Shared Identity and Entrepreneurship*

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Abstract

We show that shared identity with elected leaders helps entrepreneurs form new and productive businesses. Following close Indian elections during 2006 – 16, local firm entry by entrepreneurs belonging to the same cultural groups as winning candidates increases. Despite benefitting from preferential behavior, and in contrast to earlier work, such politically connected entrants are *more* productive than incumbent in-group firms. Simultaneously, business formation by out-group entrepreneurs does not decline. The high TFP of in-group entrants suggests barriers that previously precluded the entry of potentially high-performing firms. Administrative entry costs seem to be a key barrier that in-group politicians help ease.

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1 Introduction

Barriers to firm entry exist around the world but are especially severe in developing countries. Such barriers, created by regulations, lack of credit access, etc., have significant negative growth consequences and account for nearly half of the income gap between the richest and poorest countries (Herrendorf and Teixeira, 2011; Barseghyan and DiCecio, 2011). In addition to lowering innovation, job creation, wealth, and TFP, they enable (and include) rent extraction by insider groups that own incumbent firms or otherwise benefit through keeping entry levels low (North and Thomas, 1973; Djankov et al., 2002; Campos et al., 2010). In such distorted settings, potential entrepreneurs may exploit their socio-cultural ties with insiders to reduce their entry costs. While this can fuel new firm formation by those belonging to 'in-groups', it may enable the entry of low-productivity firms and worsen entry barriers for 'out-groups.'

Does reliance on shared socio-cultural identity alleviate frictions in an already distorted economy, or does it exacerbate resource misallocation? We answer this question in the context of India, an economy particularly suited to study this question given its high firm entry costs and the strong sense of affinity people feel along shared religious and caste identities (Munshi, 2019; Fisman et al., 2017, 2020).[1,2] Specifically, we investigate whether, following close local elections, new business formation by individuals belonging to the same caste or religion as the winning politician's increases. Our findings reveal that such an increase indeed occurs and is, in fact, substantial – an extra electoral win of a given caste's politician leads to an annual average increase of 16.67% in the entry of same-caste firms relative to total annual entry in the district in the post-election period.[3] These new firms are more productive than previous in-group entrants. Consequently, the average firm total

[1]India ranked 132^{nd} out of 190 countries in the Ease of Doing Business rankings during 2011 – 16.

[2]The caste system organizes India's majority Hindu society into five hierarchical groups that are further divided into hundreds of narrowly defined sub-groups.

[3]The post-election period typically lasts five years.

factor productivity (TFP) in the local economy increases. Importantly, the entry of out-group firms does not decline in response to a given caste's electoral win. This demonstrates that identity-based connections with politicians help ease distortions in the local economy, aiding productive firm formation across the board. Our evidence also suggests that higher productive firm entry is enabled by politicians to help reduce regulatory burden and ease access to credit and network opportunities.

Entrepreneurs' shared cultural identity with politicians can help their firms enter through political favoritism, wherein they receive cheaper access to capital, inputs, and networks, or simply have the "rules" changed for them. Politicians, in turn, may display such favoritism for reasons such as quid-pro-quo for past and future political donations or votes, or sheer in-group bias. In the absence of entry frictions, such favoritism would reduce efficiency by diverting resources towards less able entrepreneurs. However, in the presence of entry barriers, identity-based political favoritism can, under some conditions, improve allocative efficiency. At the same time, this may be accompanied by highly able entrepreneurs of the same or other castes being systematically hurt, leading to lower efficiency. The net effect, therefore, is an empirical question.

We formalize this intuition in a simple model where shared cultural identity with a winning politician reduces firm entry costs for entrepreneurs. Agents of different castes pay a caste-specific entry cost to form a business. If their productivity draws are higher than expected profits, they operate. Monopolistically competitive firms choose inputs to maximize profits. Comparative statics show that as entry cost falls, more firms enter. Without differential entry barriers, the highest productivity firms would have already entered. In such a world, reductions in entry costs (through favoritism) would, on the margin, lead to the entry of less productive firms and decreases in average productivity. However, in the presence of differential barriers to entry, some highly productive entrepreneurs may not have entered, and political leaders may assist in the entry of these high-performing firms, raising aggregate productivity. As such, the effect on the average productivity of all firms founded by

entrepreneurs with shared identity with the winning politician is theoretically indeterminate, making this investigation an empirical exercise.

For our empirical analysis, we obtain data on all firms that entered the formal sector in India during 2006 – 2016 from the Ministry of Corporate Affairs (MCA). These data provide us with information on founders' names, month and year of firm registration, its location as zip-code of headquarters, paid-up capital, and post-entry outcomes, including sales, capital, and worker compensation. We combine these data with those on state legislative assembly elections from which we use the names of the winning and runner-up candidates along with their vote shares. To identify politicians' and entrepreneurs' castes and religions, we map the last names to caste and religion as in Bhagavatula et al. (2022).[4]

To identify the effect of electoral wins of members of a caste (or religious) group on firm formation by that group, we leverage variation from close elections (Asher and Novosad, 2017; Prakash et al., 2019; Mahadevan, 2019; Brown et al., 2021; Jeong et al., 2020; Bhalotra et al., 2018). While elections are contested at the level of a legislative assembly, many of our variables of interest are measured at the district level.[5] Thus, we estimate our regressions at the district level. We investigate how the proportion of elections in a district *closely* won by politicians of a caste affect new firm formation by entrepreneurs of that caste (as a proportion of all new firms) in that district in the post-election period of roughly five years.

We find that a one-unit increase in the proportion of close elections won by a particular caste in a district in a year leads to a one percentage point (henceforth pp) increase in the share of firms founded by entrepreneurs of the same caste relative to a baseline entry rate of 6% in the post-election period (typically five years). This constitutes an annual average increase of 16.67% in firm entry. Importantly, we observe that these new firms are substantially more productive relative to previous entrants, with about 35% higher revenue

[4]We also use shape files of zip-codes and districts, bank penetration data obtained from India's central bank, district-level nightlights data, the 2011 decennial Census, and data on Special Economic Zones (SEZ).

[5]There are 14 legislative assemblies in a district, on average.

TFP (TFPR). This result is especially remarkable when combined with our finding that greater firm formation by politically connected entrepreneurs does not crowd out entry by those of other castes.

We provide supportive evidence for three potential channels through which politicians might help entrepreneurs start new businesses – by reducing the regulatory burden, by easing access to credit, and by helping deepen economic networks or find opportunities. Specifically, we find that electoral wins help in-group firm entry more in districts with greater regulatory and fiscal burdens, indicating that political connections might help entrepreneurs navigate or reduce these hurdles. The positive firm entry effects of in-group electoral wins are also larger in districts with lower bank penetration, suggesting that shared identity with winning politicians might enable entrepreneurs to access financial capital in areas where they are otherwise significantly credit constrained. Similarly, electoral wins fuel in-group firm formation more in districts with lower nightlight intensity, which has been shown to be highly correlated with income and economic activity (Henderson et al., 2012). Since these areas may also have fewer economic opportunities and sparser networks, we infer that politicians might create opportunities for in-group entrepreneurs or deepen their networks.

Finally, we examine entry effects (a) through the lens of the hierarchy embedded in the caste system and (b) for Hindus versus other religious groups. We find that the entry effects for historically advantaged caste groups are similar to those that have been disadvantaged. In contrast, firm entry effects of political connections are systematically higher for entrepreneurs of non-Hindu religions than for Hindus.

