the geographical distribution of the constituencies where parachuters barely won and where they barely lost (to climbers).

5 Findings

5.1 Covariate balance

Before discussing the RD estimates, I present a series of graphs that check for covariate balance on either side of the cutoff. Table 11 depicts the RD estimates corresponding to Figure 3, 4, 5, 6, 7 and 8. I consider four main categories of pre-determined covariates: (a) initial economic conditions (b) political competition (c) candidate’s identity (time-invariant), and (d) candidate characteristics (time-varying). The initial economic conditions (circa 1990) considered include demographic features such as population, network infrastructure such as access to roads, electricity and other measures of economic prosperity such as area under irrigation and firm employment. I also directly test for differences in initial levels of lights ($\ln(\text{luminosity score})$ in 1990) and the lagged growth rates and show that there is no difference between ‘treatment’ and ‘control’ on these two observables (which one might worry are correlated with the main outcome variable: growth rate of lights). I consider constituency-level measures of political competition such as electorate size, voter turnout, effective number of candidates and ascriptive identities of politicians such as their sex, religion and ethnicity. I also consider time-varying candidate characteristics such as affiliation to a national-party, being part of the ruling party in government and incumbency. Table 11 shows that, at the cutoff, the point estimate for the 21 out of the 22 covariates being considered is statistically indistinguishable from zero.

5.2 Economic impacts

Having established ‘balance’, consider now the impact on growth rate of lights/luminosity. Figure 9 depicts this visually by fitting a polynomial of the fourth degree on the two sides of the running variable. There is a discontinuity very close to the margin of victory with there being lower growth in constituencies in which parachuters only barely won. The RD estimates are presented in Table 3. The bandwidth for this local linear regression was calculated according to Calonico et al. (2014, 2017) (henceforth CCT 2017). Unless otherwise specified, $h = 0.11$ is the bandwidth that is used to calculate RD estimates throughout the paper. The impact on lights was also calculated using higher order polynomial function of the forcing variable (col 3-6) instead of a linear function (col 1-2). The local average treatment effect for parachuters is lowering growth between 12-41 log points and compared to the average growth rate of 21 log points this is a meaningful effect.

Table 5 explores whether the treatment effect varies according the politician’s term. Results using four different bandwidths are presented in the four panels, including one for extremely close elections (Panel A, $h/4 = 0.03$). The disaggregated results suggest that the overall negative results are driven by term 3 and term 4 (col 3-4). Since lights are a lagging indicator of economic activity, these temporal dynamics increase one’s confidence in the main result in Table 3.

Concerns about choice of specifications: Figure 14 conducts robustness checks using alternative bandwidths (10 bandwidths, incrementally increasing from 0.01 to 0.10), different kernels (three different kernels: triangular, uniform and epanechnikov) and alternative local polynomials (linear, quadratic and cubic). A majority of the RD estimates (out of the 90 regressions) confirm the magnitude and statistical significance of the above results. In addition to the conventional RD estimates with conventional variance estimator, the kernel weighted regression were re-estimated to derive bias-corrected RD estimates (using both the conventional variance estimator and robust variance estimator) and the findings were robust to this as well (Table 6, col (1)). Recent work has criticized the use of higher order polynomials as the running variable in RDD and Gelman and Imbens (2018) “recommend researchers instead use estimators based on local linear or quadratic polynomials or other smooth functions”. For this reason, the preferred specification in this paper is the local linear one (it also provides the a conservative estimate of the impact, compared to results using a quadratic polynomial).

Concerns about peculiar constituency characteristics and regional variations: Figure 16 conducts additional sensitivity checks by dropping candidates/constituencies with different characteristics one worries might be affecting the results. Four of five women politicians contesting in close elections were parachuters and one could be concerned that this sub-group could be driving the estimates. Dropping all women candidates from the estimation does not alter the results. Other robustness checks include dropping urban constituencies (even though urbanization in Bihar is low, one may worry that growth in urban areas could be driving the results) and dropping border constituencies (one may worry that constituencies along Bihar’s border with Indian states and the international border with Nepal in the north could influence the results). Dropping urban constituencies from the sample reduces the statistical significance but reassuringly does not change the point estimate. Figure 15b conducts additional checks to test whether particular geographical regions influence the results. There are 9 regions (administrative divisions) in Bihar with an average of 27 constituencies falling in each. Dropping each iteratively means that the main result is no longer statistically significant at conventional levels for majority of the specifications, but that the range of the points estimates between -0.10 and -0.20 is encouraging.

Concerns about lights data: The findings are also robust to alternative definitions of growth rate based on average lights per pixel (as opposed to lights per 100,000 voter) and winsorizing the growth rates at alternative percentile (1st and 99th percentile). In fact, the point estimates are larger with smaller standard errors in both cases. As stated previously, the time period of the nightlights data is from 1992 to 2013, implying that growth rates for two out of the five election cycles (1990-95 and 2011-15) were calculated using partial data. Figure 16 depicts that dropping the 1990 and 2010 election cycle from the regression also does not change the results. Finally, in light of the criticisms of the nightlights data, I also consider the impact on school construction. Figure 10 shows that in constituencies

where parachuters narrowly win the number of schools constructed during their term is lower than in places where climbers narrowly win. Just like the lights data, the impact is statistically significant when considering the 4-year election window (and not when considering the 5-year election window, even though the point estimate is negative). Results in table 4 imply that in constituencies where parachuters narrowly won, 3 fewer schools were built compared to where parachuters narrowly lost/climbers narrowly won. This additional result reinforces the overall negative impact that parachuters have on economic growth and development. It is also consistent with the model (described in section C.1) which predicted that parachuters would under provide public goods in the political equilibrium.

Concerns about biographies: Another concern relates to the quality of the candidate biographies data and classification of entry routes. Figure 16a iteratively drops observations from the estimating sample if either winner or runner-up was coded with a particular entry route. The point estimates are always negative, even though there is variation in the confidence intervals. The length of the median biography is 49 words/285 characters. Findings are robust to dropping biographies which are below the 10th percentile word length. The median number of interviews conducted to collect the biographies was 3; the findings are robust to dropping biographies where only one source/interview was relied upon (Figure 16b). As discussed earlier, case of multiple entry routes, a politician was classified as a parachuter, because elite capture could also operate at local levels. Nevertheless, as a robustness check the biographies were recoded based on a majority rule (i.e. classify candidates as parachuters only if half or more of their backgrounds are parachuter type). Conducting this test meant that the running/forcing variable had to be redefined; the RD estimate using this new forcing variable was -0.13 ($p < 0.15$). If one drops all the observations which had multiple entry routes and restricts the comparison among candidates with singleton backgrounds then while the RD estimate is still negative, it is no longer statistically significant at conventional levels (this approach drops nearly half of the observations; $N = 106$, $\beta_2 = -0.07$, $SE = 0.11$). In another robustness test, I considered alternative classifications of the parachuter variable. Figure 17 plots the distribution of the RD estimate based on 26 different definitions. For example, one could consider defining a parachuter politician if they either had a P-Family background or a P-Business background (as opposed to basing the definitions on all five types). The average RD estimate from these regressions is -0.8 and the estimate from Table 3 falls near the 25th percentile. If one were to ignore the P-parachuter occupation types (which comprise a small proportion of the data), then the original estimate is closer to the mean, strengthening the case that the original proposed definition is not one that focuses on the extremes.

Concerns about political competition and candidate's identity: Table 6 presents results from the kernel-weighted regression after including additional covariates. Constituency-level controls like turnout and ENOC are added in col (2) and candidate-level controls like sex, religion, ethnicity, party affiliation and ruling party alignment are added in col (3). Adding controls only marginally affects the point estimate. In col (4), the candidate's incumbency status is also included and while this reduces the point estimate by almost half the results continue to be statistically significant. Since much of

the literature has discussed impact of ascriptive identities, it is pertinent to note that in the current set up, when considering races between parachuters and climbers, none of the coefficients on the ‘identity’ of the candidate: sex/female ($b=0.12$, $se=0.14$), religion/Muslim ($b=0.14$, $se=0.15$), ethnicity/upper caste ($b=0.05$, $se=0.08$) and ethnicity/middle caste ($b=-0.02$, $se=0.07$) in the regression in col (3) are statistically significant¹¹. Given that overlap between caste and class background, it is critical to address concerns that candidates’ ethnicity could be confounding factor in these results. I test for this in multiple ways by: dropping all reserved constituencies (constituencies which have quotas for SC/ST, meaning where only SC/ST can run), dropping all lower castes (SC/ST/EBC) and dropping all upper caste candidates. None of these change the sign or the magnitude in any way that is statistically different from the original RD estimate (see Figure 15a). Instead of dropping observations, I also check sensitivity by restricting the estimating sample once to only upper caste candidates ($N = 22$, $\beta_2 = -0.46$, $SE = 0.54$) and subsequently to only middle caste candidates ($N = 47$, $\beta_2 = -0.20$, $SE = 0.11$); the point estimates continues to be negative. When the sample was restricted to only lower caste candidates, it was only then that the point estimate changed sign (but the estimate was statistically indistinguishable from zero; $N = 50$, $\beta_2 = 0.07$, $SE = 0.22$). Restricting the candidate pool to only Muslim winners and runner-ups also gives negative point estimates ($N = 12$, $\beta_2 = -0.63$, $SE = 0.34$) (results not shown in graph due to small sample size). Taken together, these results suggest that a politicians background is a crucial factor when considering local economic growth, even after accounting for conventional ascriptive identities.

6 Mechanisms

The various robustness checks above suggest that the impact of parachuters is a state-wide phenomenon with no heterogeneity by constituency characteristics, and with limited influence of candidate’s ascriptive identity. In this sub-section, I consider three other factors that could affect growth:

Firstly, consider the role of executive constraints. Studying long run economic growth over more than 150 years, Besley et al. (2011) find that hereditary rule increases growth, but only when constraints are weak. Bihar’s experience can also help shed light on this question. Bihar’s growth experience, post 1990s, can be broadly classified in two distinct regimes: Lalu Prasad Yadav’s regime (1990-2005) and Nitish Kumar’s regime (2005-present). Nitish’s rule-based governance was a sharp contrast from Lalu’s rule which was often based on personal diktat. The period from 1990 to 2005 may, thus, be considered as one where executive constraints were weak and the years from 2005 to 2015 as one where executive was much more powerful. Table 8 shows that parachuters have a greater negative impact when constraints are weak (the coefficients in col (1) and col (2) are statistically difference from each other). While these findings contradict the ones from Besley (2013), they are intuitive because in the context of Bihar weak executive constraints increases the role that legislators

¹¹An indicator variable for lower castes was not included in the regression to avoid the dummy trap; a candidate can belong to either upper, middle or lower caste

can play in affecting governance.

Secondly, consider the role of law and order, as crime is known to be associated with economic development. In the absence of crime data at the constituency level, I compile district-level crime data and classify districts which have high crime (above median) and low crime (below median). The rate of economic crimes is used to categorize the districts because one expects parachuters (politicians part of the elite) to have a greater propensity to indulge in these types of crimes, as opposed to violent or property crime. Table 9 restricts the sample to these sets of districts and re-estimating the impact of parachuters indicates that the findings are driven by lower growth rates in high crime districts. (The difference between estimates in col (3) vs col (4) are statistically significant, when considering the $h/2$ bandwidth).

This result, in turn, raises another question: what are the underlying mechanisms in the parachuters-crime-growth relationship? Could individual traits explain these variations? Thirdly, consider the role of individual politician's traits such as age, political experience and human capital. Before discussing the results, it is important to bear in the mind that the data on traits are self-reported data available only for winning candidates (those who go on to become MLAs) and that the data for the 1995-2000 election cycle could not be accessed. Additionally, age and experience data is missing for nearly 1 out of 5 legislators whereas education data is missing for almost 2 out of 5 legislators. A novel aspect of the traits data in Bihar is that, unlike other states, legislators report their year of political entry, which can be used to infer political experience. Based on the data, legislators are divided into two sub-groups for each trait based on whether their traits were above or below the median trait, calculated separately for each electoral cycle. Table 7 reports the results from split sample regressions; col (1) and (2) use the optimal bandwidth $h = 0.11$, while col (3) and (4) use $h/2$. Panel A reports the estimates for age, panel B for political experience and panel C for education (an indicator variable for whether the legislator had a graduate degree or not). The results do not provide evidence for heterogeneous effects, as one cannot reject that the coefficients in col (1) are statistically different from that in col (2), or that estimates in col (3) are statistically different from that in col (4). One needs to exercise caution in interpreting these findings because it is not clear whether the lack of differential sub-group effects is due to power issues or whether there is indeed no heterogeneity. The results for young vs old politicians are very similar, and even those for education (Panel C, col (3) and (4)) look similar. However, when using the full bandwidth, it is possible that estimates in Panel C, col (1) vs col (2); Panel B, col (1) vs col (2); and Panel B, col (3) vs col (4) *might have been* different if the sample size was larger. Anecdotal evidence suggests that education/human capital plays a muted role (as pointed out in the introductory example of Meira Kumar vs Mayawati) but results on political experience *would have been* intriguing since they *would have* hinted at a counter-intuitive finding. Establishing whether parachuters impact growth negatively because of inexperience and consequently being informationally constrained or due to vested interests is an important question. In the absence of additional data, results in Table 7, by itself, do not rule out any competing expla-

nations.

The findings so far point to parachuter politicians leading to worse economic outcomes. But how might elites achieve these outcomes? The literature outlines three key suspects: one, elites could block access to technology to maintain their power and two, they could indulge in rent seeking. Figure 11 shows that we find no change in technology adoption in constituencies where parachuters win vs. where they lose. Two, elites could manipulate factor prices (Acemoglu, 2006). Figure 12 illustrates that there is little or no correlation between average district male wages and proportion of parachuters in the same district, after accounting for district and year fixed effects. (If anything, the relationship appears to be positive when considering female wages). Finally, it is possible that corruption and revenue extraction is the underlying mechanism that depresses growth (Acemoglu, 2006). In order to test the rent seeking hypothesis, we consider the nexus between legislators and bureaucrats. In India, bureaucratic control via ‘transfers and posting’ is a major source of revenue of rent seeking and one in which MLAs can play an important role (Ghosh, 1997; Saksena, 1993). We examine the transfers of non-IAS police officers (inspectors, sub-inspectors and assistant sub-inspectors who form backbone of policing system) and find that places with greater proportion of hereditary politicians have higher bureaucratic turnover which reduces efficiency of investigation and in turn increases economic crime in the district. Table 10 reports that the elasticity of turnover to economic crimes is 0.17. In other words, a 10 percent increase in average duration of investigating officers is associated with a 17 percent increase in economic crimes. We also report the association between average tenure and total crime (col 1-3) and find that there is no relationship. While these results don’t lend themselves to a causal interpretation, the aggressive fixed effects structure and a placebo check ruling out a positive relationship between all crime suggest that correlation may not be explained by reverse causality. In Figure 13 we show the correlation between the average proportion of parachuter politicians with turnover (number of transfers) and tenure (duration spent in the district). A positive correlation with turnover and tenure suggests a stability in the parachuter-bureaucrat nexus (with plausibly non-cooperating officers being shunted out of the district). This result squares up with the finding from Table 9 which shows that in the depressed growth effects come from the districts which have high crime rates. Taken together, the results in Table 7 (no heterogeneity by traits) along with the above associations that shows a link between parachuters and growth (Parachuter $\Rightarrow$ mis-allocation of police resources (Figure 13) $\Rightarrow$ higher crime (Table 10) $\Rightarrow$ lower growth (Table 9) thus provide suggestive evidence that revenue extraction could be a mechanism that could explain these results.