Together, these results demonstrate that in a distorted economy with high entry costs for firms, socio-cultural connections with insiders can spur new firm formation by connected entrepreneurs relative to those unconnected. Significantly, these new firms formed by connected entrepreneurs are, in fact, more productive than previous entrants and do not crowd out the entry of others. This indicates that connections help reduce entry costs and improve resource allocation. The latter finding is remarkable as it stands in contrast to a large liter-

ature that overwhelmingly finds that social connections, while fueling economic activity, do so at the cost of out-groups and lead to economically perverse aggregate outcomes.

Related literature: Our paper relates to the large literature on firm entry costs. Herrendorf and Teixeira (2011) find that differences in entry costs are the chief factor underlying cross-country income differences. Much of the literature view these entry costs as stemming from, and so measures them in terms of, regulatory or legal requirements such as product market regulations, licensing fees, etc. These regulatory burdens are much higher in developing than in OECD countries. However, entry costs also include frictions created by weak institutions, financial market imperfections, barriers to technology adoption, labor and innovation costs, imperfect information, and corruption (Bollard et al., 2016; Djankov et al., 2002; Dreher and Gassebner, 2013; Campos et al., 2010). These factors get less attention in the literature due to the inherent measurement challenges. Since many of these factors may be simultaneously contributing to large entry costs, no one policy can be the panacea. In this circumstance, exploiting socio-cultural connections to effectively reduce entry costs may be beneficial for individual founders as well as the aggregate total factor productivity.

We also contribute to a long line of studies on politically connected firms. These studies typically find that such firms are valued higher relative to others (Acemoglu et al., 2016; Faccio, 2006; Fisman, 2001; Claessens et al., 2008; Goldman et al., 2009; Cooper et al., 2010) but perform worse in real performance measures (Duchin and Sosyura, 2012; Boubakri et al., 2008; Fan et al., 2007; Akcigit et al., 2018). For instance, Khwaja and Mian (2005) document that politically connected firms are able to get more bank loans but default on them at a much higher rate than other firms. Cole (2009) has a similar finding in the context of Indian agriculture. Sukhtankar (2012) shows that farmers get paid less in politically controlled sugar mills during election years but are given higher prices later. Bertrand et al. (2020) provide the rare evidence of firm donations made to politically connected charities being correlated with associated politicians voting in favor of firm interests in Congress.

We make two contributions to this literature. First, in contrast to previous work that finds perverse consequences of political connections, entailing resource misallocation, we show that exploiting political connections can be simultaneously beneficial for the connected firms and the economy, alleviating resource misallocation. Second, most studies focus on the outcomes of incumbent firms instead of examining firm entry. Notable exceptions include (Duchin et al., 2020) and (Giannetti et al., 2017). We add to this growing body of work and show that firm entry increases substantially when founders are connected to politicians.

Several papers document the myriad ways in which shared identities and social networks influence economic decisions. For example, venture capitalists invest in startups of founders who are ethnically similar to themselves (Hegde and Tumlinson, 2013), firm mergers are influenced by shared ties of CEOs and directors (Cai and Sevilir, 2012; Ishii and Xuan, 2014), shared political views affect influence which firms hire which workers (Colonnelli et al., 2022), research collaborations between scientists are determined by their national origins (Freeman and Huang, 2015), and banks leverage social connections to gather information when giving loans (Rehbein et al., 2020). Previous research also shows that shared ethnic, cultural, or gender identity with politicians affects public good provision, public policies, and subsequent political involvement (Easterly and Levine, 1997; Beaman et al., 2009; Besley et al., 2004). Closer to our paper, Dai et al. (2019) and Gupta et al. (2019) show that community networks are important determinants of entrepreneurship in modern China and in the cotton textile industry in an Indian region during the British *Raj*, respectively. We differ from these two studies in several respects. First, we examine how shared caste or religious identity with politicians affects entrepreneurship across all industries and regions of contemporary India. Second, the mechanisms through which caste-based political connections affect firm entry are distinctly different from those through which community networks matter.

Several studies also analyze the influence of caste and religion on economic outcomes in India. Existing work predominantly examines outcome differences between those in privileged and disadvantaged caste groups (Hnatkovska et al., 2012, 2013; Ghani et al., 2014;

Damodaran, 2018; Thorat and Neuman, 2012; Jodhka, 2010; Varshney et al., 2012). More recently, researchers have begun to investigate the economic influence of shared caste and religious identities between agents. Damaraju and Makhija (2018), Bhagavatula et al. (2022) and Bhalla et al. (2019) find that shared caste identity heavily influences the choice of CEOs and directors in India's public firms and their decisions for the firms, perversely affecting firm performance. Cassan et al. (2021); Munshi (2011) and Fisman et al. (2017) document how caste proximity affects occupational choice, mobility, and loan repayments, respectively. Dutta et al. (2022) show that shared governance of a region by caste non-aligned politicians increases its economic activity. To our knowledge, we are the first to examine how shared caste or religious identity affects firm entry. We find positive firm formation and TFP effects of shared identity between entrepreneurs and politicians. Unlike other work, we find that reliance on such connections *improves* aggregate productivity.

2 Theoretical Framework

In this section, we present a theoretical framework that lays the foundation for our empirical findings. In our model, firms make an entry decision if their expected profits are higher than their fixed cost of entry. Heterogeneity in the fixed entry cost determines whether low or high-productivity firms enter. Political connections based on similar identities can lower these entry costs, potentially leading to the entry of new firms with higher TFP than incumbent firms.

Each firm i is identified with a caste, c. We consider the caste of the firm's founding member(s) to be its relevant caste. We assume there to be a finite number of castes, C. A set of firms associated with a particular caste are further subdivided into groups, $g \in G$ indicating the firm's ability to do business. Differences in ability to do business across categories could be because of varying business acumen, or existing networks based on their subgroups, among other things. Each firm i that belongs to caste, c and group, g creates

output, Y_{icg} according to the following Cobb-Douglas technology function:[6]

$$Y_{icg} = \tilde{A}_{icg} L_{icg}^{\alpha} \bar{K}^{1-\alpha} \quad ,$$

where $\tilde{A}_{icg}$ and L_{icg} denote the Total Factor Productivity (TFP) of the firm i and the labor used by the firm i, respectively. We assume that each firm uses a constant amount of capital, $\bar{K}$, hired at the rate of r per unit. The Total Factor Productivity of each firm is drawn from a continuous distribution, $F[0, M]$. Let ω denote the constant wage paid per unit of labor. Further, each firm of caste, c of group g pays a fixed entry cost, η_{cg} to begin operating in the market. η_{cg} allows differential barriers to entry with respect to caste and group of the firm. In our context, η_{cg} includes the cost of registration or obtaining approvals, which may vary due to the dominance of a particular caste group in the local economy and its political connection as well as business acumen. The profit function for the firm is given by:

$$\Pi_{icg} = Y_{icg} - \omega L_{icg} - r\bar{K} - \eta_{cg}$$

First order conditions with respect to L_{icg} reveal that the optimal optimal labor hired by firm i is $L_{icg}^{*} = \frac{\alpha Y_{icg}}{\omega}$. Substituting L_{icg}^{*} into the production function, we can rewrite output as $Y_{icg} = \left(\frac{\alpha}{\omega}\right)^{\frac{\alpha}{1-\alpha}} \tilde{A_{icg}}^{\frac{1}{1-\alpha}} \bar{K}$.

Let $A_{icg} = (1-\alpha)\left(\frac{\alpha}{\omega}\right)^{\frac{\alpha}{1-\alpha}} \tilde{A}_{icg}^{\frac{1}{1-\alpha}}$ be a simple transformation of TFP. The equilibrium profit function can be rewritten as:

$$\Pi_{icg}^{*} = A_{icg}\bar{K} - r\bar{K} - \eta_{cg}$$

Firms enter only if their profits are non-negative, i.e., when $A_{icg} \geq \frac{\eta_{cg} + r\bar{K}}{\bar{K}}$. We define the cutoff TFP above which firms enter as $A(\eta_{cg}) \equiv \frac{\eta_{cg} + r\bar{K}}{\bar{K}}$.

[6]The Cobb Douglas production function assumption is a common one in the literature and aids in the tractability of computations. We can relax the fixed capital amounts and make capital freely traded at an equilibrium rental rate without a change in our predictions

Therefore, the average TFP of entering firms of caste c and group g is:

$$\overline{TFP}_{cg} = \int_{A(\eta_{cg})}^{M} \frac{Af(A)dA}{1 - F(A(\eta_{cg}))}$$

The average TFP of entrants of caste c is:

$$\overline{TFP_c} = \sum_g \theta_{cg} \int_{A(\eta_{cg})}^{M} \frac{A}{1 - F(A(\eta_{cg}))} f(A)dA = \sum_g \theta_g \bar{TFP}_{cg} \ ,$$

where θ_{cg} is the fraction of c caste entrants that belong to group g.

What does shared identity with a politician entail for an entrant? In our theoretical framework, this effect would occur through a change in the entry cost. The following result gives us a theoretical prediction:

Result 2.1. *Number and proportion of new entrants*

- *The level and proportion of new firms of caste c and group g decreases (increases) with an increase (decrease) in firm entry cost, η_{cg}.*
- *The proportion of new firms of caste c increases (decreases) with an increase (decreases) in the entry cost of firms of another caste.*

Proof. See Appendix 6 □

Intuitively, a reduction in firm entry costs for entrepreneurs of a given caste leads to greater firm entry of that caste. If political connections reduce the entry cost for firms, then we can test the conclusions of our model. That is, following elections, the absolute level and proportion of entrants belonging to the same caste as the winning politician should increase.

The following result gives us a theoretical prediction on the total factor productivity of entering firms. Particularly, we look at how the reduction in entry costs affects the relative total factor productivity of entering firms of caste c in comparison to the productivity of all entering firms.

Result 2.2. *Total Factor Productivity*

- *The average TFP of all entering firms of the caste, c and group, g increases with an increase in entry cost, η_{cg}.*
- *The change in relative TFP of all entering firms of the same caste, c with respect to its own entry costs is ambiguous*

Proof. See Appendix 6 □

Intuitively, an increase in entry cost for a group g of caste c increases the average productivity of entering firms of that particular caste and group. This is because the higher entry cost would enable only more productive ones to enter. Though increases in entry costs for group g and caste c increase the average productivity of that particular caste and group, it also reduces the fraction of entrants that belong to the group. Therefore, the impact of increases in the entry cost of group g and caste c on the TFP of all entering firms of the caste c relative to that of all entrants is ambiguous. Particularly, on the one hand, increases in the entry cost prevent low-productive firms of group g and caste c to enter and increase the average TFP of entrants of that group and caste. The entry cost of group g and caste c does not affect the TFP of the other groups $g\prime \neq g$ that belong to caste c. On the other hand, increases in entry costs of firms of group g and caste c, change the distribution of entrants across groups. Particularly, it reduces the share of entrants of group g that belong to caste c and, increases the share of total entrants that belong to group $g\prime$ and caste c. If the entry cost rises for say low-productivity group g firms, then the average productivity may rise; but if the rise in entry costs is concentrated for say high-productivity group g firms, then the average productivity of new entrants may fall. Therefore, the relative change in TFP of caste c with respect to η_{cg} is indeterminate, and we empirically examine the average TFP of entering firms of a particular caste.

3 Data and Background about India's Elections and Caste System

We combine data from three main sources described in detail below.

3.1 Firm-level data

We use data on the universe of firms registered with the Ministry of Corporate Affairs (MCA), the government department responsible for enforcing corporate laws. The MCA publishes details of all firms registered and incorporated with the Registrar of Companies.[7] For each registered firm, the MCA collects two types of data – (i) time-invariant characteristics and (ii) annual financial indicators of the firm.

We obtain information on companies registered from all offices of the Registrar of Companies across the country.[8] The Registrar of Companies maintains records of companies registered under the first Companies Act that was legislated in 1956. Thus, we have time-invariant firm information for almost all firms ($1,611,558$ unique firms) that have registered with the Ministry from $1956-2016$. However, the MCA maintains information about the founding directors of the incorporated firm since 2005. Therefore, our relevant sample is for the period $2005-2016$. For this sample period, we use data on founding directors' names, firm names, locations (as zip codes), company identification numbers, the month and year of registration (our measure of entry), industry classification, paid-up capital, and issued capital. We also use self-reported annual financial indicators of the firm for the period $2010-2016$. Variables of interest are tangible capital and capital work-in-progress, purchase of stocks, profits, worker compensation (employee benefits and managers' salary), and cost

[7]The Registrar of Companies (ROC) deals with the administration of companies under several acts like the Companies Act, 2013, The Limited Liability Partnership Act, 2008, The Company of Secretaries Act, 1980, and The Chartered Accountants Act, 1949.

[8]There are 26 Registrar of Companies offices in India.

of intermediates.

Additionally, we map firms' zip codes to districts using shape files. Zip code shape files contain the spatial data for zip code boundaries based on data from the National Informatics Centre.[9] This enables us to identify the district in which each firm is located.[10]

3.2 Elections data

India is a federal republic with a parliamentary system of government. The Parliament of India, the national legislature, consists of two Houses: an Upper House (*Rajya Sabha*) and a Lower House (*Lok Sabha*). Those elected to either House are referred to as Members of Parliament (or MPs). State assemblies follow a similar structure with an Upper House called the Legislative Council (or *Vidhan Parishad*) and a Lower House called the Legislative Assembly (or *Vidhan Sabha*). Those elected to the state legislative assembly are referred to as Members of the Legislative Assembly (or MLAs). Both national and state elections follow the "first-past-the-post" system, i.e. the candidate with the most votes wins the election. Districts are divided into single-member constituencies. The party with the largest number of seats (constituencies won) in an election year forms the government at the state level either on its own or through a coalition of parties.[11] The maximum length of an election term is constitutionally fixed at five years. Elections may, however, occur sooner (e.g. when a coalition government loses the support of a partner political party), or later (e.g. due to a natural disaster). Over the span of fifteen years covered by our sample, a constituency has an election an average of 2.56 times, which is consistent with the average electoral terms.

Since we are interested in examining how shared identity with local election winners affects firm formation by entrepreneurs in the area, we focus on state elections. Data on these elections are publicly available on the Election Commission of India website and also hosted

[9] A zip code is almost always contained within a district boundary.

[10] We could not find district matches for 0.7% of zip codes in our data.

[11] The average voter turnout in the raw data in our sample period is 71.3%.

by Ashoka University TCDP. The data provide the names of all assembly constituencies with their district and state identifiers, the names of all contesting candidates, and their respective vote margins for every state election. We use shape files to identify the district within which each electoral constituency falls. To align with our firm-level data, we restrict these data to the period $2005 - 2016$.