To sum up, the findings of this research underline the importance of studying how political selection occurs and which type of politicians run for office. Policy makers need to view the rising trend of hereditary politicians and other elites in Indian politics with concern as it implies that the political system is increasingly becoming closed. In response to the debate on the consequences of dynastic politics, some have suggested that political parties should only allow one person from a family on

the ticket. It is easy to how such a policy could be counter-productive as it is likely that families might succeed in getting tickets from multiple parties and would continue to persist. It is also important to note that simply passing legislation for institutional reforms such as decentralization or reservation for minorities might not strike at the root cause of the problem as elite capture is a real threat. The rising cost of campaigning, lack of intra-party democracy and weak party structure are some of the areas where policy makers should attempt to make change to arrest this trend. The study also underlines the role of sub-national leaders in the development process and sheds light on their motivations. It is part of a larger research agenda that aims to understand concentration of power in a democracy. If politicians are elected by a free and fair electoral process then how do parachuters reflect on the merits of the people? How do they coexist alongside the rapid democratization of society? Why do parachuters persist in some places and not in others? Answering these questions will help expand our notion of political inequality and examine the workings of a closed political system. This is particularly crucial not just because India is the world's largest democracy but every third person living in a democracy is Indian.

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A Tables

Table 1: Descriptive stats

	(1) All	(2) 1990	(3) 1995	(4) 2000	(5) 2005	(6) 2010
A. Winner:						
Female	0.07	0.03	0.03	0.06	0.10	0.14
Muslim	0.08	0.07	0.08	0.10	0.07	0.08
Upper caste	0.27	0.35	0.19	0.24	0.25	0.33
Middle caste	0.43	0.38	0.49	0.45	0.46	0.37
Lower caste	0.22	0.20	0.24	0.21	0.23	0.22
National party	0.56	0.86	0.92	0.30	0.30	0.40
Ruling party	0.64	0.47	0.75	0.54	0.59	0.85
Incumbent	0.36		0.41	0.34	0.33	
Parachuter	0.68	0.62	0.60	0.69	0.72	0.74
N	1215	243	243	243	243	243
B. Runner-up:						
Female	0.07	0.02	0.05	0.05	0.09	0.12
Muslim	0.13	0.11	0.08	0.14	0.16	0.15
Upper caste	0.31	0.37	0.43	0.27	0.27	0.21
Middle caste	0.35	0.34	0.28	0.37	0.35	0.41
Lower caste	0.21	0.19	0.19	0.22	0.21	0.23
National party	0.49	0.79	0.81	0.39	0.30	0.16
Ruling party	0.23	0.18	0.17	0.43	0.24	0.13
Incumbent	0.26		0.23	0.26	0.28	
Parachuter	0.67	0.53	0.60	0.65	0.75	0.81
N	1215	243	243	243	243	243

Note: Panel A and B in Table 1 depict the characteristics of the winner and first runner-up respectively. Upper caste refers to Brahmin, Bhumihaar, Kayastha and Rajput. Middle caste refers to Yadav, Kushwaha, Kurmi, Koeri, Baniya, Kalwar, Marwari and Kahar. Lower caste refers to the Dalits (scheduled castes like Paswan, Chamar, Pasi, Musahar, Dhobi, Bhuiya, Rajwar), tribals (scheduled tribes) and extremely backward classes such as Teli, Gangota, Nishad, Kevart, Bind, Nai, Noniya, Dhanuk, Dangi and Mallah. National party refers to whether the politician belonged to a political party that received national party (as opposed to a state/regional party) status by Election Commission of India at time of election. Ruling party refers to whether politician was either directly part of the government or indirectly part of it via an alliance. A parachuter is defined as a politician who is part of the socio-economic or political elite (either hereditary or a landlord or has a business background or connected via social ties or inducted).

Table 2: Descriptive statistics (mean) of constituency-level data, by election cycle

	(1) All	(2) 1990	(3) 1995	(4) 2000	(5) 2005	(6) 2010
A. Full sample:						
Growth of lights per voter	0.20	0.49	0.13	-0.06	0.08	0.36
Growth of lights per pixel	0.21	0.49	0.14	-0.06	0.08	0.37
Schools	22.64	6.62	10.75	6.82	62.72	2.36
Groundwater depth	3.32		2.87	3.15	3.59	3.66
Victory margin	0.14	0.14	0.18	0.13	0.10	0.12
Turnout	0.57	0.64	0.60	0.64	0.46	0.53
Effective candidates	3.79	3.90	4.10	3.58	3.37	4.01
Votes inequality	0.51				0.52	0.51
N	1215	243	243	243	243	243
B. Parachuter vs climber elections:						
Growth of lights per voter	0.20	0.49	0.13	-0.06	0.09	0.35
Growth of lights per pixel	0.21	0.50	0.14	-0.06	0.09	0.35
Schools	20.58	6.33	10.81	6.37	61.84	1.29
Groundwater depth	3.25		2.89	3.12	3.63	3.55
Victory margin	0.14	0.15	0.18	0.13	0.10	0.13
Turnout	0.58	0.64	0.60	0.63	0.46	0.52
Effective candidates	3.76	3.89	3.95	3.56	3.33	4.05
Votes inequality	0.50				0.50	0.50
N	482	108	113	101	84	76

Note: Panel A and B in Table 2 depict means from the full sample and sample of close elections (where parachuters contest against climbers) respectively. Close elections are defined if the margin of victory is less than 11 percent ($h = 0.11$, where h is the optimal bandwidth calculated according to CCT, 2017). Growth rate of lights per voter refers to the difference in the $\ln(\text{luminosity score per } 100,000 \text{ voters})$; growth rate of lights per pixel is calculated as the difference in the $\ln(\text{mean luminosity score in a pixel})$; schools is defined as the number of schools established; groundwater depth is the depth of the water table in the Kharif (lean) season in November (in meters below ground level). Victory margin, turnout and effective candidates are measures of political competition in the assembly constituency. Victory margin is the difference in the share of votes received by the winner and first runner-up. Turnout refers to the proportion of electors who cast their vote in the election. Effective number of candidates is defined in 18. Votes inequality is the coefficient of variation of the vote shares across polling stations, within a given constituency. Blank cells mean no data (groundwater data is available after 1996; and votes inequality is only measured in 2005 and 2010).

Table 3: Impact of parachuters on growth in close elections

	Linear		Polynomial: quadratic		Polynomial: cubic	
	(1)	(2)	(3)	(4)	(5)	(6)
Parachuter	-0.16 (0.09)*	-0.12 (0.09)	-0.32 (0.12)***	-0.22 (0.11)**	-0.41 (0.13)***	-0.24 (0.12)**
Initial level of ln(luminosity)		-0.06 (0.01)***		-0.05 (0.01)***		-0.05 (0.01)***
N	225	225	225	225	225	225
Mean	0.21	0.21	0.21	0.21	0.21	0.21

Note: Table 3 presents results for (triangular) kernel RD estimates of the impact of parachuters on growth rate of night lights, measured by difference in ln(luminosity scores) over the election cycle (4-year window) and winsorized at the 5th and 95th percentiles. A four-year window of the election cycle is chosen to avoid biasing the estimate due effects of an election year. Each coefficient in this table represents a separate regression using local linear and polynomial controls. The optimal bandwidth ($h = 0.11$) was calculated according to the algorithm in CCT (2017). Standard errors are clustered at the constituency level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Impact of parachuters on school construction in close elections

	(1)	(2)	(3)
Parachuter	-3.29 (1.51)**	-3.91 (1.99)*	-2.58 (2.85)
N	84	84	84
Mean	4.29	4.29	4.29

Note: Table 4 presents results for (triangular) kernel RD estimates of the impact of parachuters on school construction, over the election cycle (4-year window). A four-year window of the election cycle is chosen to avoid biasing the estimate due effects of an election year. Each coefficient in this table represents a separate regression using local linear (Col 1) and polynomial controls (Col 2, quadratic and Col 3, cubic). The optimal bandwidth ($h = 0.11$) was calculated according to the algorithm in CCT (2017). Standard errors are clustered at the constituency level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Impact of parachuters on growth, by term

	(1) Term 1	(2) Term 2	(3) Term 3	(4) Term 4	(5) Term 5
A. Bandwidth = $h/4$					
Parachuter	-0.01 (0.23)	-0.19 (0.20)	-0.28 (0.54)	-0.71 (0.40)*	0.27 (0.23)
N	44	44	53	53	53
Mean	-.026	.25	.086	.32	.14
B. Bandwidth = $h/2$					
Parachuter	-0.19 (0.19)	0.10 (0.19)	-0.35 (0.44)	-0.64 (0.33)*	0.24 (0.20)
N	81	81	104	104	104
Mean	-.041	.27	.075	.32	.13
C. Bandwidth = h					
Parachuter	-0.20 (0.14)	0.26 (0.16)	-0.49 (0.33)	-0.13 (0.26)	-0.01 (0.16)
N	173	173	185	185	185
Mean	-.046	.28	.039	.33	.092
D. Bandwidth = $2h$					
Parachuter	-0.12 (0.10)	0.18 (0.12)	-0.14 (0.23)	-0.17 (0.19)	-0.03 (0.12)
N	297	297	311	311	311
Mean	-.033	.28	1.9e-04	.34	.094

Note: Table 5 presents results for (triangular) kernel RD estimates of the impact of parachuters on growth rate of night lights, measured by difference in $\ln(\text{luminosity scores})$ by the politician's term period. The growth rate is winsorized at the 5th and 95th percentiles. Each coefficient in this table represents a separate regression using local linear regression. The optimal bandwidth ($h = 0.11$) was calculated according to the algorithm in CCT (2017) and the four panel present results for alternative bandwidths: Panel A ($h/4 = 0.03$), Panel B ($h/2 = 0.058$), Panel C: ($h = 0.11$) and Panel D: ($2h = 0.232$). Standard errors are clustered at the constituency level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Impact of parachuters on growth including covariates

	(1)	(2)	(3)	(4)
Conventional	-0.16 (0.09)*	-0.15 (0.09)	-0.16 (0.09)*	-0.08 (0.04)*
Bias-corrected	-0.32 (0.09)***	-0.30 (0.09)***	-0.32 (0.09)***	-0.15 (0.04)***
Robust	-0.32 (0.11)***	-0.30 (0.12)***	-0.32 (0.11)***	-0.15 (0.06)***
N	225	225	225	133
Bandwidth	.11	.11	.11	.11
Constituency controls	No	Yes	Yes	Yes
Candidate controls	No	No	Yes	Yes
Incumbency control	No	No	No	Yes

Note: Table 6 presents results for (triangular) kernel-weighted RD estimates of the impact of parachuters on growth rate of night lights, measured by difference in $\ln(\text{luminosity scores})$ over the election cycle (4-year window) and winsorized at the 5th and 95th percentiles. Robust bias-corrected standard errors are also reported for all regressions. The optimal bandwidth ($h = 0.11$) was calculated according to the algorithm in CCT (2017). Col (1) doesn't include any controls; col (2) includes constituency level controls of political competition: effective number of candidates and voter turnout; col (3) adds controls for candidate level characteristics such as sex of candidate/an indicator variable for whether candidate is female or not, religion of candidate/an indicator variable for whether candidate is Muslim or not, ethnicity of candidate/an indicator variable whether candidate is upper caste or not, another indicator variable whether candidate belongs to the middle caste or not, party of candidate/an indicator variable for whether candidate belongs to a national party or not and ruling party alignment/an indicator whether candidate was part of the government or not; col (4) adds an indicator variable for whether candidate was an incumbent or not. Candidate incumbency is only available for 1995, 2000 and 2005. Redrawing of constituency boundaries by Delimitation Commission of India in 2008 prevents estimating incumbency status for 2010. Standard errors are clustered at the constituency level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Heterogeneous impact of parachuters on growth, by traits

	Bandwidth: h		Bandwidth: $h/2$	
	(1)	(2)	(3)	(4)
Panel A: Age				
Parachuter	-0.11 (0.14)	-0.16 (0.13)	-0.34 (0.19)*	-0.39 (0.16)**
N	76	77	47	41
Mean	0.26	0.20	0.24	0.17
Sample restriction	Young	Old	Young	Old
Panel B: Experience				
Parachuter	-0.04 (0.15)	-0.19 (0.13)	-0.27 (0.23)	-0.43 (0.15)***
N	74	79	39	47
Mean	0.29	0.20	0.28	0.16
Sample restriction	Inexperienced	Experienced	Inexperienced	Experienced
Panel C: Education				
Parachuter	-0.01 (0.24)	-0.22 (0.14)	-0.43 (0.21)*	-0.41 (0.18)**
N	35	83	16	51
Mean	0.17	0.23	0.07	0.20
Sample restriction	Below graduate	Above graduate	Below graduate	Above graduate

Note: Table 7 presents results for (triangular) kernel-weighted RD estimates of the impact of parachuters on growth rate of night lights, measured by difference in $\ln(\text{luminosity scores})$ over the election cycle (4-year window) and winsorized at the 5th and 95th percentiles, separately for different candidate traits. Each coefficient in this table represents a separate regression using a local linear control function using two bandwidths: the optimal bandwidth ($h = 0.11$), which was calculated according to the algorithm in CCT (2017) and $h/2 = 0.055$. Col (1) and col (3) restrict the sample to above median traits and col (2) and col (4) restrict to below median traits. The split-sample regressions test for heterogeneity by age (age as on 1 Jan of the election year) in panel A; by political experience (years since legislator reported entering into politics) in panel B; and by education (having a graduate degree) in panel C. Young/old is an indicator variable of whether the legislator's age was above or below median age; experienced/inexperienced is an indicator variable of whether legislator had above or below median political experience; and above/below graduate is an indicator variable whether the legislator had a graduate degree or not. The average age for young legislators was 39 years, whereas that for old legislators was 55 years (overall average was 46 years). The average time spent in politics for experienced legislators was 35 years whereas that for inexperience legislators was 16 years (overall average was 24 years). A SUR test of equality between impact of parachuters in all the split sample regressions (young vs old, experienced vs inexperienced and above vs below graduate) was not statistically significant at the conventional levels. Standard errors are clustered at the constituency level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. The sample size in the above table is due to missing data. Candidate traits are sourced from self-reported data in handbooks available at the Bihar legislative assembly library. Data on traits is not available for 1995 and of the years for which data is available, age is missing for 20.47 percent of the legislators, political experience is missing for 20.27 percent of the legislators and education is missing for 37.86 percent of the legislators.

Table 8: Heterogeneous impact of parachuters on growth, by executive constraints

	Bandwidth: h		Bandwidth: $h/2$	
	(1)	(2)	(3)	(4)
Parachuter	-0.26 (0.11)**	0.11 (0.10)	-0.34 (0.15)**	-0.15 (0.16)
N	133	92	75	45
Mean	0.16	0.29	0.17	0.27
Sample restriction:				
Executive constraints	Weak	Strong	Weak	Strong

Note: Table 8 presents results for (triangular) kernel-weighted RD estimates of the impact of parachuters on growth rate of night lights, measured by difference in $\ln(\text{luminosity scores})$ over the election cycle (4-year window) and winsorized at the 5th and 95th percentiles. Each coefficient in this table represents a separate regression using a local linear control function using two bandwidths: the optimal bandwidth ($h = 0.11$), which was calculated according to the algorithm in CCT (2017) and $h/2 = 0.055$. Col (1) and col (3) restrict the sample to periods when executive constraints were weak (Lalu Prasad Yadav's regime from 1990-2005) and col (2) and col (4) restrict to periods when executive constraints were strong (Nitish Kumar's regime from 2005-2015). A SUR test of equality between impact of parachuters in weak vs strong constraints has a p-value of 0.05 when using bandwidth h and p-value of 0.44 when using bandwidth $h/2$. This suggests that parachuters have a greater negative impact when executive constraints are weak. Standard errors are clustered at the constituency level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 9: Heterogeneous impact of parachuters on growth, by crime

	Bandwidth: h		Bandwidth: $h/2$	
	(1)	(2)	(3)	(4)
Parachuter	0.04 (0.10)	-0.31 (0.12)**	-0.14 (0.12)	-0.45 (0.16)***
N	116	109	63	57
Mean	0.17	0.25	0.14	0.28
Sample restriction:				
Economic crime	Low	High	Low	High

Note: Table 9 presents results for (triangular) kernel-weighted RD estimates of the impact of parachuters on growth rate of night lights, measured by difference in $\ln(\text{luminosity scores})$ over the election cycle (4-year window) and winsorized at the 5th and 95th percentiles. Each coefficient in this table represents a separate regression using a local linear control function using two bandwidths: the optimal bandwidth ($h = 0.11$), which was calculated according to the algorithm in CCT (2017) and $h/2 = 0.058$. Col (1) and col (3) restrict the sample to districts which have below median rates of economic crime, whereas col (2) and col (4) restrict the sample to districts with above median rates of economic crime. Standard errors are clustered at the constituency level. A SUR test of equality between impact of parachuters in low and high crime districts has a p-value of 0.12 when using bandwidth h and p-value of 0.03 when using bandwidth $h/2$. This suggests that parachuters have a greater negative impact in high crime districts compared to low crime districts. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

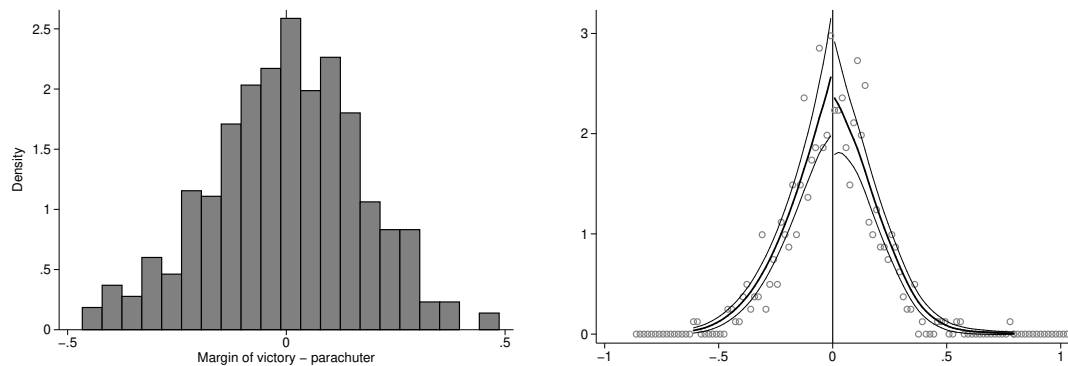
Table 10: Association between bureaucratic turnover and crime

	Ln(All crime)			Ln(Economic crime)		
	(1)	(2)	(3)	(4)	(5)	(6)
Ln(duration)	0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.12 (0.08)	0.16 (0.08)*	0.17 (0.08)**
N	444	432	432	444	432	432
Mean	7.80	7.81	7.81	4.27	4.28	4.28
District FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Zone $\times$ year trends	No	Yes	No	No	Yes	No
Range $\times$ year trends	No	No	Yes	No	No	Yes

Note: Table 10 presents results from the following regression in a district-year panel: $\ln(duration)_{dt} = \beta \ln(crime)_{dt} + u_d + f(t) + e_{dt}$ where, $\ln(duration)_{dt}$ is the log of average tenure of investigating officers in district d in year t ; $\ln(crime)_{dt}$ is the log of crime (either total crime or economic crimes) in district d in year t ; u_d are district fixed effects; $f(t)$ are non-parametric controls such as year FE, zone $\times$ year trends and range $\times$ year trends; e_{dt} is the idiosyncratic error term that is clustered at the district level. Police range/zones are administrative units corresponding to the police organization. A police range is a collection of districts that is led by an officer at the rank of at least a Deputy Inspector-General (DIG) whereas a police zone is group of ranges that is led by an office with at least a rank of Inspector-General (IG). There were 37 districts in Bihar in 2001, 11 police ranges and 4 police zones. The coefficient of interest is β which measures the crime-turnover elasticity. A positive elasticity implies that greater turnover is associated with higher economic crime. Standard errors are clustered at the constituency level. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

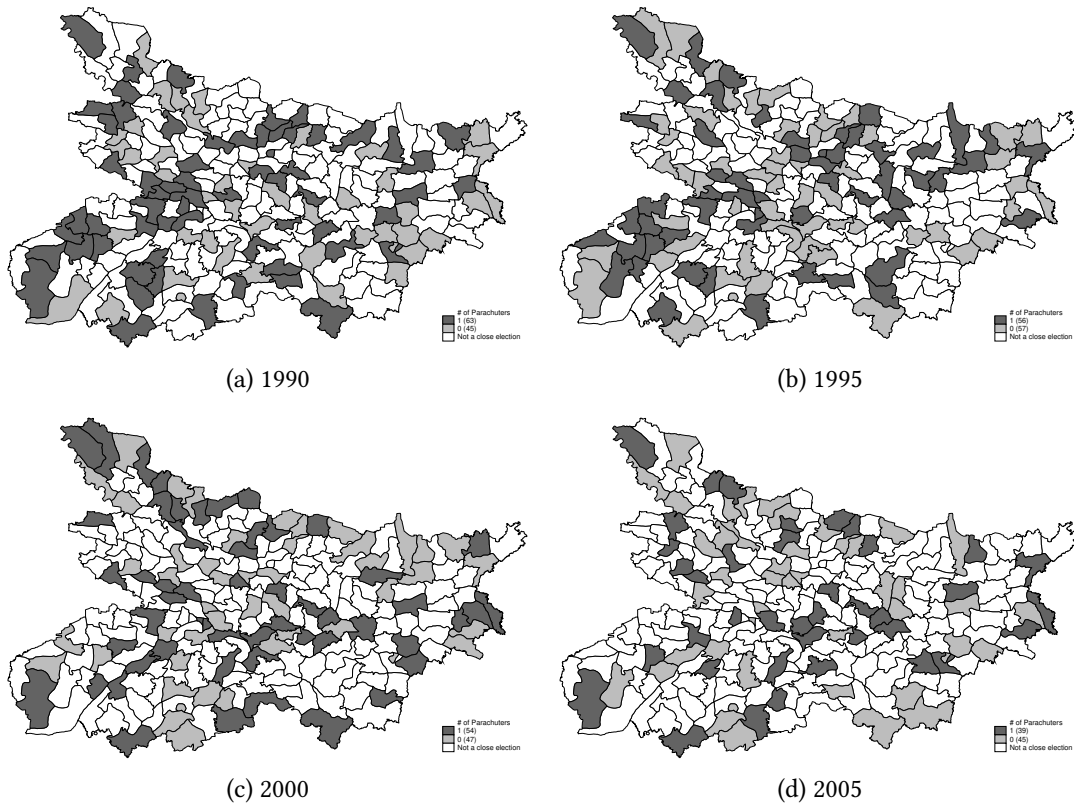
B Figures

Figure 1: McCrary test for the running variables



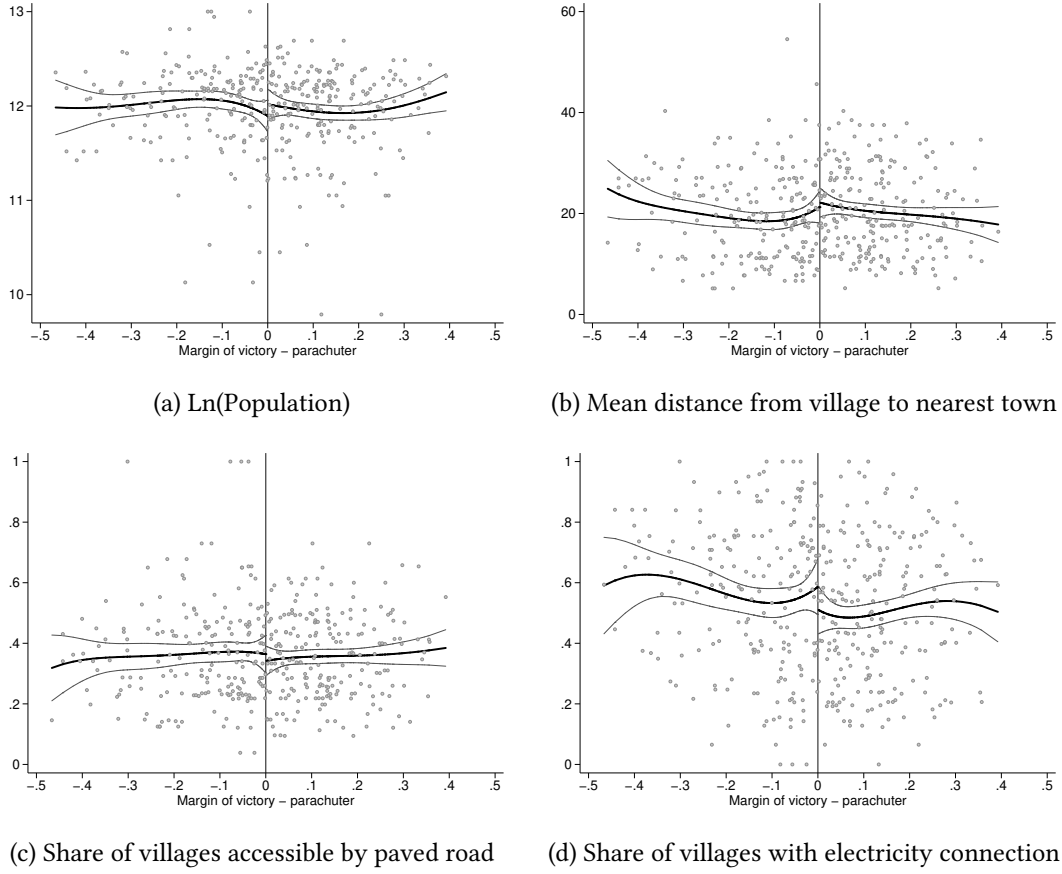
Note: Figure 1 depicts whether there is a discontinuity in the density of the running variable (parachuter's margin of victory). Discontinuity estimate (log difference in height) for the running variable is -0.113 and the standard error is 0.189.

Figure 2: Parachuters vs climbers in close elections



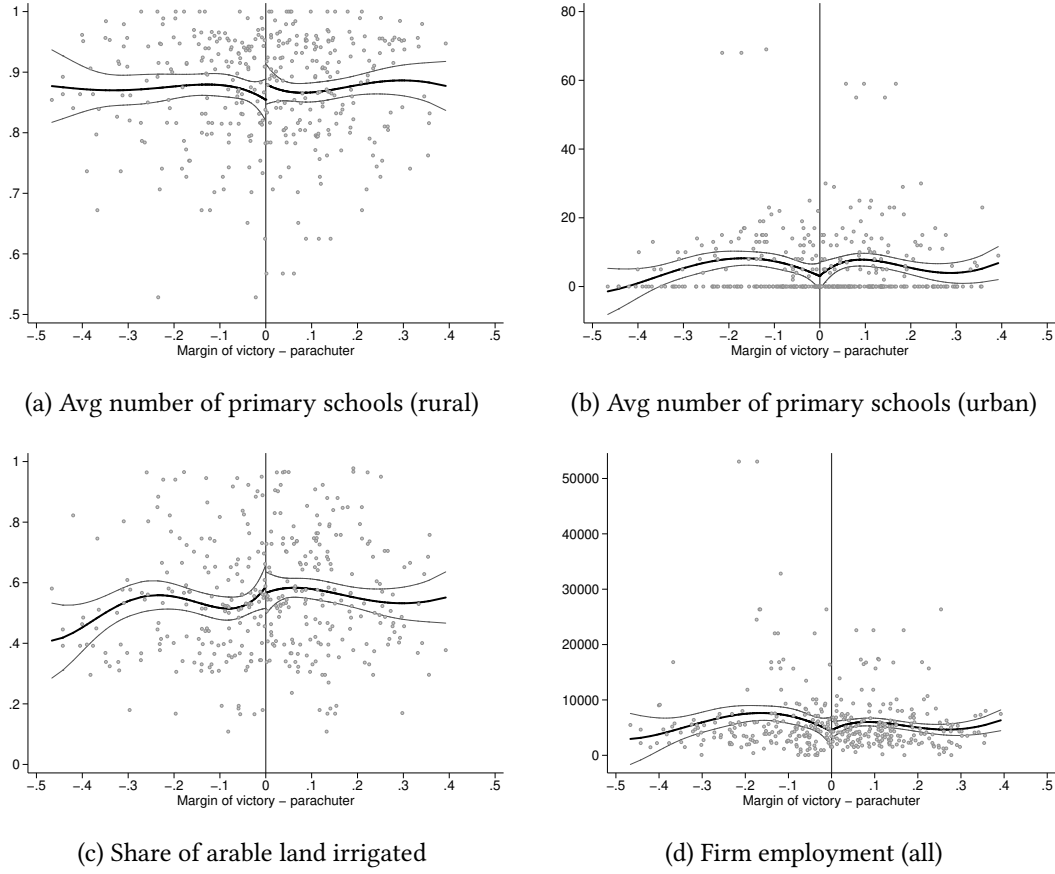
Note: Figure 2 illustrates the assembly constituencies where parachuter politicians faced off against climber politicians. The constituencies in black and grey refers to those won by parachuters and climbers respectively. White/no fill means that either the election was between two climbers or two parachuters.

Figure 3: Balance checks for initial conditions - 1



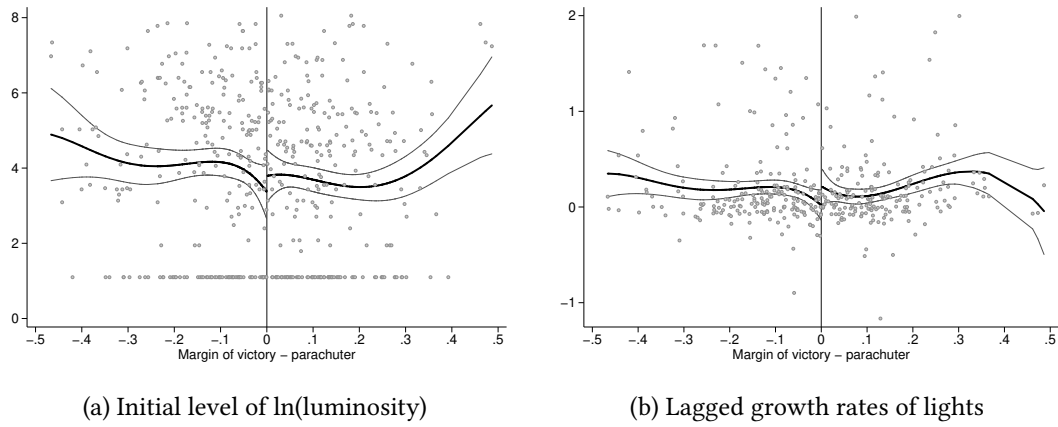
Note: Figure 3 compares the initial economic conditions (in 1990) in constituencies where parachuters won (to the right side of 0) with those where they lost (to the left of 0). The forcing variable is the margin of victory of a parachuter candidate. The black line represents a fourth degree polynomial function (in the forcing variable) and the grey lines indicate the 95 percent confidence intervals. The points represent the raw data. Data on baseline economic conditions is derived from Census of India 1991 and Economic Census 1990, as reported by Asher and Novosad (2014).