3.3 Name-caste mapping data

The caste system stratifies India's majority Hindu population into four hierarchical *varnas*: *Brahmins*, *Kshatriyas*, *Vaishyas*, and *Shudras*. Historically, these groups were associated with broad occupations of priests, warriors, traders, and artisans, respectively, although there was flexibility. There is an additional fifth de facto *varna* of *Dalits* that falls outside the caste system. These *varnas* are further subdivided into hundreds of sub-groups or *jatis*. Our focus is to understand in-group influences on economic activity rather than differential outcomes for castes higher or lower in the *varna* hierarchy. Thus, for our main results, we focus on *jati* – the dimension along which people feel the strongest affinity toward others. Indeed, marriages, residence, occupations, voting patterns, public good provision, etc. are all influenced by *jati* (Joshi et al., 2018; Kumar et al., 2017; Beteille, 1996; Srinivas, 1995).

Besides Hinduism, there are other religions practiced in India and observed in our data, namely Islam, Christianity, Jainism, Buddhism, Sikhism, and Zoroastrianism. We treat these religions as distinct cultural groups in addition to the Hindu caste groups.

For our analysis, we need to map the names of election candidates and firms' founding directors to their respective cultural groups – *jatis*, *varnas*, and religions. For this purpose, we use the probabilistic mapping of last names to cultural groups developed by (Bhagavatula et al., 2022). While the authors describe the methodology underlying this mapping in detail in their paper, we provide a brief summary here. The mapping exploits two aspects of the caste system: (a) caste is endogamous, and (b) last names are indicative of caste. The mapping is based on the profiles of over six million individual users on three matrimonial

websites that include information on individuals' first and last names and their self-identified religion, *varna*, and *jati*. All spelling variations of a last name are grouped together and considered as the same last name. Since one last name may not always belong to a unique caste, the authors probabilistically assign castes (*varnas* and *jatis*) to all last names in the group. The probability of a last name belonging to a given caste equals the proportion of times the users with that last name self-identify as belonging to that caste.

We use this mapping to assign the most likely caste and religion to each politician and firm founding director based on their last name.[12] We retain all firm-year observations for which we can identify caste for at least 85% of the directors. This constitutes 72% of all firms. We identify the predominant caste among the directors as the "caste of the firm".[13]

Using the name-caste mapping to assign castes to election candidates, we are able to identify castes and religions for 95% of winners and runners-up in our sample. Our final dataset consists of 3,543 assembly constituencies across 576 districts and 631,906 firms.

3.4 Other data sources

For our exploration of mechanisms underlying electoral wins' influence on in-group firm formation, we use three additional sources of data. To proxy for economic activity or district-level incomes, we use nightlight intensity data for each district during the sample period. These data are obtained from the Shrug website (Asher et al., 2021). We use the nightlight density in the year 2005 to stratify our sample into high versus low GDP regions. To measure credit access, we use district-level bank penetration data made available by the Reserve Bank of India (RBI). We have information on the number of bank accounts, credit limit, and amount outstanding for our sample period. For each of our banking variables, we calculate per-capita measures using the 2001 district population. We divide our sample into

[12]The average likelihood of the most likely caste is quite high (73% for *varna* and 59% for *jati*).

[13]We select the caste with the largest share to be the dominant caste of the firm. In case of ties, we assign the firm's caste randomly.

high and low bank penetration districts based on the level of per capita banking activity in the year 2005. Finally, to identify districts with Special Economic Zone (SEZ) status, we obtain the relevant information from the Indian government's SEZ website.

3.5 Summary statistics

Figure 1 shows the distribution of dominant castes of firms over time. Each sub-figure consists of the five hierarchical Hindu *varnas* and all the other religions grouped together as "Other". The size of each color block is proportional to the share of each group in the sample. We see that *Vaishya* is the dominant entrepreneurial caste in 2006 followed by the composite of other religions. Each block further consists of sub-blocks representing *jatis* belonging to the corresponding *varna* (each religion constituting "Other"), with their sizes proportional to their shares of firms within the block. The figure shows that within the *Vaishya varna*, the *Agarwal jati* is dominant.[14] Sub-figure (b) shows the analogous distribution for 2016. Comparing it to sub-figure (a), we see that there has been a marginal decrease in the shares of firms owned by the top two *varnas* in 2006. We further corroborate this observation in Figure A.1 which shows a gradual decrease in the concentration of firms as measured by the Herfindahl-Hirschman Index (HHI) of the dominant caste of firms over the sample period. Both figures show a small drop in the market power of the traditionally dominant castes among business owners. Next, in Figure 2, we show the distribution of castes of election winners at the beginning and end of our sample period. Unlike figure 1, apart from the group "Other", the *Brahmin* is the dominant *varna* followed by *Shudra*. We again notice a small shift in the share of each *varna* over our sample period. The proportion of elections won by *Brahmins* falls while that for *Shudras* increases. In our firm-level data, we have a total of 360 *jatis* represented, while in the elections data, we see a total of 215 *jatis*.

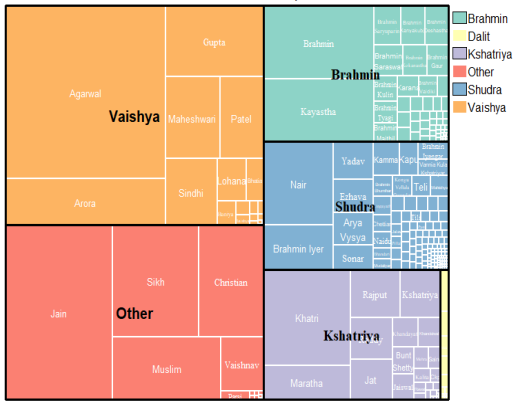
Summary statistics are reported in Table A.1. The firms in our data are small to mid-

[14]This is consistent with the historical anecdotes of *Agarwals* being primarily involved in business and entrepreneurship.

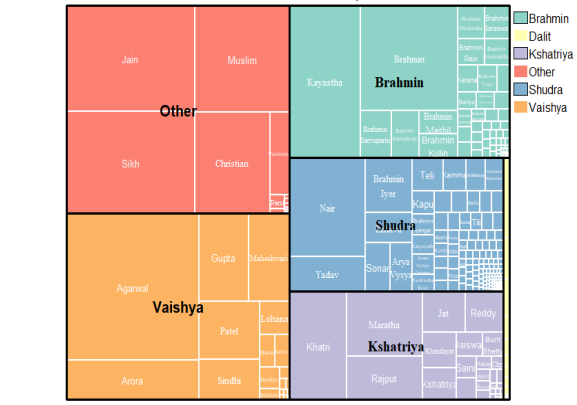
sized, with an average paid-up capital of Rs. 13.3 million and average annual revenue of nearly Rs. 50 million. These firms are started on average by two individuals. Looking at the religion and caste composition of firms' founding teams, we see that over 78% of firms are dominated by Hindus, and 68% are dominated by historically advantaged *varnas* (*Brahmins*, *Kshatriyas*, and *Vaishyas*). Turning our attention to election data, with 4,663 constituencies, we have over 11,000 constituency elections. Restricting our empirical analysis to close elections (defined as up to 4 pp winning margin), we retain 29% of these elections.