Figure 4: Balance checks for initial conditions - 2



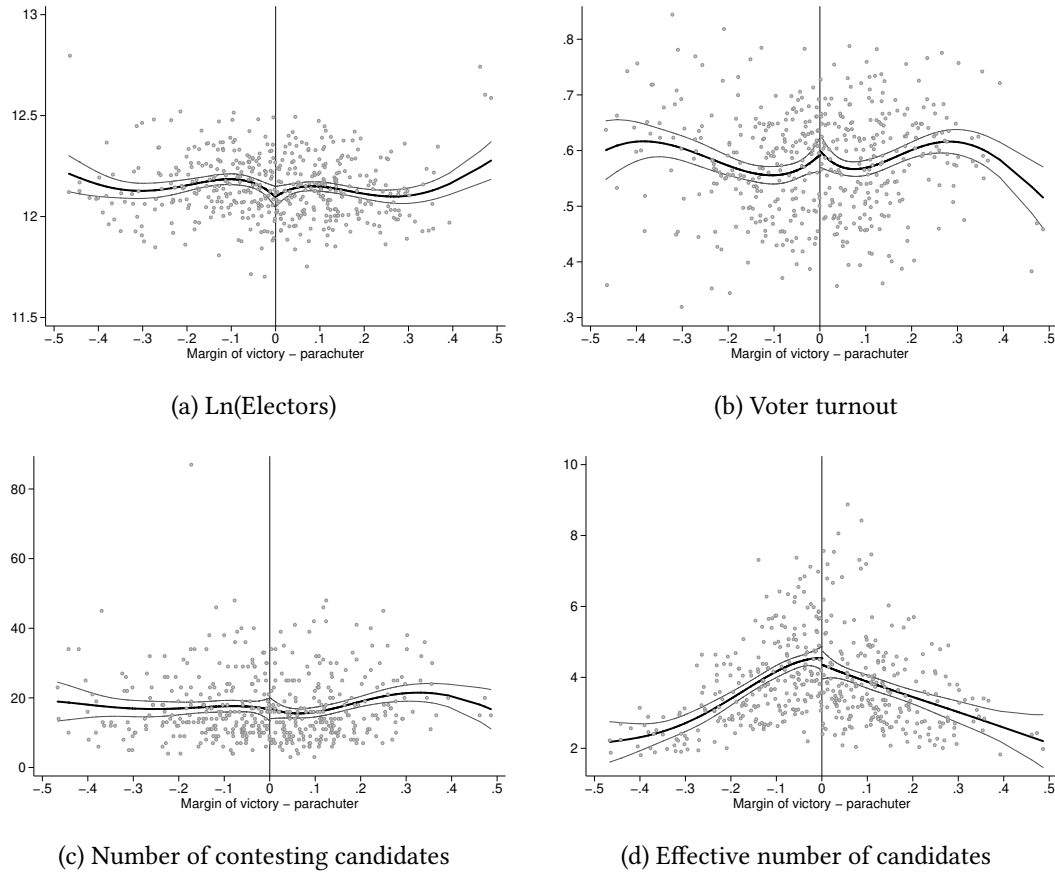
Note: Figure 4 compares the initial economic conditions (in 1990) in constituencies where parachuters won (to the right side of 0) with those where they lost (to the left of 0). The forcing variable is the margin of victory of a parachuter candidate. The black line represents a fourth degree polynomial function (in the forcing variable) and the grey lines indicate the 95 percent confidence intervals. The points represent the raw data. Data on baseline economic conditions is derived from Census of India 1991 and Economic Census 1990, as reported by Asher and Novosad (2014).

Figure 5: Balance checks for economic covariates



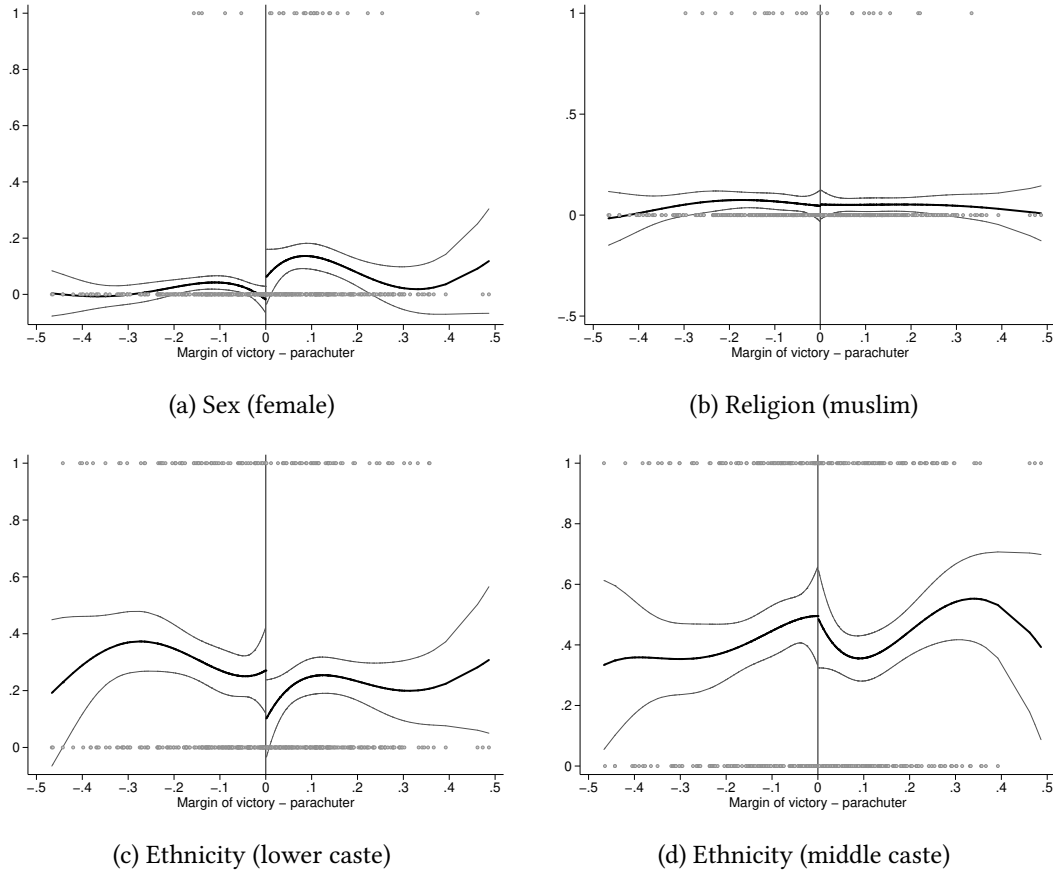
Note: Figure 5 depicts the initial levels of $\ln(\text{luminosity})$ and lagged growth of lights in constituencies where parachuters won (to the right side of 0) and where they lost (to the left of 0). The forcing variable is the margin of victory of a parachuter candidate. The black line represents a fourth degree polynomial function (in the forcing variable) and the grey lines indicate the 95 percent confidence intervals. The points represent the raw data.

Figure 6: Balance checks for political competition



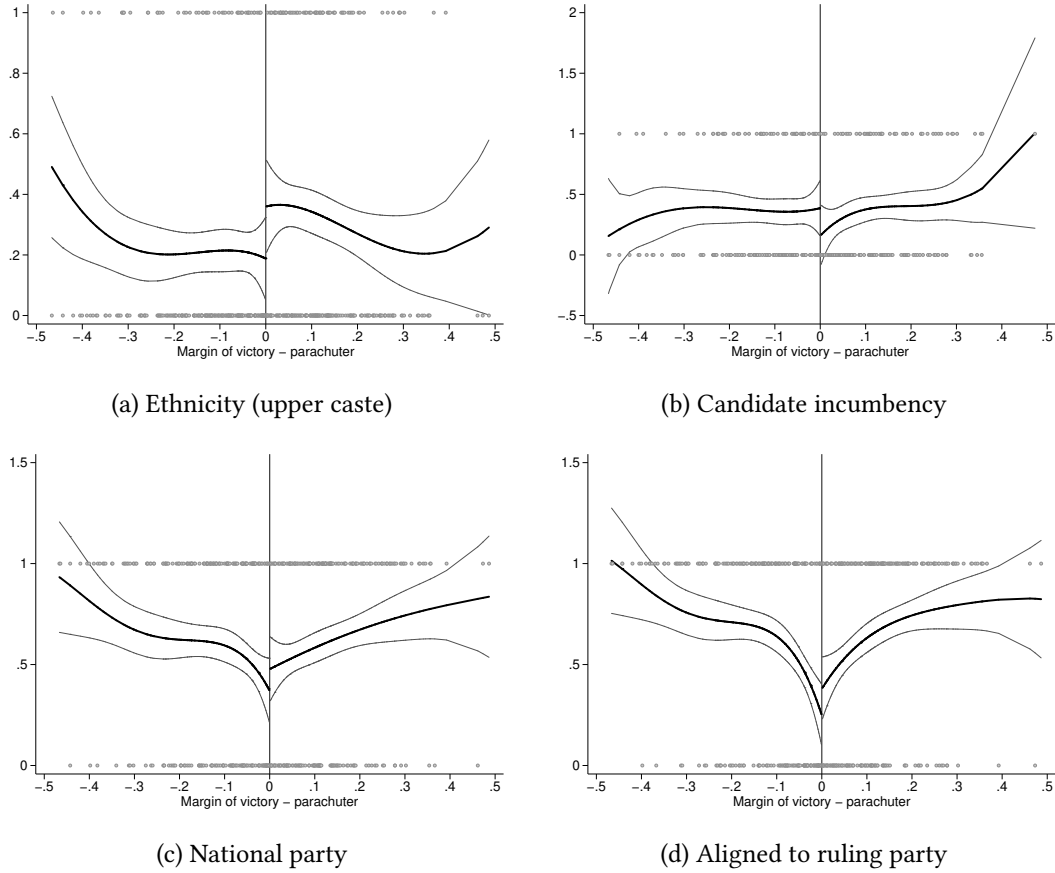
Note: Figure 6 illustrates the political competition in constituencies where parachuters won (to the right side of 0) and where they lost (to the left of 0). The forcing variable is the margin of victory of a parachuter candidate. The black line represents a fourth degree polynomial function (in the forcing variable) and the grey lines indicate the 95 percent confidence intervals. The points represent the raw data.

Figure 7: Balance checks for candidate's identity



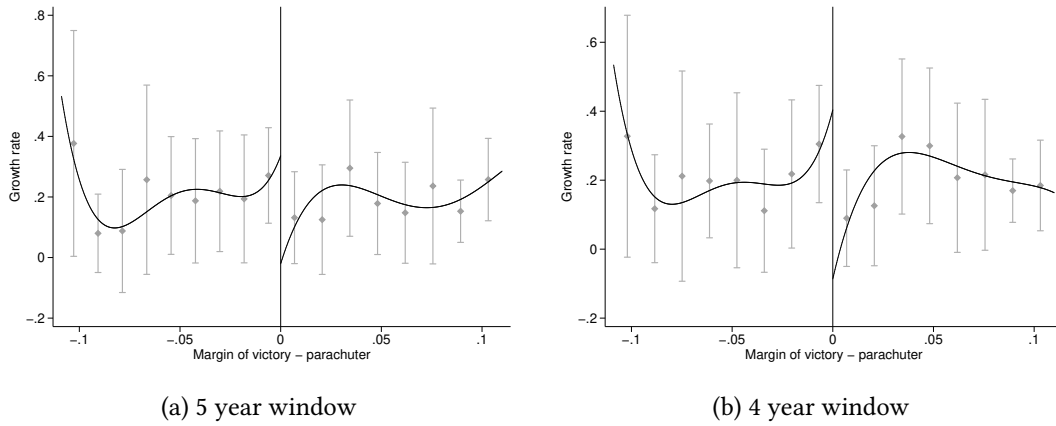
Note: Figure 7 illustrate the candidate characteristics of winners in constituencies where parachuters won (to the right side of 0) and where they lost (to the left of 0). The forcing variable is the margin of victory of a parachuter candidate. The black line represents a fourth degree polynomial function (in the forcing variable) and the grey lines indicate the 95 percent confidence intervals. The points represent the raw data. Candidate's identity refer to either sex, religion or ethnicity. Sex of winner is an indicator variable for whether winning candidate is female or not; religion of candidate is an indicator variable for whether candidate is Muslim or not; and ethnicity of candidate is an indicator variable whether candidate is lower caste or not, another indicator variable whether candidate belongs to the middle caste or not and an indicator variable whether candidate is upper caste or not. Lower caste refers to the Dalits (scheduled castes like Paswan, Chamar, Pasi, Musahar, Dhobi, Bhuiya, Rajwar), tribals (scheduled tribes) and extremely backward classes such as Teli, Gangota, Nishad, Kevart, Bind, Nai, Noniya, Dhanuk, Dangi and Mallah; middle caste refers to Yadav, Kushwaha, Kurmi, Koeri, Baniya, Kalwar, Marwari and Kahar; and upper caste refers to Brahmin, Bhumihaar, Kayastha and Rajput.

Figure 8: Balance checks for candidate's characteristics



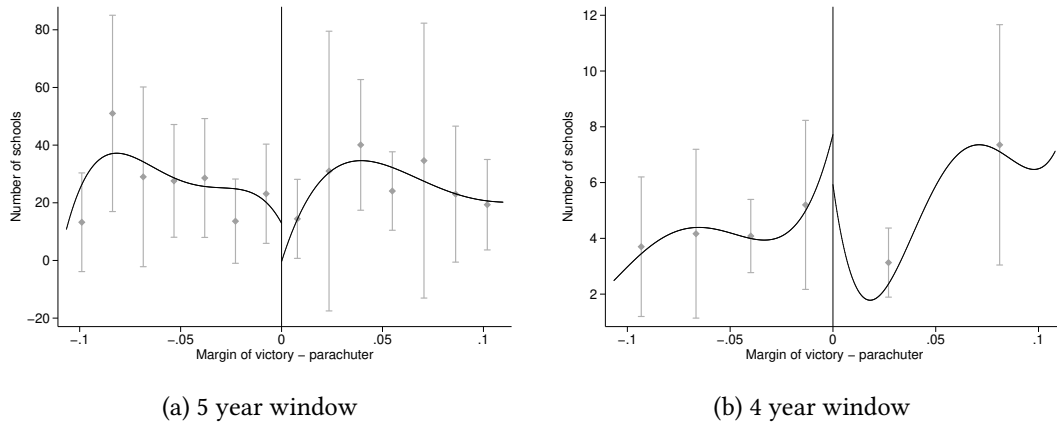
Note: Figure 8 illustrate the candidate characteristics of winners in constituencies where parachuters won (to the right side of 0) and where they lost (to the left of 0). The forcing variable is the margin of victory of a parachuter candidate. The black line represents a fourth degree polynomial function (in the forcing variable) and the grey lines indicate the 95 percent confidence intervals. The points represent the raw data.

Figure 9: Impact on growth rate of lights



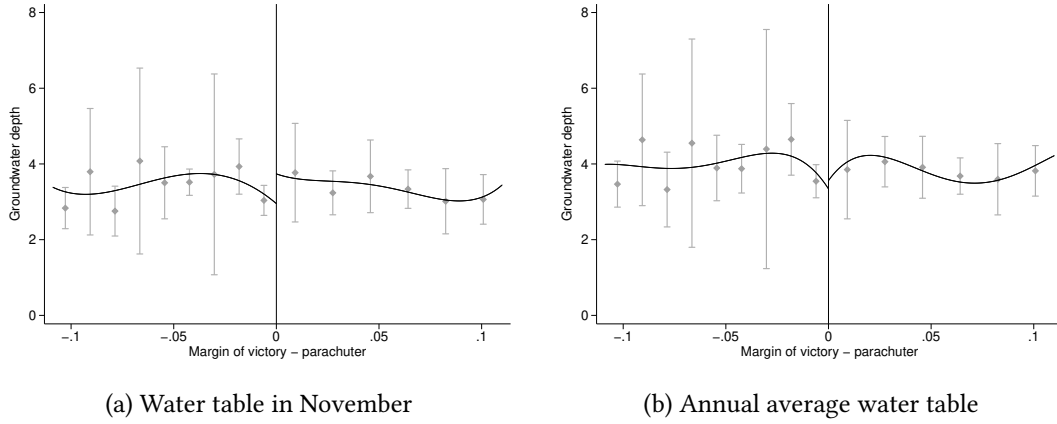
Note: Figure 9 depicts the growth in night lights (as measured by luminosity scores) in constituencies where parachuters won (to the right side of 0) and where they lost (to the left of 0), in the optimal bandwidth. The optimal bandwidth ($h = 0.11$) was calculated according to the algorithm in CCT (2017). The forcing variable is the margin of victory of a parachuter candidate. The black line represents a fourth degree polynomial function (in the forcing variable). The points represent the binned data and the vertical lines indicate the 95 percent confidence intervals. The growth rate of lights is calculated over the entire election cycle (Figure 9a, five-year window) and also over a four-year window (Figure 9b). A four-year election cycle is chosen to avoid biasing the estimate due effects of an election year. The RD estimate in Figure 9a is -0.148 (SE=0.104) and it is not statistically significant at conventional levels. The RD estimate in Figure 9b is -0.215 (SE=0.120) and statistically significant at the 90 percent level. The bias-corrected and robust bias-corrected RD estimates are larger and statistically significant in both cases.