Figure 1: Caste composition of firms

(a)



(b)

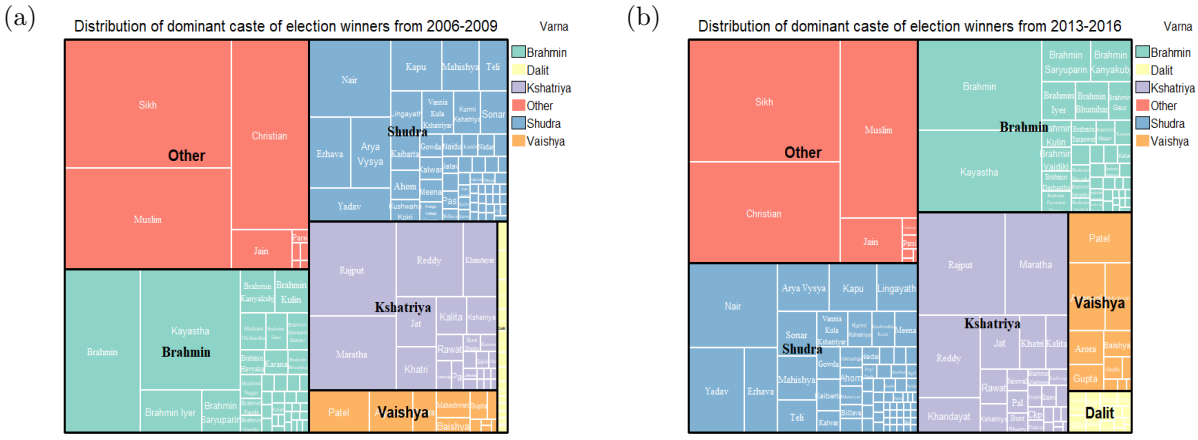


Notes: Figure 1a shows the distribution of dominant caste of firms in 2006 (first year of sample); Figure 1b shows the distribution of dominant caste of firms in 2016 (last year of sample). Dominant caste of a firm is defined as the caste to which the highest number of members on the firm's founding board belong to. In each figure, distinct colors represent different *varnas*. An additional color represents non-Hindu religions, termed as "Other". Within each color block, each sub-block represents the constituent *jati* (religion in case of "Other"). The sizes of blocks and sub-blocks are proportional to the shares of *varnas*, *jatis*, and religions in the sample of firms.

4 Empirical Strategy

Same-caste firm entry: The first goal of our empirical analysis is to estimate the effect of candidates of a given caste winning a state legislature election on the post-election entry of firms founded by entrepreneurs of the same caste. To isolate the causal effect, we have to account for regional, time, and social factors that might simultaneously influence electoral victories and firm formation by various castes. For example, a district may be dominated

Figure 2: Caste composition of election winners



Notes: Figure 2a shows the distribution of castes of election winners in 2009 (the first election year during our sample period); Figure 2b shows the distribution of castes of election winners in 2016. In each figure, distinct colors represent different *varnas*. An additional color represents non-Hindu religions, named as "Other". Within each color block, each sub-block represents the constituent *jati* (religion in case of "Other"). The sizes of blocks and sub-blocks are proportional to the shares of *varnas*, *jatis*, and religions in the sample of winning politicians.

both politically and economically by members of a particular caste which may drive election wins as well as new firm entry. Analogously, there may be reverse causality in that increasing economic dominance over the years, reflected in high firm entry by a caste group, may also lead to the group gaining greater political influence resulting in more electoral wins.

To account for these possibilities, we focus exclusively on closely fought elections to account for differences in the local political strength of the caste group. We also leverage the panel nature of our data to include district and year fixed effects. Thus, our main variable of interest is PC_{mcde} – the proportion of "close" elections won by caste c candidates in district d in election year e, where "close" is defined by vote margins of at most m. Our primary estimation equation takes the form:

$$Firms_{cdt} = \beta_1 PC_{mcde} + \beta_2 Post_t + \beta_3 \left(PC_{mcde} \times Post_t\right) + \beta_4 Firms_{cde-1} + \gamma_d + \gamma_t + \epsilon_{cdt} \quad (1)$$

In the above specification, $Firms_{cdt}$ represents the number of new firms formed by entrepreneurs of the winning caste c as a proportion of all new firms entering district d in year t of the post-election period; $Post_t$ is a binary variable that takes the value 1 for all the

calendar years after the event (election) year, until the next election year, and zero otherwise. γ_d and γ_t are the district and time fixed effects respectively. Measuring our outcome of interest as all new firms of *caste* c, *relative* to total firm entry in the district helps us account for the possibility that there may be greater firm entry overall. Our key estimand is β_3, which shows us the firm entry effects of a unit change in treatment intensity, i.e., how does a unit change in the fraction of close elections won by candidates of a given caste affect same-caste firm entry (relative to all entry) in the post-election period compared to the pre-election period. We estimate equation 1 for several electoral winning margins, ranging from 1pp through 10pp.

Firm formation by non-winning castes: How do electoral wins of politicians of caste c affect firm formation by entrepreneurs of other castes? To answer this question, we estimate a regression similar to equation 1 above but replace the dependent variable with the proportion of all new firms that are founded by entrepreneurs of all castes other than the winning caste. We also examine the entry effects for firms started by those belonging to the election runner-up candidate's caste.

Heterogeneity in firm formation across caste hierarchy and religions: Does the firm-entry effect of entrepreneurs' shared identity with election winners differ based on whether they belong to historically advantaged or disadvantaged *varnas*. Analogously, is the firm entry effect of shared religious identity with winning politicians different between Hindu and non-Hindu entrepreneurs? To address the first question, we estimate equation 1 separately for entrepreneur *jatis* belonging to "advantaged" *varnas* (*Brahmin*, *Kshatriya* and *Vaishya*), and "disadvangated" *varnas* (*Shudra* and *Dalit*). We again estimate the equation separately for Hindu entrepreneurs and those belonging to other religions.

Productivity: To examine how electoral wins by politicians affect the productivity of

entrants founded by same-caste entrepreneurs, we use the same strategy of using only close elections. Thus, our estimation equation is similar to equation 1, except that the dependent variable is replaced by a productivity measure:

$$log(TFP_{cdt}/\overline{TFP}_{dt}) = \beta_1 PC_{mcde} + \beta_2 Post_t + \beta_3 (PC_{mcde} \times Post_t) + \gamma_d + \gamma_t + \xi_{mcdt} \quad (2)$$

where TFP_{cdt} is the average TFP of all new caste c firms in district d in year t and $\overline{TFP}_{dt}$ is the average TFP of all new firms in district d in year t. Average TFP in both numerator and denominator is measured as the average of firm TFP levels over a rolling window of two years. To measure productivity, we calculate firms' revenue-based TFP (TFPR) using the standard approach in existing literature (Hsieh and Klenow, 2009; Ackerberg et al., 2015). Thus, we measure TFPR as $\log(TFPR) = \log(R) - \log(K) - \log(L) - \log(I)$, where R denotes revenue, K denotes capital costs, L denotes labor costs and I denotes cost of intermediate goods. Since we do not have separate data on the quantities and prices of firms' products, we cannot measure quantity-based TFP (TFPQ). Moreover, as Atkin et al. (2019) demonstrate, in the presence of differences in product quality and specifications across and within firms, TFPR is a more accurate measure of firm productivity.[15]

In addition to estimating TFPR effects of electoral wins for new same-caste firm entrants, we also present results for other balance sheet performance measures, including size (proxied by paid-up capital), revenues, and profits. Lastly, we employ an alternative approach to measuring TFPR, as proposed by Shenoy (2021), which accounts for the likely possibility of frictions in the local economic environments in which the firms operate.[16]

[15]Note that equation 2 does not include among its regressors the pre-election share of firms founded by caste c entrepreneurs.

[16]Shenoy (2021) argues that the traditional methods of calculating TFPR fail in the presence of market frictions such as credit constraints. They show that lagged values of capital and labor can inform us about firms' constraints, and then use these to calculate TFPR using a two-stage least squares method, such that resulting productivity estimates incorporate market distortions.

Mechanisms: Finally, we examine the channels through which winning politicians might help in-group entrepreneurs start new businesses. In particular, we investigate whether shared caste identity with winning politicians eases the process of starting a business for entrepreneurs through three critical pathways: reducing bureaucratic red tape or administrative costs, easing access to capital, and creating or deepening networks or opportunities.

We analyze whether winning politicians help spur firm formation by in-group entrepreneurs by reducing or expediting the administrative and regulatory hurdles that they have to cross. To examine this possibility, we compare firm entry effects of same-caste electoral wins between areas with high and low regulatory burdens. Districts with Special Economic Zone status are areas where the government significantly reduces the regulatory burden that new firms have to meet.[17] We estimate equation 1 separately for these districts and all others. Our intuition is that in SEZ districts, shared caste identity with winning politicians may have a relatively weaker influence on entrepreneurs' firm formation since the regulatory environment is already favorable and easy to operate in.

To assess whether winning politicians may enable in-group entrepreneurs to access capital, we separate the districts in our sample into two sub-samples of above- and below-national median credit limits per capita and loan volume outstanding per capita. For both subsamples separately, we re-estimate equation 1. The intuition behind this analysis is that entrepreneurs in regions with low bank penetrations may be more credit constrained than others. Shared caste identity with winning politicians may help ease credit constraints for more entrepreneurs in these regions than in others.

Finally, same-caste politicians might help deepen or create economic networks and oppor-

[17] As described by Hyun et al. (2018), SEZ activity in India began in 2000 and increased significantly with the SEZ Act of 2005. SEZ areas can be developed by both public and private enterprises. Firms in these areas enjoy substantial tax exemptions, with zero taxes in their first five years of operations. Through the "single window mechanism", they also have easier and expedited administrative procedures, especially those related to starting a new firm.

tunities for entrepreneurs, we again estimate equation 1 separately for districts with above- and below-national median economic activity levels as proxied by their nightlights intensity. The idea here is that entrepreneurs in regions with low economic activity levels may not have access to strong networks and opportunities that can provide information or connections to suppliers, customers, etc. In these circumstances, the prominence brought to a winning caste group may help strengthen these networks, or the politician may directly help in-group entrepreneurs find opportunities and connections.

Validation Tests: Our objective is to isolate the impact of shared cultural identity with local politicians on firm formation. To obtain causal estimates, we restrict ourselves to closely fought elections. Yet, to understand the overall validity of our results for the broader set of elections, we first document how predictive close elections are in predicting overall electoral power in the district. We can consider this to be a "first-stage" exercise.

We conduct a variety of tests in Figure A.2. In the first stage, we examine whether the fraction of close elections won by a *jati* in a district in an election year is a strong predictor of the fraction of total elections won by the *jati* in the district in the election year:

$$TE_{cde} = \beta_1 PC_{mcde} + \gamma_d + \gamma_t + \epsilon_{cde}, \tag{3}$$

where TE_{cde} is the fraction of total elections won by the caste c in district d in election year e. We present the results in Figure A.2a and observe that close election wins strongly predict total elections won by a caste. We also present the plot of the F-statistic from equation 3 over all the bandwidths in Figure A.2b. Each F-statistic is well beyond 10 and thus, suggesting the strength of predicting overall electoral power as a result of close elections.

Next, we turn to our second validity check i.e. whether close elections are as good as random. If close elections won by a caste are truly random, then, the fraction of close elections (winning margin $< 10pp$) won by a caste in a district in an election year should

not predict the fraction of non-close elections won by the same caste in the district in the same election year. Thus, our estimation equation is:

$$PNC_{cde} = \beta_1 PC_{mcde} + \gamma_d + \gamma_t + \epsilon_{mcdt}, \tag{4}$$

where PNC_{cde} is the fraction of non-close elections won by caste c in district d in election year e. We present our results in Figure A.2c. The coefficients are statistically insignificant overall winning margins suggesting no evidence of manipulation of the election victories by a caste in a district.

As a final check, we restrict our sample to districts where all the close elections are won by a single caste in an election year. This allows us to conduct tests in the same vein as the standard density manipulation regression discontinuity (RD) tests used widely in the literature. Following McCrary (2008), we present our result in Figure A.2d where we find no evidence of bunching of the running variable (i.e. winning margin) around the cutoff.[18] For this binary *jati* sample, we also plot the standard RD plots (Calonico et al., 2015) in Figure A.2e, and find a meaningful discontinuity in firm entry of the winning *jati* at the cutoff.

5 Results

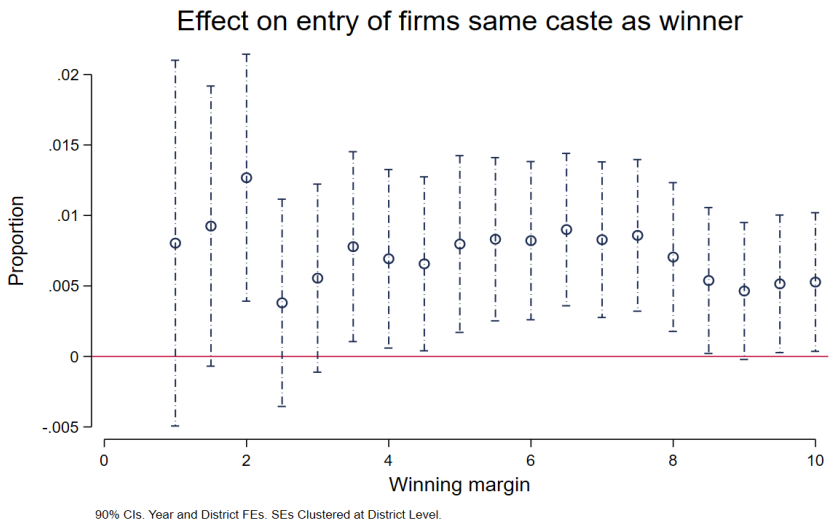
5.1 Electoral Wins and Firm Entry

Entry of Same-Caste Firms: We present our results for the main coefficient of interest (β_3) in equation 1 in Figure 3. The figure shows how a unit increase in the proportion of close-election wins of politicians of a given caste affects the average firm entry by same-caste entrepreneurs in the post-election period relative to total entry. The figure presents these effects while varying the winning margins of elections from 1 to 10 percentage points. Previous work on close elections in India focuses on winning margins of around 4 percentage points

[18] Margin percentage is defined as $\frac{\text{(Votes won by the winner)}-\text{(votes won by the runner-up)}}{\text{Total votes in the assembly constituency in the election year}}$.

who all examine close elections in India.[19] At this winning margin, we see that the average annual proportion of all new firms in a district formed by entrepreneurs of a given caste increases by 1 pp with a unit increase in the fraction of close elections won by politicians of the same caste in the same district. Since the baseline firm entry rate is about 6%, this constitutes a 16.67% annual increase in same-caste firm entry. Across the range of winning margins, we see similar magnitudes of higher firm entry.[20] The IV-2SLS results are presented in the Appendix Figure A.3.

Figure 3: Firm entry effect of political connection



Notes: This figure presents estimates for our main estimand in equation 1 and the corresponding 90% confidence intervals. The dependent variable is the proportion of all entering firms that are owned by entrepreneurs who share their caste/religion identity with winning politicians in close elections. The main estimand is the coefficient on post-election period*fraction of close elections in the district won by politicians of a given identity. Controls include the past share of firms of the same identity as the winning politician and district and year fixed effects. Standard errors are clustered at the district level. Results are presented for close elections defined over several winning margins ranging from 1 pp to 10 pps.