Figure 10: Impact on school construction



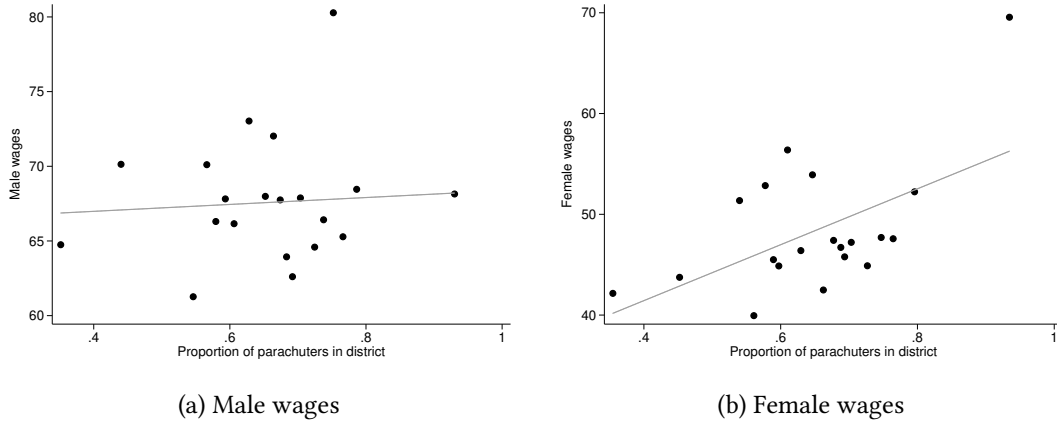
Note: Figure 10 depicts the number of schools established in constituencies where parachuters won (to the right side of 0) and where they lost (to the left of 0), in the optimal bandwidth. The optimal bandwidth ($h = 0.11$) was calculated according to the algorithm in CCT (2017). The forcing variable is the margin of victory of a parachuter candidate. The black line represents a fourth degree polynomial function (in the forcing variable). The points represent the binned data and the vertical lines indicate the 95 percent confidence intervals. School construction is calculated over the entire election cycle (Figure 10a) and also over a four-year window (Figure 10b). A four-year election cycle is chosen to avoid biasing the estimate due effects of an election year. The RD estimate in Figure 10a is 0.339 (SE=8.903) and it is not statistically significant at conventional levels. The RD estimate in Figure 10b is -3.483 (SE=1.548) and statistically significant at the 95 percent level. The bias-corrected and robust bias-corrected RD estimates are negative in both cases, but only statistically significant in case of the latter.

Figure 11: No impact on regulation of technology adoption



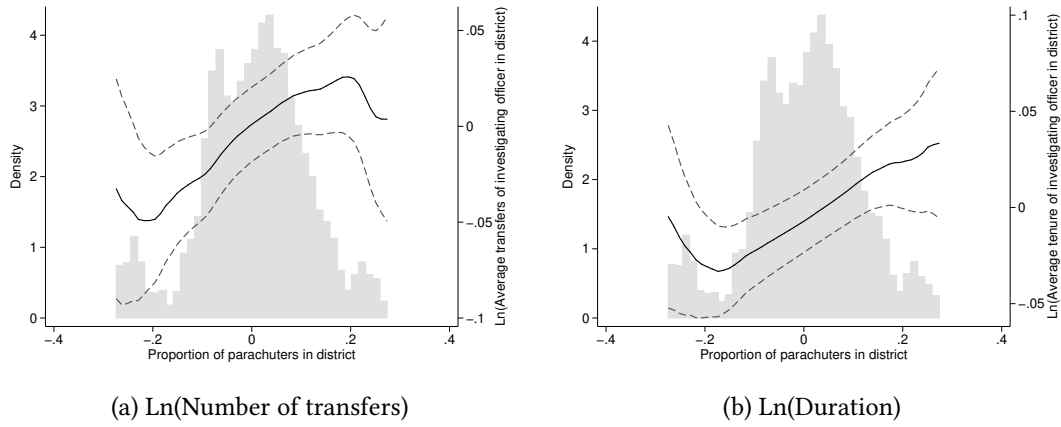
Note: Figure 11 depicts the groundwater depths (in meters below ground level) in constituencies where parachuters won (to the right side of 0) and where they lost (to the left of 0). The optimal bandwidth ($h = 0.11$) was calculated according to the algorithm in CCT (2017). The forcing variable is the margin of victory of a parachuter candidate. The black line represents a fourth degree polynomial function (in the forcing variable). The points represent the binned data and the vertical lines indicate the 95 percent confidence intervals. Groundwater depths are a proxy of technological adoption and greater adoption of tubewell irrigation should be positively correlated with agrarian dynamism. The water table depths are reported for the month of November and an average through the entire year. Both measures are aggregated over a four-year election cycle (Figure 11a and Figure 11b respectively). The conventional, bias-corrected and robust bias-corrected RD estimates are statistically indistinguishable from zero. Groundwater depths calculated over the entire election cycle, using a 5-year window, are also statistically indistinguishable from zero. (Results not shown.)

Figure 12: Wages not lower in districts with higher parachuters



Note: Figure 12 depicts the correlation between average wages and fraction of parachuters in a district using a binned scatterplot, after residualizing district and month fixed effects. The fitted line local polynomial plots γ from the following regression: $y_{dt} = \gamma AvgParachuters_{dt} + u_d + v_t + e_{dt}$ where, y_{dt} is either the male or female wage in district d in year t ; $AvgParachuters_{dt}$ is the proportion of parachuter politicians in district d in year t ; u_d are district fixed effects; v_t are year FE; and e_{dt} is the idiosyncratic error term.

Figure 13: Association between bureaucratic turnover and proportion of parachuters



Note: Figure 13 depicts the correlation between turnover of investigating officers and proportion of parachuters in a district. Figure 13a and 13b illustrate the partialled out regression plot $\ln(\text{average number of transfers})$ and $\ln(\text{average tenure of investigating officers})$ respectively. The local polynomial plot γ from the following regression: $y_{dt} = \gamma \text{AvgParachuters}_{dt} + u_d + v_t + e_{dt}$ where, y_{dt} is either the log of average tenure of investigating officers or the log of the average number of transfer of investigating officers in district d in year t ; $\text{AvgParachuters}_{dt}$ is the proportion of parachuter politicians in district d in year t ; u_d are district fixed effects; v_t are month FE; and e_{dt} is the idiosyncratic error term.

C Online Appendix

C.1 Model

Consider the following model, based on Polo (1998):

Setup: Suppose there are N citizens each having a preference over a private good, c and a public good, g . We allow citizens to be heterogeneous and place different weights on their preference for the public good. Let α^i be this citizen specific parameter that is drawn from a distribution $F(\alpha)$ which has mean α . The utility for citizen $i \in (1, 2, \dots, N)$ is additively separable and given by the quasi linear preference:

$$u^i(c^i, g; \alpha^i) = c^i + \alpha^i H(g) \quad (5)$$

where, $H(\cdot)$ is an increasing, twice differentiable concave function in its argument (so that $H_g^{-1}(\cdot)$ is decreasing in its argument). The public good is financed by a proportion tax, t . We can allow individuals to have different incomes but in order to simplify the exposition we set $y^i = 1$ so that $c^i = (1 - t)y^i = 1 - t$. We also abstract away from the consumer's labor supply problem: we could also allow for individuals to have preferences over consumption and leisure and vary by an individual productivity parameter but the main results would still carry through. Additionally, assume that voters have ideological preferences that are denoted by σ^i which is uniformly distributed with the support $[\frac{-1}{2\phi}, \frac{1}{2\phi}]$.

There are two politicians who are in the fray: climbers (C), those who make their way to the top by climbing the ladder, and parachuters (P), those who are parachuted because one or more of their family members were in politics or they did enter politics by rising through the ranks. P -type differ from C -type politicians in one crucial respect: they have a leg up in the race due to an inherited stock of political capital (which includes a reputation advantage, greater financial resources and established networks). Let the parameter $d > 0$ denote this parachuter advantage, so that P 's popularity is given by: $\delta = \tilde{\delta} + d$, where $\tilde{\delta}$ is a popularity shock that is uniformly distributed on the interval $[\frac{-1}{2\psi}, \frac{1}{2\psi}]$. Our treatment of the parachuter advantage is analogous to the discussion on lobbying in Persson and Tabellini (2002) which in turn is drawn from work by Baron and Grossman & Helpman.

Politicians are assumed to be office motivated and they seek to maximize their rents, $r^j, j \in \{C, P\}$. In other words, it is possible that revenue from taxes can be appropriated by politicians (as rents) and thus the government budget constraint is given by:

$$\int ty^i dF(\alpha^i) = t = g + r \quad (6)$$

The timing of the game is as follows:

1. Politicians simultaneously announce policy $q^j = (g^j, r^j)$, $j \in \{C, D\}$.
2. Popularity shock, $\tilde{\delta}$, is realized and elections are held immediately after. Citizens vote for politician C if $U(q^C; \alpha^i) > U(q^P; \alpha^i) + \sigma^i + \tilde{\delta} + d$.
3. The winning policy is implemented and the payoffs are realized.

Implications: In order to solve the model, we use the logic of backward induction. In the last stage the payoffs to the citizens is dependent on the policy platform and given by: $U(q^j; \alpha^i) = 1 - g^j - r^j + \alpha^i H(g^j)$. The last stage also implies that there is incentive for politicians to win the election and therefore politician j sets out to maximize its expected payoff: $W(q^j) = \pi^j r^j + (1 - \pi^j) \times 0 = \pi^j r^j$, where π^j is the probability of winning the election and is defined as:

$$\pi^j = \text{Prob}[s^j > \frac{1}{2}] \quad (7)$$

where s^j is the share of the votes politician j receives and this depends on the number of ideologically neutral voters. A “swing voter” is defined as one who is indifferent between voting for politician C and P and this is given by: $\hat{\sigma}(q^C, q^P, \tilde{\delta}, d; \alpha^i) = U(q^C; \alpha^i) - U(q^P; \alpha^i) - \tilde{\delta} - d = V(q^C, q^P; \alpha^i) - \tilde{\delta} - d$. This implies that all those citizens who have a draw of σ^i that is less than $\hat{\sigma}$ will vote for politician C .

$$s^C = \int [\frac{1}{2} + \phi \hat{\sigma}(q^C, q^P, \tilde{\delta}, d; \alpha^i)] dF(\alpha^i) \quad (8)$$

$$s^P = \int [\frac{1}{2} - \phi \hat{\sigma}(q^C, q^P, \tilde{\delta}, d; \alpha^i)] dF(\alpha^i) \quad (9)$$

Rolling the game back further and using (7) and (8) implies that the probability of winning of politician C and D is:

$$\pi^C = \frac{1}{2} + \psi(V(q^C, q^P; \alpha) - d) \quad (10)$$

$$\Rightarrow \pi^P = \frac{1}{2} - \psi([V(q^C, q^P; \alpha) - d]) \quad (11)$$

Moving back to the first stage, we see that the choice variables for politician j are g^j and r^j . The four best response equations can be found by solving the following maximization problem:

$$q^j(q^{-j}) \in \text{argmax}\{[\frac{1}{2} + \psi(U(q^j; \alpha) - U(q^{-j}; \alpha) - d)]r^j\} \quad (12)$$

Finally, the first order conditions can be used to derive the equilibrium policy platforms. These are:

$$\bar{g}^C = H_g^{-1}\left(\frac{1}{\alpha}\right) = \bar{g}^D \quad (13)$$

$$\bar{r}^C = \frac{1}{2\psi} - \frac{d}{3} \quad (14)$$

$$\bar{r}^P = \frac{1}{2\psi} + \frac{d}{3} \quad (15)$$

Proposition C.1. *A political equilibrium exists.*

Proof. There is a Nash equilibrium in this game where no player has any incentive to deviate. An equilibrium consists of a pair of policy platforms $(\bar{q}^C, \bar{q}^P)$ such that $\bar{q}^C$ is a best response to P -type's strategy and $\bar{q}^P$ is a best response to C -type's strategy. Citizens votes based on the rule specified earlier, after $\tilde{\delta}$ is realized and the winner implements the announced policy. Assuming a general utility function $u(c^i, g) = u(1 - g - r, g)$, the exact conditions under which a PE exists is given by the SOC's (i.e. the Hessian matrix should be negative semidefinite). $\square$

Proposition C.2. *Parachuters extract more rents in equilibrium.*

Proof. Using (14) and (15), it is evident that $\bar{r}^D > \bar{r}^C$. Intuitively, the high rents are a cost that voters have to pay for the popularity that results from the parachuter's advantage ($d > 0$) that type P politicians have. If we assume that taxes are fixed (which is not an unreasonable assumption given that the tax base as measured by the tax to GDP ratio in India hasn't significantly changed in many years) so that the modified government budget constraint is now given by: $\bar{t} = g + r$ and the only choice variable is r , then when equilibrium rents are set, the allocation to public goods is residually determined, implying that P -type politicians will provide less public goods than C -type politicians in equilibrium. $\square$

Proposition C.3. *Parachuters are likely to persist.*

Proof. Substituting the FOC, (13)-(15), in (10) and (11) we can show that $\pi^P > \frac{1}{2} > \pi^C$, implying that the probability of parachuters winning elections are greater than climbers. In other words, the C -type politicians can level the playing field only if there is a sharp negative popularity shock ($\tilde{\delta}$) or if there is no parachuter advantage i.e. $d = 0$ (in the latter case $\pi^C = \pi^P = \frac{1}{2}$). In order to make the argument about persistence though, we have to make an additional assumption that rents are used for campaigning activities which further enhance popularity of the politician. If $\delta_{t+1} = \tilde{\delta} + d + \lambda r_t^P$ where, $(1 - \lambda)$ signifies the costs of channeling the rents for campaign finance, then it is possible that rents extracted in equilibrium have a feedback effect which only helps entrench the rule of parachuters. $\square$

Proposition C.4. *Parachuter politicians under provide public goods as compared to the social optimum (and they provide the efficient level of public goods only under restrictive assumptions).*

Proof. In order to answer the normative question about whether P -type politicians are good or not, we compare the provision of public goods in (13) with the socially optimal provision of public goods being given by:

$$\begin{aligned} \max_{g,r} \int [c^i - \alpha^i H(g)] dF(\alpha^i) \\ \text{s.t. } c^i = 1 - t \end{aligned}$$

The efficient level of policy then is $g^* = H_g^{-1}(\frac{1}{\alpha^i})$ and $r^* = 0$. Under the specific functional assumption of the utility function that we have imposed, we do have $\bar{g}^C = \bar{g}^P = g^*$ but this result is driven by the fact that the income effect for public goods in case of quasi-linear preferences is 0, so that when the available budget with the government falls (due to higher rent extraction by P -type politicians there is no change in the level of $\bar{g}^j$). However, if we were to relax the restriction, then $r^{*'}$ would still be 0 but $g^{*'}$ would be different and can be found by equalizing the marginal utility of consumption of the private good with that of the public good. The policy from the maximization of the individual's problem would imply that the electoral competition is inefficient: $r^{\bar{P}'} > 0 = r^{*'} \Rightarrow \bar{g}^{P'} < g^{*'}$. $\square$

C.2 Covariate balance

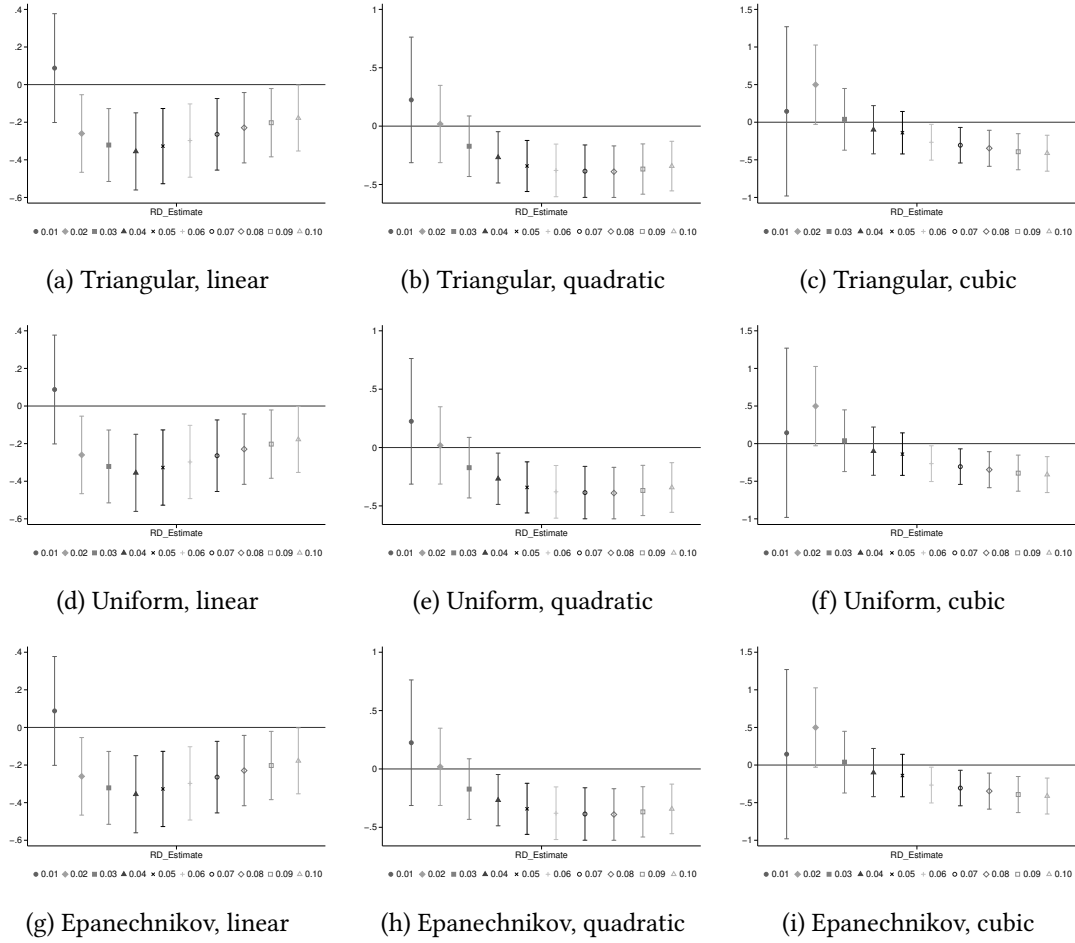
Table 11: Balance check for covariates

Covariate	Bandwidth	Estimate	SE	p-value	N
<i>A. Initial economic conditions</i>					
Ln(Population)	0.15	0.077	0.14	0.43	234
Mean distance from village to nearest town	0.14	0.91	2.9	0.85	230
Share of villages accessible by paved road	0.11	-0.051	0.051	0.24	192
Share of villages with electricity connection	0.12	-0.097	0.079	0.17	195
Firm employment (all)	0.087	-914	1627	0.54	155
Share of arable land irrigated	0.098	-0.0037	0.07	0.75	157
Avg number of primary schools (urban)	0.13	0.011	0.036	0.64	201
Avg number of primary schools (rural)	0.092	0.37	2.8	0.91	153
Initial level of ln(luminosity)	0.11	0.62	0.55	0.17	228
Lagged growth rate of lights	0.097	0.14	0.13	0.22	145
<i>B. Political competition</i>					
Ln(Electors)	0.12	-0.02	0.046	0.51	236
Turnout	0.11	0.012	0.023	0.46	234
Effective candidates	0.16	-0.35	0.38	0.42	309
Total no of candidates	0.17	-1.4	2.6	0.64	312
<i>C. Candidate's identity</i>					
Female	0.1	0.077	0.07	0.33	210
Muslim	0.15	0.0029	0.068	0.81	298
Upper caste	0.11	0.19	0.12	0.11	235
Middle caste	0.12	-0.0069	0.16	0.9	248
Lower caste	0.11	-0.21	0.13	0.05**	212
<i>D. Candidate characteristics</i>					
Incumbent	0.15	-0.18	0.18	0.23	182
Ruling party	0.16	0.13	0.14	0.27	306
National party	0.13	0.11	0.16	0.42	261

Note: Table 11 depicts the RD estimates corresponding to Figure 3, 4, 5, 6, 7 and 8.

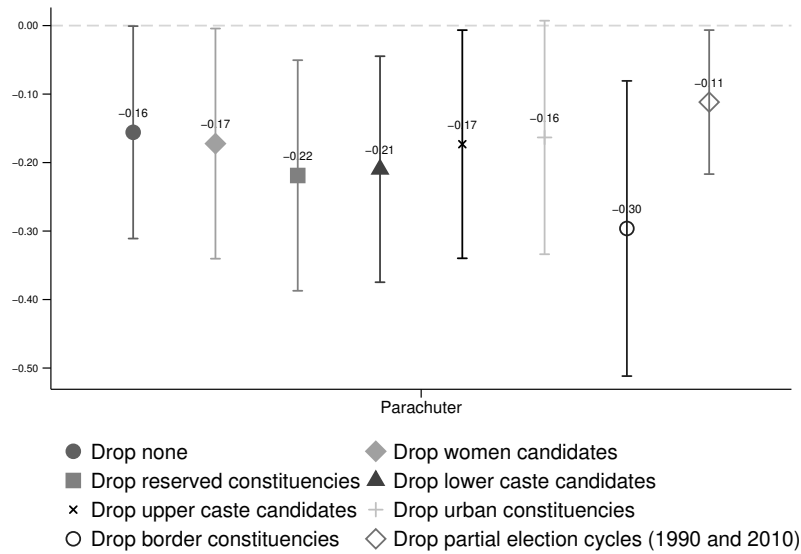
C.3 Robustness

Figure 14: Robustness to alternative bandwidths, kernels and local polynomials

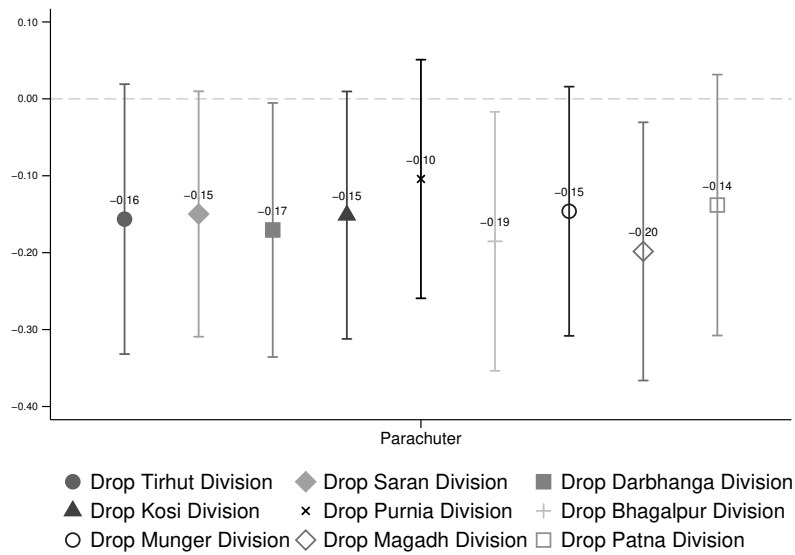


Note: Figure 14 depicts the sensitivity of the RD estimate to alternative bandwidths, and different choice of kernels and local polynomials. The top panel presents results for the triangular kernel, the middle panel for the uniform kernel and the bottom panel for epanechnikov kernel. The left panel fits a linear regression on either side of the cutoffs, the middle panel fits a local quadratic function and the right panel fits a local cubic polynomial. The outcome variable is growth in night lights (as measured by luminosity scores) for a 4-year election window. The forcing variable is the margin of victory of a parachuter candidate. Each estimate in the graph represents a RD estimate for each of the 10 bandwidths (ranging from 0.01 to 0.10) and the width around the point estimate represent 95 percent confidence intervals.

Figure 15: Robustness to constituency/candidate characteristics



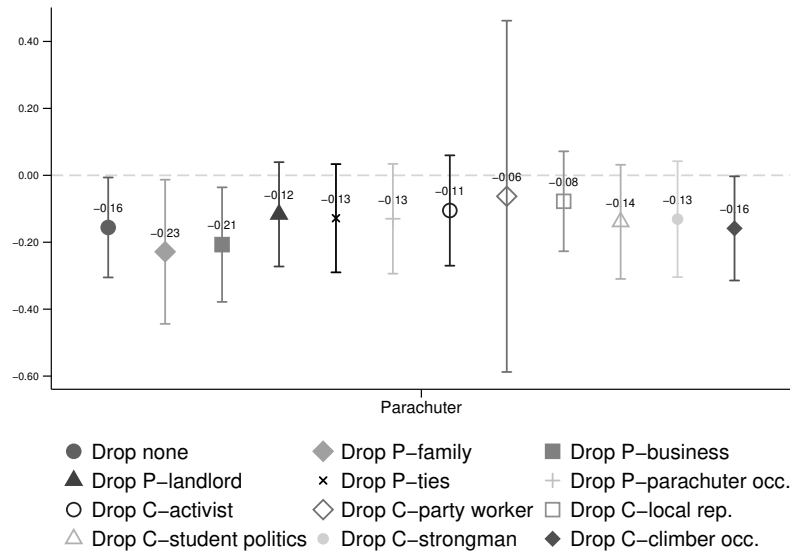
(a) Sensitivity to type of constituency



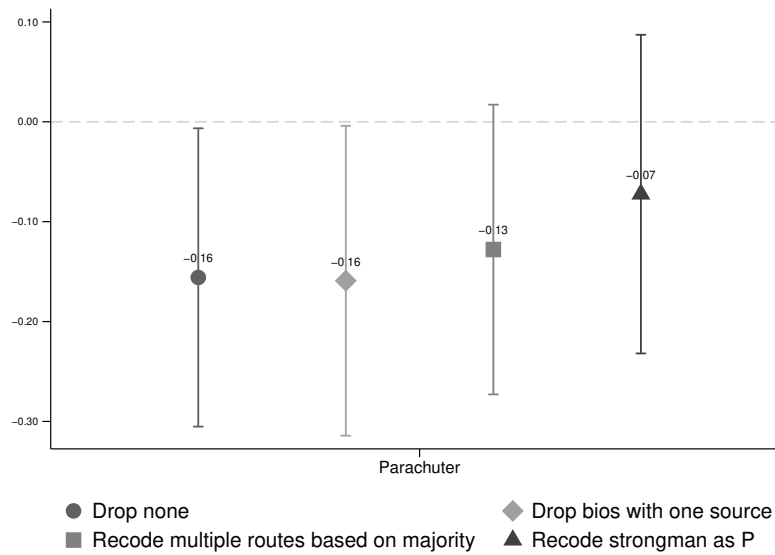
(b) Sensitivity to regional variation

Note: Figure 16 depicts the sensitivity of the RD estimate to dropping constituencies based on different characteristics. The top panel (Figure 15a) presents results after dropping reserved constituencies (constituencies where only SC/ST candidates may contest), dropping women constituencies (constituencies where either winner or runner-up is female), dropping urban constituencies (constituencies which have any urban built up area as derived from 2002-2003 MODIS satellite data at 1 km resolution) and dropping border constituencies (constituencies which share borders with Nepal in the north, Uttar Pradesh on the west, Jharkhand to the south and West Bengal to the east). The bottom panel (Figure 15b) drops constituencies falling in the each of the 9 divisions in Bihar. Divisions are an administrative structure above the district. The outcome variable is growth in night lights (as measured by luminosity scores) for a 4-year election window. The forcing variable is the margin of victory of a parachuter candidate. Each estimate in the graph represents a RD estimate calculated for the optimal bandwidth $h = 0.11$ and the width around the point estimate represent 90 percent confidence intervals.

Figure 16: Robustness to classification of entry routes



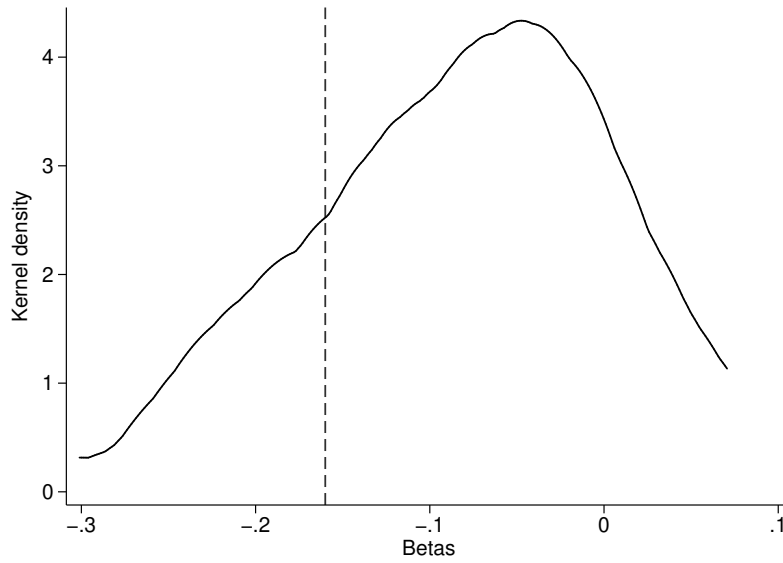
(a) Sensitivity to type of political background



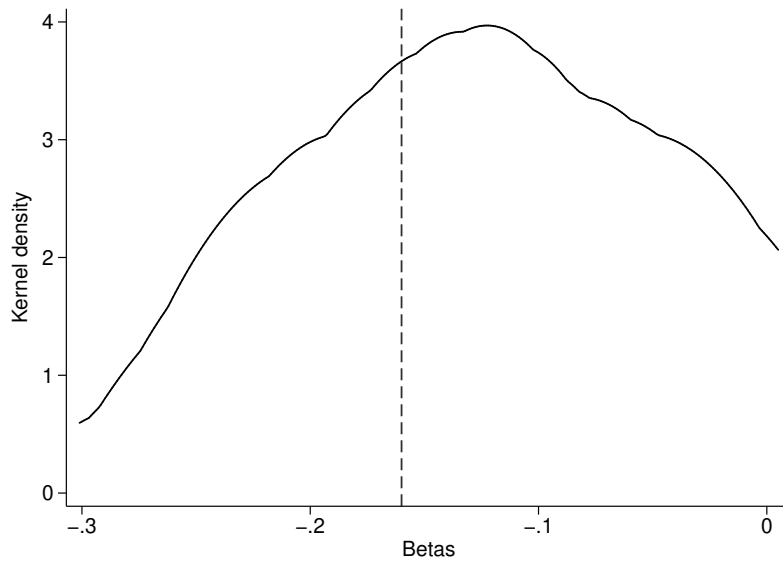
(b) Sensitivity to alternative definitions

Note: Figure 16 depicts the sensitivity of the RD estimate to alternative codings. The top panel (Figure 16a) presents results after dropping each individual background type iteratively and re-estimating the equation in the optimal bandwidth ($h = 0.11$). The bottom panel (Figure 16b) drops constituencies which had candidates whose biography was collected using only one source/interview; redefining a parachuter politician as one if majority (half or more) of backgrounds belonged to parachuter type (under the original coding scheme, a politician is a parachuter if s/he has any one of the parachuter features); and recoding strongmen as parachuters. The outcome variable is growth in night lights (as measured by luminosity scores) for a 4-year election window, winsorized at the 5th and 95th percentile. The forcing variable is the margin of victory of a parachuter candidate. Each estimate in the graph represents a RD estimate calculated for the optimal bandwidth $h = 0.11$ and the width around the point estimate represent 90 percent confidence intervals.