Figure A.4 shows similar positive same-caste firm entry effects when we classify firm

[19] Asher and Novosad (2017) (3-20 percentage points), Brown et al. (2021) (5 percentage points), Prakash et al. (2019) (6.16-7.79 percentage points), Bhalotra et al. (2018) (16-21 percentage points), Lehne et al. (2018) (3-6.2 percentage points) and Clots-Figueras (2012) (6-9 percentage points)

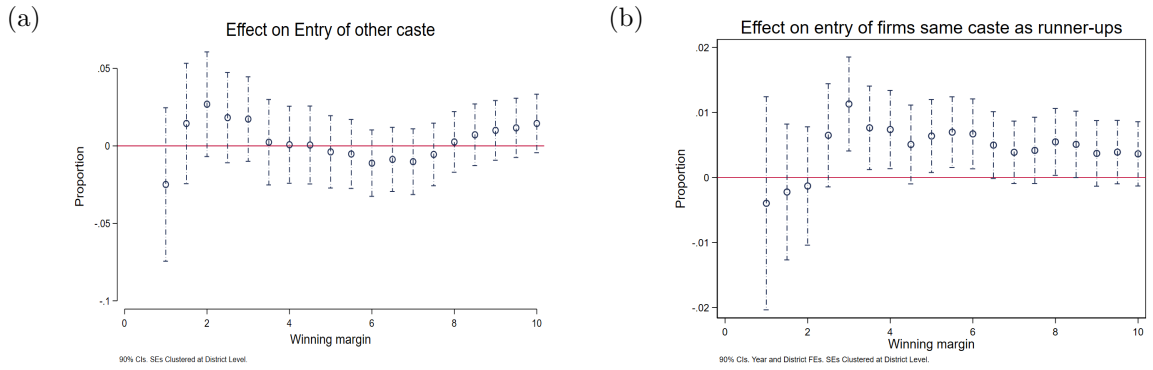
[20] We additionally explored the non-linear effects of the winning margin on entry and we found that the entry rate declines with higher winning margins suggesting diminishing marginal returns.

founders' caste based on the second dominant caste among the founding directors of the firm. These results demonstrate that shared caste identity with winning local politicians helps entrepreneurs form new businesses. This may be because politicians show in-group bias towards entrepreneurs of the same caste as their own. Politicians might exercise this favoritism through various channels that we explore in Section 5.3.

Entry of Different-Caste Firms: In Figure 4a we look at firm formation by entrepreneurs of all castes other than the election-winning caste. Across a wide range of winning margins, we see no reduction in the firm entry of other castes. Focusing specifically on immediate political rivals, in Figure 4b we find no detectable reduction in the entry of firms started by those with shared caste identity with the runner-up politicians across all winning margins.

Together, these results show that increased entry of own-caste firms does not crowd out the entry of other caste firms. Thus, politicians may display favoritism towards those with whom they share their caste identity but perhaps may not simultaneously discriminate against others or divert resources away from them.

Figure 4: Firm entry effect of electoral wins for other and runner-up politician's identities



Notes: Figure 4a shows the effect of a unit increase in fraction of close election wins of a given caste on the entry of firms of all other castes. Controls include the past share of firms of the same identity as the winning politician and district and year fixed effects. Figure 4b shows the effect of a unit increase in fraction of close election wins of a given caste on the entry of firms of the same caste as the runner-up candidates. We control for the past share of runner-up caste firms in the district and district and year fixed effects. Standard errors are clustered at the district level. Results are presented for close elections defined over several winning margins ranging from 1 pp to 10 pps.

5.2 Firm Productivity

Whether the new entrants of a particular caste are more or less productive than others determines the impact of political favoritism on aggregate productivity in the local economy. Without differential entry barriers, the highest productivity firms would have already entered. In such a world, favoritism would lead to the entry of less productive firms causing lower average productivity overall. However, in the presence of differential barriers to entry, some high-productivity firms may not have entered. Politicians may aid the entry of these high-performing firms, thereby raising overall productivity. As such, the effect on the average productivity of all firms founded by entrepreneurs with shared identities with the winning politician is theoretically indeterminate, making this investigation an empirical exercise.

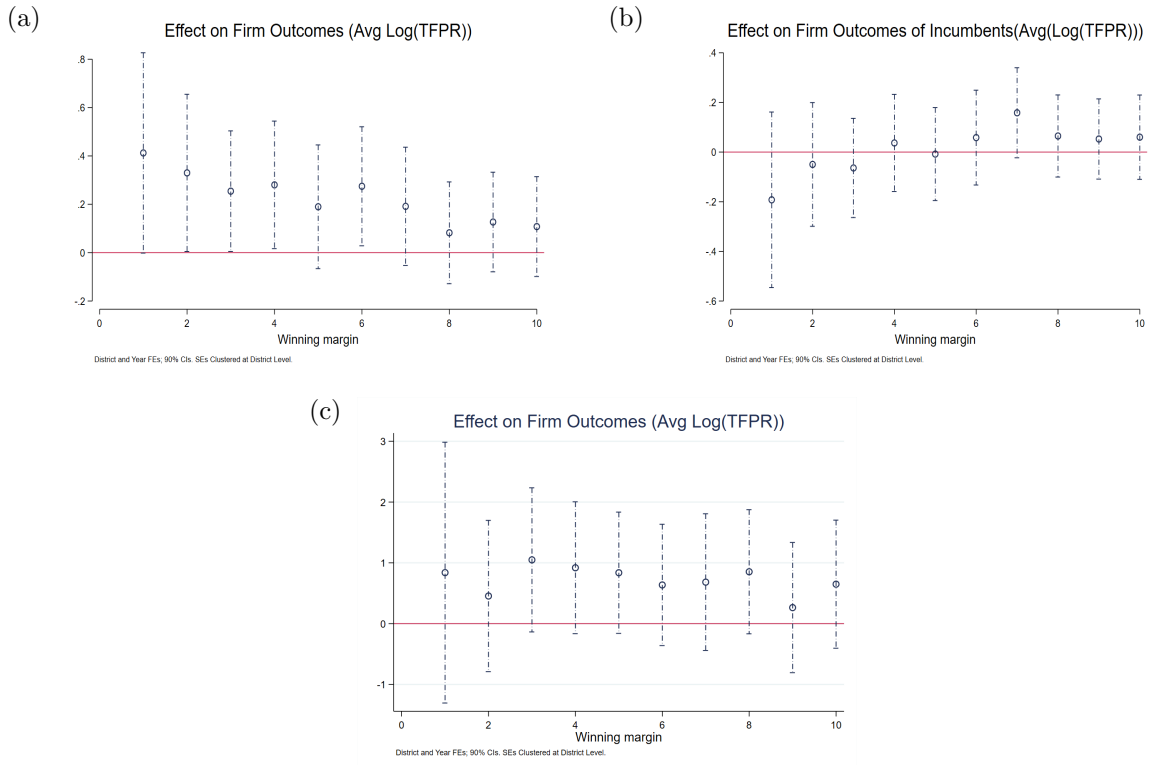
We examine the average productivity of same-caste firm entrants after an electoral victory of a given caste's candidate relative to that of all entrants. As described in Section 4, we measure firm productivity using the standard measure for TFPR, balance sheet measures of paid-up capital, profits, and revenue (in logs), and other TFPR measures that account for frictions (Shenoy, 2021). Results are presented in Figure 5. Figure 5a shows that for winning margins of 1 through 5 pp (including our preferred winning margin of 4 pp), the TFPR of same-caste firm entrants is higher relative to all entrants. Similar results hold for profits and revenues (Figure 6a and 6b).