Figure 17: Robustness to re-classification among parachuters



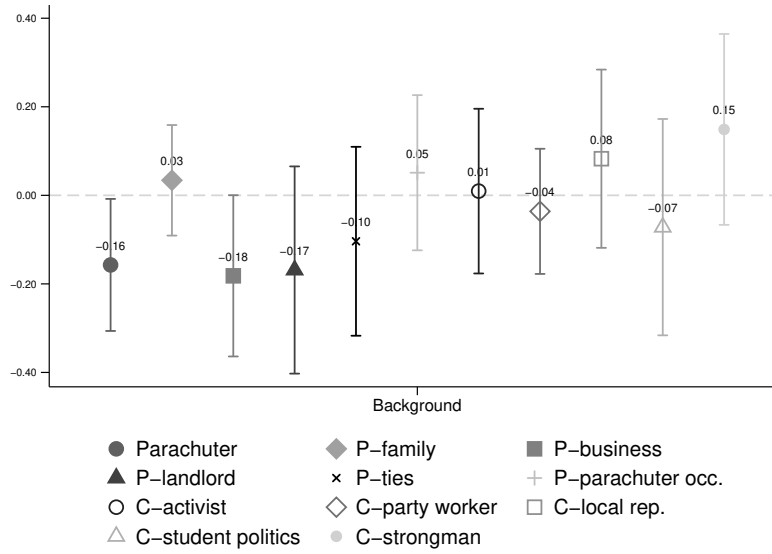
(a) $N = 26$ regressions



(b) $N = 12$ regressions

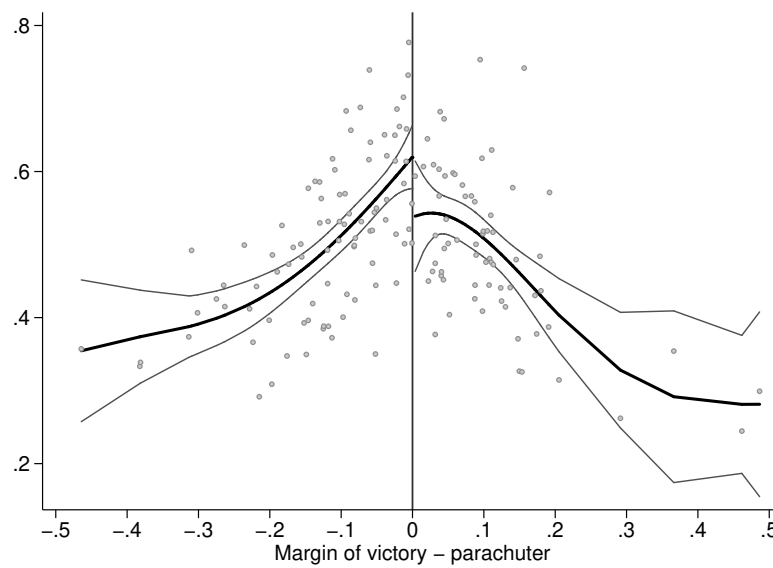
Note: Figure 17 depicts the sensitivity of the RD estimate to alternative codings of the parachuter variable. The top panel (Figure 17a) presents results after changing the composition of the variables being aggregating in the parachuter background and re-estimating the RD equation 26 different times. The bottom panel (Figure 17b) conducts the same analysis without taking into account P-Parachuter occupations, and there 12 such different regressions possible. The outcome variable is growth in night lights (as measured by luminosity scores) for a 4-year election window, winsorized at the 5th and 95th percentile. The forcing variable is the margin of victory of a parachuter candidate. The dotted line represents the original RD estimate.

Figure 18: Association between individual background types and growth



Note: Figure 18 depicts the RD estimate of the association between a politician of a particular background with local economic growth, measured by the difference in $\ln(\text{luminosity scores})$ over the election cycle (4-year window) and winsorized at the 5th and 95th percentile. Unlike all other estimates reported in the paper, the forcing variable here is the margin of victory of a candidate belonging to a politician with a particular background. The bandwidth for each estimate is different, and calculated optimally using the algorithm in CCT (2017): P-family ($h = .15$); P-business ($h = .09$); P-landlord ($h = .12$); P-ties ($h = .1$); P-parachuter occupations ($h = .11$); C-activist ($h = .13$); C-party worker ($h = .11$); C-local representative ($h = .14$); C-student ($h = .08$) and C-strongman ($h = .08$). The RD estimate for C-climber occupations couldn't be calculated because of the small sample size ($N=37$). The estimates do not necessarily have a causal interpretation because of covariate imbalance (results not shown), and are presented only for the sake of completeness.

Figure 19: Inequality in vote distribution



Note: Figure 19 depicts the inequality in distribution of votes (as measured by coefficient of variation of within-constituency polling station votes share) in constituencies where parachuters won (to the right side of 0) and where they lost (to the left of 0). The forcing variable is the margin of victory of a parachuter candidate. The black line represents a fourth degree polynomial function (in the forcing variable) and the grey lines indicate the 95 percent confidence intervals. The points represent the raw data.

C.4 Data

Overview

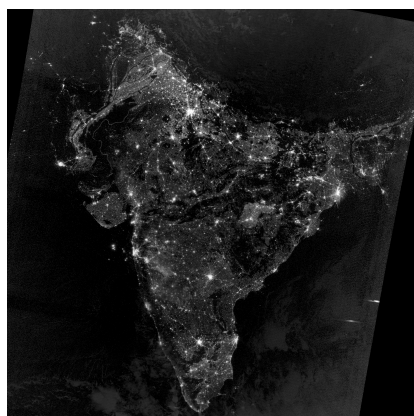
Table 12: Data description

Data	Frequency	Resolution	Source
Night lights	1992-2013, annual	Spatial (raster)	DMSP, NOAA
Schools	1990-2013, annual	Spatial (points)	State Education Society
Groundwater	1996-2012, quarterly	Spatial (points)	CGWB
Public amenities	1991, 2001, decadal	Village level	Census of India*
Crime	2001-2012, annual	District level	NCRB
Police transfers	1980-2015, monthly	Officer-district level	State Police
Electoral data	Every election cycle	Constituency (AC) level	ECI Statistical Reports
Within-AC vote shares	2005 and 2010	Polling station level	ECI Form 20
Candidates' mini-biographies	Every election cycle	Winners and runner ups	Fieldwork
Legislators' traits	1990, 2000, 2005, 2010	Only winners	<i>Sadasya Parichay</i>

Note: * Village level amenities data aggregated to constituency level by Asher and Novosad (2017). The administrative hierarchy is: village (approx 40,000) > panchayat (approx 8,000) > block (approx 535) > district (37) > division (9) > state. The unit of analysis in this study is an assembly constituencies (AC). ACs are political units that are strict sub-sets of districts. There are 243 ACs in Bihar. *Sadasya Parichay* (literally: member's introduction) are handbooks containing biography information about elected legislators (members of legislative assemblies/MLAs) such as age, education, occupation and year of entry in politics. Despite best efforts, *Sadasya Parichay* for 1995 could not be located/accessed (the book was either not published or was untraceable at the Vidhan Sabha library, Patna, Bihar).

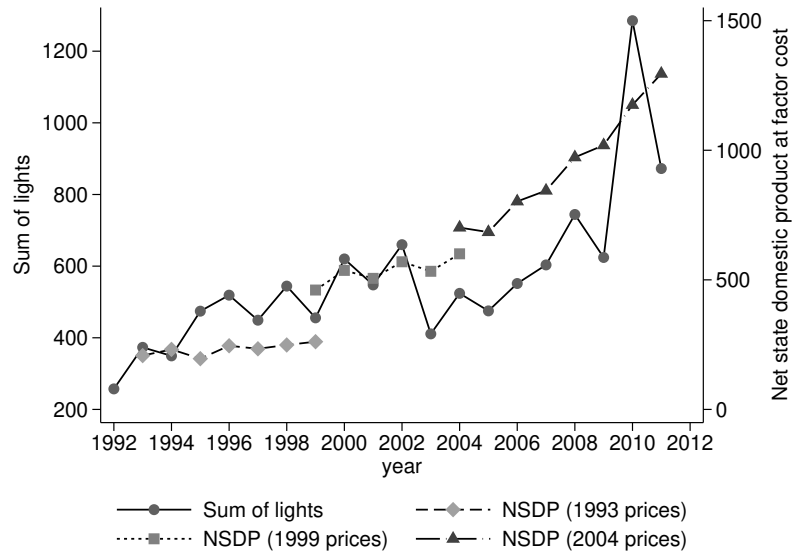
Night lights

Figure 20: Nighttime lights for India

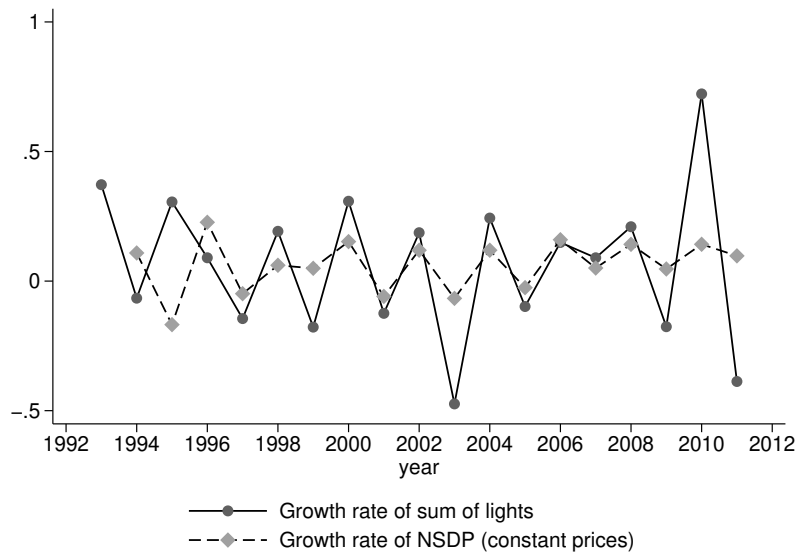


Note: Figure 20 shows an example of the satellite images recorded by the Defense Meteorological Satellite Program (DMSP) in the National Geophysical Data Center (NGDC)

Figure 21: Elasticity of State Gross Domestic Product (SGDP) with respect to luminosity scores



(a) Comparison of levels



(b) Comparisons of growth rates

Note: Figure 21a compares the sum of luminosity score for Bihar with the Net State Domestic Product (NSDP) at factor cost (in Rupees Billion). NSDP for 1993 to 1999 is calculated using 1993 as the base year; NSDP for 1999 to 2004 is calculated using 1999 as the base year; and NSDP for 2004 to 2011 is calculated using 2004 as the base year. (The choice of base year is not subjective and is as per RBI's data). Figure 21b compares the growth rate of lights with the chained NSDP time series. The elasticity of NSDP to lights is 0.13 and it is statistically significant ($p < 0.10$). Source: NSDP comes from RBI's Database on Indian Economy (Handbook of Statistics on the Indian Economy, Table No 6). Luminosity scores are derived from DMSP-OLS Nighttime Lights Time Series (Version 4).

Electoral data

Election data from Election Commission of India are used to define political competition at the constituency level. Let $votes_{c,t}^1$ and $votes_{c,t}^2$ be the votes received by the winner and first runner-up in assembly constituency c at time t and $v_{ac,t}^{tot}$ be the the total number of votes. For each constituency, define:

- Victory margin

$$VictoryMargin_{c,t} = \frac{votes_{c,t}^1 - votes_{c,t}^2}{v_{ac,t}^{total}} \quad (16)$$

- Voter turnout

$$Turnout_{c,t} = \frac{votes_{ac,t}^{total}}{electors_{c,t}} \quad (17)$$

- Effective number of candidates

$$ENOC_{c,t} = \frac{1}{\sum_i (voteshares^i)^2} \quad (18)$$

Within-AC/polling station level vote shares

Detailed election data at the polling station (PS) level is available only for recent elections, and not for earlier ones. There were 55,700 and 58,465 PS in 2005 and 2010 respectively. This data was used to construct a measure of ‘vote inequality’.

For each candidate $i \in \{1, 2, \dots, C\}$, let v_{jt}^i be the votes secured in PS $j \in \{1, 2, \dots, P\}$ at time $t \in \{2005, 2010\}$. Given $voteshare_{jt}^i = \frac{v_{jt}^i}{\sum_i v_{jt}^i}$, define the coefficient of variation (CV) of vote share for candidate i as:

$$CV_t^i = \frac{PSsd_t^i}{PSmean_t^i} \quad (19)$$

where, $PSmean_t^i$ is the mean vote share for candidate i

$$PSmean_t^i = \frac{1}{P} \sum_j voteshare_{j,t}^i$$

and $PSsd_t^i$ is the standard deviation of vote share for candidate i

$$PSsd_t^i = \sqrt{\frac{\sum_j (voteshare_{j,t}^i - mean_t^i)^2}{P - 1}}$$

This measure (equation 19) captures how spread out the votes received by a candidate within a given constituency are. A higher CV in an election year implies that there was greater inequality in the

distribution of votes. In other words, the votes received by candidates came from a wider distribution of polling stations (instead of just being concentrated in a few ones).

Candidates' Biographies

Information on how a candidate entered politics was collected by speaking to local journalists, party workers, politicians and activists in two phases. In Phase I of the research (2014-15), data on candidate's identity and background was collected which was later verified in phase II (2017-18) by speaking to a different set of elite respondents. In addition to eliciting responses on candidate's sex, religion and caste, respondents were also asked to describe the candidates' political background i.e. how did politician *X* enter politics and what their entry route/career path was. Dividing the field-work in two phases was a way to ensure that a politician's 'mini-biography' was composed after having spoken to at least two respondents. More than half of the biographies (54 percent) were collected from three or more interviews, 38 percent had two sources and 8 percent had only one source. All the biographies put together contain a total of nearly 80,000 words, with the length of the median mini-biography being 50 words (note: currently, the biographies are written in Hindi, using Roman script and translated biographies are likely to be longer). Overall, biographies were collected for nearly 3,000 candidates ($= 243 \text{ constituencies} \times 6 \text{ election cycles} \times 2 \text{ winner/runner up}$). In the 25 years between 1990 and 2010, there were 1,358 unique politicians in the candidate pool and categorized biographies are available for 97 percent of the sample. The following table describes the frequency of entry routes during that period:

Table 13: Entry routes

Background/career paths	Frequency	Percent of cases
P-Family	366	27.71
P-Business	254	19.23
P-Landlord	108	8.18
P-Social Ties	245	18.55
P-Parachuter occupations	192	14.53
C-Activism	121	9.16
C-Local representative	204	15.44
C-Party worker	511	38.68
C-Student politics	43	3.26
C-Strongman	146	11.05
C-Climber occupations	21	1.59
Total	2,211	167.37

Note: Total number of unique candidate bios = 1358. Non-missing cases= 1321. Incomplete/inadequately described cases= 37. The total percentage of cases exceeds 100 because a politician is allowed to have multiple entry routes.

The candidates' entry routes were classified as either parachuter or climber, as per the definitions in

the text (section 2). Out of the 1,321 unique biographies, 69.4 percent were either a ‘pure’ climber or a ‘pure’ parachuter, whereas 30.6 percent had multiple parachuter/climber codes. In case of multiple entry routes, being a parachuter overruled. In developing countries, elite capture is a significant concern and given the context of Bihar where party-candidate linkages are weak, a politician was categorized as a parachuter as long as took any of the parachuter paths before joining politics.

The following examples illustrate the coding scheme (translated biographies are in quotes and the category is mentioned in square brackets):

P-Family

- Chaudhary Mahboob Ali Kaiser (Muslim) — “He was a big landlord of Simri Bakhtiyarpur and from a Congress family. He is son of Choudhary Mohd. Salauddin, acclaimed politician, former state congress president, former minister and MLA. They are from a royal family, owning over 1,200 hectares of land. He is grandson of late Nawab Nazirul Hasan of Simri Bakhtiarapur (erstwhile princely state). His brother Farooque who contested for MP election was defeated by Dinesh Yadav. After a spat with Rahul Gandhi, he moved to the BJP. Father was a MLA in 1964, grandfather in 1952 (both of them have expired).” [Family (Multiple-grandson of MLA and son of minister), Landlord]
- Manjeet Kumar Singh (Rajput/upper caste) — “Son of Brijkishore Nr. Singh, a former minister and Congress leader (father joined SAP later). Landlord family. He got the benefit of his father being in politics. Gas agency, contractor. He inherited this seat. They were well-to-do and had a hold on society. Their bus would also run.” [Family (son of minister), Landlord, Business]
- Dr. Madan Mohan Jha (Brahmin/upper caste) — “A Member of Legislative Council (MLC), he was a professor. His father, Dr. Nagendra Jha, was education minister in Bihar. Famous. He started from village politics, and was a social activist like his father. He got his father’s seat. (Father fetched him the ticket and gave up his own candidature for his son). He became a professor after his PhD. A three time legislator, his family is in politics. There are two colleges in his father’s name (Nagendra Jha Mahila College for girls and Nagendra Jha college).” [Family (son of minister), Professional (professor)]

P-Business

- Bacchan Das (Paswan/lower caste) – “He was very rich and spent a lot of money on elections. His loyalties were with whatever party was riding the wave of success. He contested through the RJD initially but is now looking to get a ticket from JDU. He is known for being very haughty and runs a highly successful business in Kolkatta.” [Business (Contractor)]

- Jamshed Ashraf (Muslim) - “He was a very successful owner of a shipbuilding company. He was based in Mumbai and is known for his clean image. He used to be based in Bombay and served as both a former minister and Member of Legislative Assembly in Bihar. During his time serving the Excise Commission he took some steps against the alcohol mafia which cost him the support of Nitish Kumar owing to which he was removed from the ministry and had to leave the party.” [Business (Shipbuilder)].
- Vijay Kumar Sinha (Bhumihar/upper Caste) – “He owns factories, a pharmaceutical company with a roaring business and sells alcohol. He is an extremely wealthy politician who started his involvement in politics thanks to his money and involvement with the Youth Wing of the BJP. He became the state president of the BJP Youth Wing after which he contested an election in 1995. He currently serves as a cabinet minister.” [Business (Pharma)]

P-Landlord

- Raj Kishore Yadav (Yadav/backward caste) – “He was a farmer and active in village politics. He would get work done at the block office. When he was unsuccessful in his attempt to get a ticket to run for the Janata Dal, he contested as an independent candidate and won 22,000 votes. He subsequently became the chairman of DRDA and through the Congress navigated his way back into the Janata Party. He owns about 40-50 bighas (10-12.5 hectares) of land and is considered a big farmer.” [Farmer (large), Local representative (Chairman DRDA)]
- Ganesh Shankar Vidyarthi (Bhumihar/upper caste) – “He comes from a famous zamindari family. His family members have been members of the constituent assembly for many years. He was an old timer in the party and served as the CPM state chairman. He came into politics to protect his lands. He donated a very small portion of his land to create housing for the poor.” [Zamindar]
- Krishna Chandra Prasad Singh (Bhumihar/upper caste) – “Known for owning one of the largest swathes of land in Lakhisarai District, Krishna Prasad Singh is a very rich zamindar. In addition to his lands he owns several thriving cinema halls. He is very feudal and is not known to possess any political ideology. He entered politics due to his wealth and connections with Kapildeo Singh. He served as a Member of Parliament for a decade from 1985-95.” [Zamindar, Business (Cinema Hall), Social Ties]

P-Social ties

- Kanti Singh (Yadav/backward caste) – “Not known figure. She was known to be very beautiful which is what got her the blessings of Lalu Yadav. He gave her a very important ticket after which she successfully became a Member of Parliament. She was also a former Union Minister. She was close to Lalu and personally knew him. Husband was with the PWD. Her brother-in-law, Vijay Mandal, is RJD’s district president.” [Social Ties (Handpicked by Lalu Yadav)]

- Sanjay Kumar Prabhat (Yadav/backward caste) – “He was the Vice Chancellor of Magadh University. He was a close friend of Jagannath Mishra’s through whom he become involved in politics and was a member of multiple political parties over his lifetime. He is deceased.” [Social Ties (close friend of Jagannath Mishra), Government Employee (Professor)]
- Phoolchand Manjhi (Musahar/lower caste) – “He was handpicked by Lalu despite not being an active party worker. Phoolchand had a criminal history that lent to a certain social image that Lalu found particularly appealing owing to which he handpicked him and gave him a ticket to contest elections.” [Strongman, Social Ties (Lalu Yadav)]

P-Parachuter occupations

- Surendra Prasad Singh (Kushwaha/backward caste) - “He was a professor of economics in Madhepura where he served under a college principal (Ranjan Yadav) who was an acquaintance of Lalu Yadav. He has no political background, but still successfully obtained a ticket to contest Vidan Sabha elections from Amarpur through Ranjan Yadav. He subsequently tried to contest elections through the BJP but was not granted a ticket by the party and went on to contest independently. He suffered a major defeat as an independent candidate. His younger brother’s wife, Nilam Devi also stood for the Zila Parishad elections in 2001 and won but however lost the following election.” [Government Employee (Professor)]
- Usha Sinha (Kurmi/backward caste) – “She comes from a very rich family; she is a professor in Patna (maybe Patna Women’s College?). Her husband is a principal and he has some cases pending. She was an active political worker for the RJD for over 20 years. She won her election in Nitish Kumar’s wave. When there were doubts cast on her work while she MLA, she did not get a ticket next time.” [Government employee (professor), Cadre (Party Worker)]
- Vinay Bihari (Rajput/upper caste) – “He is an actor, director, singer as well as writes screenplays, dialogues and songs in five languages (Bhojpuri, Maithili, Hindi, Angika and Chhattisgarhi). He has also figured in the Limca Book of Records for his performance in entertainment industry. He considers himself committed to politics and the development of his constituency (Lauria). He served as the ‘Kala and Sanskriti’ (Arts and Culture) Minister for Bihar in 2014. He is known for his statements blaming smartphones and non-vegetarian food for increasing incidences of rape in India. His wife served in the Zila Parishad.” [Professional (Actor)]

C-Activist

- Munshi Lal Paswan (Paswan/lower caste) – “He was involved with the JP movement. He was initially a worker with JD/RJD and then garnered political support from LJP. He unsuccessfully contested legislative elections in 2000 after which he passed away. His wife (Meena Devi) was given his ticket and she unsuccessfully contested elections in 2005.” [Social Movement (JP), Cadre (JD)]

- Anup Lal Yadav (Yadav/lower caste) — “He is a former Member of Parliament with no family background in politics. He was a freedom fighter who was anti-Congress. He became a *Sama-jwaadi* (socialist) leader and served as a minister. He got involved in politics at a very young age and won every election he contested except one. Indira Gandhi came to campaign in Pipra where he was contesting from and that was the only election he ever lost.” [Social Movement (Freedom fighter)]
- Shivanarayan Pd. Mishra (Brahmin/upper caste) — “He took part in the cooperative movement. He always had ideological leanings that aligned with the Congress party. He contested elections unsuccessfully but served as the President of a Cooperative Bank for the longest time.” [Social Movement (cooperative), Local Representative (cooperative bank president)]

C-Party worker

- Anugrah Narayan Singh (Rajput/upper caste) — “Lifelong congress worker. He reached heights despite being a *‘dharti ke neta’* (grounded politician). He was district president for the congress. His son-in-law, Rajesh Kumar Singh, is now in politics.” [Party worker (Congress)]
- Ambika Prasad (Kharwar/lower caste) — “A CPI worker, grassroots, most dedicated leader of Bhaglapur. He fought for the rights of the labourers and protests even today. He was part of the CPI cadre from a young age. His son, Amresh Kumar, lost the *Zila Parishad* (district president) election.” [Party worker (CPI)]
- Kishore Prasad (Bind/extremely backward caste) — “He was a great leader with a strong social background. He was a leader of the Bind community and he founded a party to this end. He has expired. His son, Mohan Bihan, got a ticket from BJP to contest Zila Parishad (district president) elections but after losing has quit active in politics. Kishore was a loud voice against injustice; one of his relative is carrying forward his party (Surendra prasad, former Mukhiya (village president).” [Party worker (Jai Hind Subhash Chandra Bose party)]

C-Local representative

- Devdat Prasad (Yadav/backward caste) — “He was a one -time MLA and is no longer active in politics. He entered politics while serving as the *Mukhiya* (village president) and subsequently a *Pramukh* (block president). He was a socialist leader and was a representative of his caste group. He lost elections 3 times before winning for the first and last time. His sons are active politicians with the RJD. His wife tried to contest elections on his ticket once he passed away however she was not given his ticket. She then contested as an Independent candidate and won 38,000 votes.” [Local Representative (Mukhiya, Pramukh), Cadre (Socialist)]
- Krishna Nandan Paswan (Paswan/lower caste) — “He came from a very poor family and is allegedly involved in corruption. He won Zila Parishad elections as an independent candidate the

first time he contested. He is known to have an attitude and vision that is closely aligned with helping the more marginalized. As a legislator he travelled to constituencies wearing a '*jhola*' which is a trademark showcasing an activist bent of mind. His wife has successfully contested Zila Parishad elections." [Local Representative (Zila Parishad), Cadre (Party Worker)]

- Bramhadeo Narayan Singh (Kushwaha/backward caste) – "He comes from a poor family with no political family background. He was a hardworking mukhiya who had close association with the socialist movement. He was perceived as being a genuine ground level party worker. He lost all MLA (Member of Legislative Assembly) elections but won the MLC (Member of Legislative Council) election. For some years he suffered from paralysis and was then diagnosed with cancer. He is now deceased." [Local Representative (Mukhiya)]

C-Student politics

- Prem Chandra Mishra (Brahmin/upper caste) – "He served as the president of the National Students Union of India at Patna University while he was a student. He then went on to become the president of the youth wing and chief spokesperson for the Congress in Bihar. He has not won any elections yet." [Student Politics (NSUI), Cadre (Congress)]
- Dinesh Kumar Singh (Yadav/backward caste) – "He was an ordinary student worker who was a leader of a student group. He was given a ticket by the Janata Dal purely for his hard work and won elections because of it. He comes from a very simple family and has no prior family background. He served as a *Mukhiya* in 2001 but is currently with the BJP." [Student Politics (Union Leader), Local Representative (Mukhiya)]

C-Strongman

- Shah Chand (Muslim) – "He served as a *Mukhiya* (village president) twice. He was a worker for CPI(ML) and was known to be a leader of the poor. He was later accused in a criminal case owing to which he was given a 20-year jail term. He was imprisoned in the Jahanabad Jail but is now deceased. His wife contested *Zila Parishad* elections in 2006 and won them." [Local Representative (Mukhiya), Cadre (CPI(ML)), Strongman]
- Taslimuddin (Muslim) – "Known to be one of the senior most leaders in the Seemanchal region of Bihar Taslimuddin was called 'Seemanchal Gandhi'. He was the son of a labourer. He started off as a grassroots political worker and made his way to the top through panchayati elections. He has a generally controversial image and is known to use money and muscle to win elections. His claim to fame was when he surrounded the office of the Superintendent of Police and publicly humiliated him in Araria. He is now a many time Member of Parliament and a former Home Minister of State in the central government during Devegowda's regime but had to resign following incendiary remarks on BJP supremo LK Advani. He is a high-profile

party turncoat and a political heavyweight in the region.” [Local Representative (Mukhiya), Strongman]

- Ram Balak Singh (Kushwaha/backward caste) — “He was a long-time political worker and *mukhiya*. He was also a notorious criminal. He was elected as a Member of Legislative Assembly in 2001 and more recently won the seat again.” [Local Representative (Mukhiya), Strongman]

C-Climber occupations

- Somprakash Singh (Yadav/backward caste) — “He was a ‘daroga’ (sub-inspector) before he decided to resign and contest elections as an Independent candidate from Obra. He was popular and won the election based on his persona. He was well-known for his contributions towards increasing access to school for children including those residing in Naxal areas. He opened schools in remote places and ensured that children attending those schools received free textbooks. His wife (Shanti Yadav) contested elections as an independent from Bakhtiarpur but did not get elected to the assembly.” [Protective service worker (Sub-Inspector in Police)]
- Bhagwati Devi (Musahar/lower caste) — “She was a daily wage laborer at a stone quarry who frequently fought for the right to housing for other laborers. Lalu Yadav saw her potential and gave her a ticket on which she won elections multiple times. She has a reputation for being honest and powerful. Her life is detailed in a biography titled ‘*Dharti ki Beti*’ (Daughter of the Earth). Her son (Vijay Kumar) and daughter (Samta Devi) are also in politics. Her daughter is currently serving as a legislator.” [Labourer]

Multiple entry routes

- Dhruv Tiwari (Bhumihar/upper caste) — “He was with the Jan Sangh and a member of RSS as well. There was no applicant in Brahmampur from the BJP and therefore, Kailash Pati Mishra gave him a ticket. He is a relative of Kailash Pati Mishra’s brother.” [Family, Cadre (RSS)]
- Uday Prakash Goit (Yadav/backward caste) — “He is son of socialist leader, Asheshwar Goit (who has now expired). Uday was a small worker in the party and got close to Lalu Yadav. He stuck to Lalu following Janta Dal’s break up.” [Family (son of MLA), Party worker (JD)]
- Bijay Kumar Singh (Rajput/upper caste) — “He was cooperative chairman. President of youth LJP. Earlier with RJD. His uncle was a mukhiya (village president). He was a contractor before contesting for the cooperative elections. After becoming chairman, he built a house for himself in Patna and started living there. Madhopur’s Lal Mohan Singh (congress leader) got him the ticket using his influence, due to his proximity with Chandrasekhar.” [Family (relative of mukhiya), Business (contractor), Local rep (cooperative chairman), Social ties (close to a politician)]

National Classification of Occupations (NCO-1968)

Division 1: Professional, technical and related workers: physical scientists; physical science technicians; architects, engineers, technologists and surveyors; engineering technicians; aircraft and ships officers; life scientists; life science technicians; physicians and surgeons (including dental and veterinary surgeons); nurses and other medical and health technicians; scientific medical and technical persons, other; mathematicians, statisticians and related workers; economists and related workers; accountants, auditors and related workers; social scientists and related workers; jurists; teachers; poets, authors, journalists and related workers; artists; composers and performing artists; professional workers. *Division 2: Administrative, executive and managerial workers:* administrative and executive officials, govt and local bodies; working proprietors, directors and managers, wholesale and retail trade; directors and managers, financial institutions; construction, manufacturing and related concerns; executives, transport, storage and communication; services; administrative, executive and managerial workers. *Division 3: Clerical and related workers:* clerical and other supervisors; village officials; operators; book keepers, cashiers and related workers; computing machine operator; clerical and related workers; transport and communication supervisors; transport conductor and guards; mail distributors and related workers; telephone and telegraph operators. *Division 4: Sales workers:* merchants and shopkeepers, wholesale and retail trade; manufacturers' agents; technical salesmen and commercial travelers; salesmen, shop assistants and related workers; salesmen and auctioneers; money lenders and pawn brokers; sales workers. *Division 5: Service workers:* hotel and restaurant keepers; maids and related house keeping services workers; workers; launderers, dry cleaners and pressers; hair dressers, barbers, beauticians and related workers; protective service workers; service workers. *Division 6: Farmers, fishermen, hunters, loggers and related workers:* farm plantation, dairy and other managers and supervisor; cultivators; farmers, other than cultivators; agricultural labourers; plantation labourers and related workers; other farm workers; forestry workers; hunters and related workers; fishermen and related workers. *Division 7: Production and related workers:* miners, quarrymen, well drillers and related workers; metal processors; wood preparation workers and paper makers; chemical processors and related workers; spinners, weavers, knitting, dyers and related workers; tanners, fellmongers and pelt dressers; food and beverage processors; tobacco preparers and tobacco product makers workers. *Division 8-Transport equipment operators:* shoemakers and leather goods makers; carpenters, cabinet and related wood workers; stone cutters and carvers; blacksmiths, tool-makers and machine tool operators; instrument makers (except electrical); workers; broadcasting station and sound equipment operators and cinema projectionists; preparers and erectors; engravers (except printing); glass formers, potters and related workers. *Division 9: Labourers:* rubber and plastics products makers; paper and paper board product makers; printers and related workers; painting; production and related workers; bricklayers and other construction workers; oilers and greasers; dockers and freight handlers; transport equipment operators.