Looking at the TFPR of incumbent firms in Figure 5b, we observe that the productivity of same-caste incumbent firms is not statistically different from that of other incumbent firms. This result, combined with our finding that the new political connections do enable more productive firms to enter, implies that political connections engender an average firm productivity increase in the local economy.

As explained in the introduction, we view our finding that political connections have positive effects for new firms *and the local economy* through enabling entry of high productivity firms as remarkable and in contrast to findings in previous research. It indicates that the entrants benefiting from their political connections are positively selected, thereby

alleviating, to some extent, the resource misallocation caused by caste-specific frictions that dampen entrepreneurship.

Figure 5: Firm productivity effects



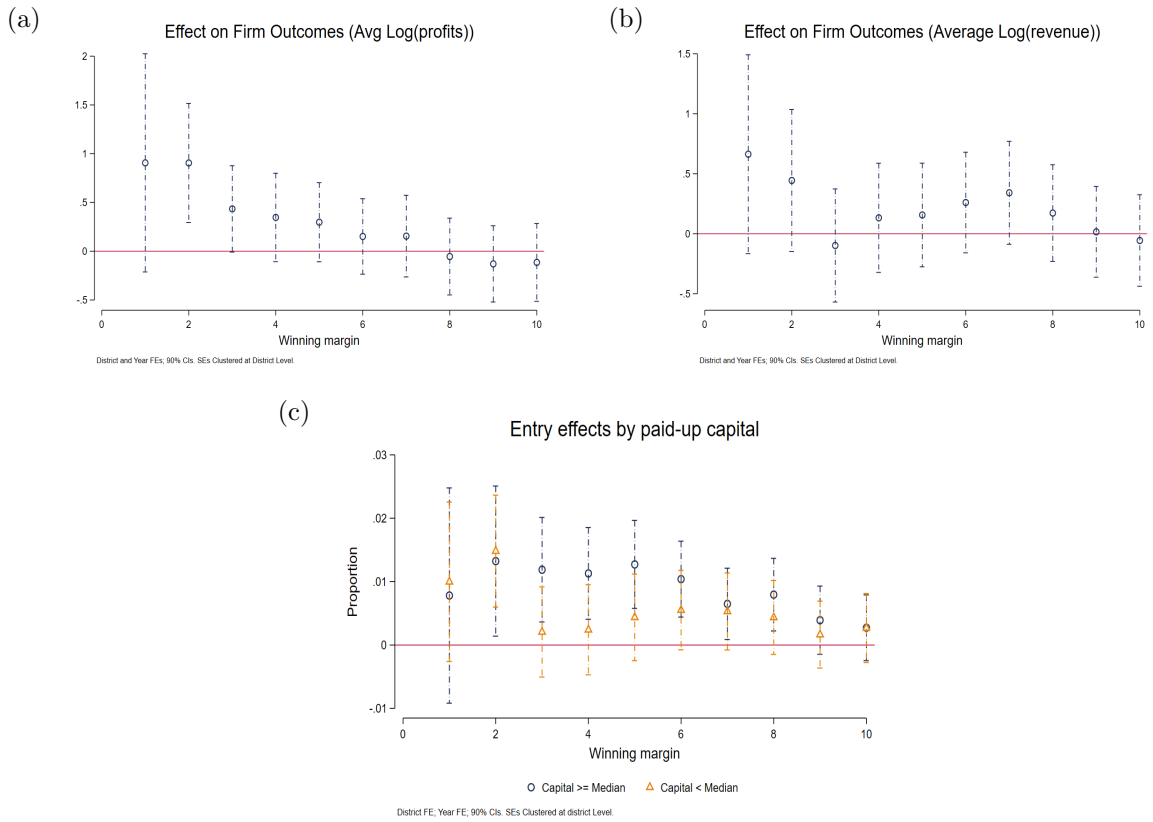
Notes: This figure presents results for our main estimand in equation 2 and the corresponding 90% confidence intervals. Figure 5a plots the effect of a unit increase in the fraction of close elections won by politicians of a given caste on the average log(TFPR) of the same-caste firm entrants relative to all the other castes. Figure 5b shows the effect of the same variable of interest on the relative average log(TFPR) of incumbent firms. Figure 5c shows analogous results for an alternative log(TFPR) of entrants that accounts for market frictions. Controls include district and year fixed effects. Standard errors are clustered at the district level. Results are presented for close elections defined over several winning margins ranging from 1 pp to 10 pps.

5.3 Mechanisms

Our results thus far demonstrate that shared caste identity with winning politicians spurs business formation by entrepreneurs. How do politicians help in-group entrepreneurs? In this section, we explore three potential pathways – reducing bureaucratic red tape, easing capital access, and creating/deepening networks or opportunities.

As explained in Section 4, SEZs have significantly lower administrative burdens and fiscal costs for firms than other areas. This can make starting and operating businesses

Figure 6: Firm performance effects



Notes: We use our same main specification equation 2 replacing the outcomes with various firm productivity measures. Subfigure 6a plots the effect on the log(profits) of the newly entered firms with an additional win by a politician sharing the same caste over a range of winning margin. Subfigure 6b plots the effect on the log(revenue) of the newly entered firms with an additional win by a politician sharing the same caste over a range of winning margin. In subfigure 6c, we split the sample by the median paid-up capital of all the firms. We see higher entry for larger firms with paid-up capital at entry higher than the median firm in the sample. Controls include the past share of firms of the same identity as the winning politician and district and year fixed effects. Standard errors are clustered at the district level. Results are presented for close elections defined over several winning margins ranging from 1 pp to 10 pps.

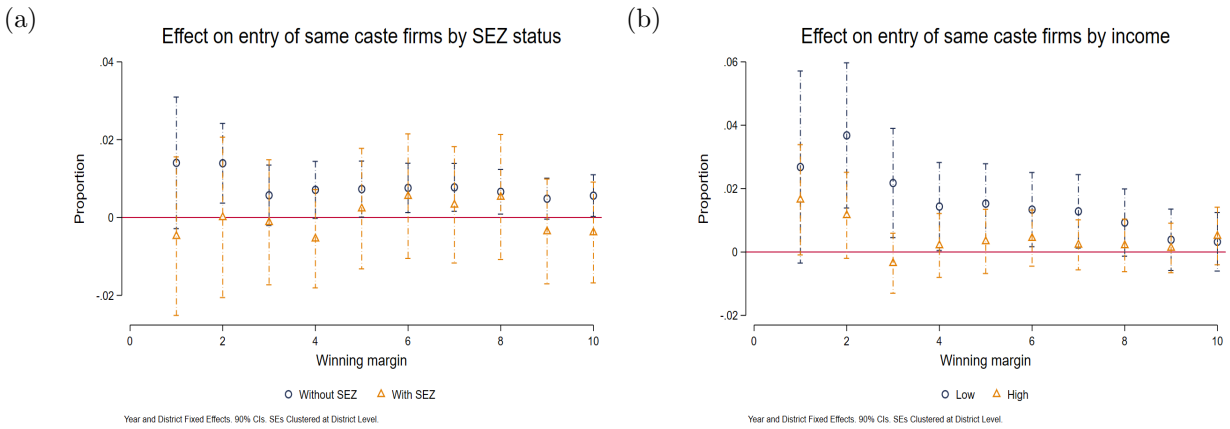
much easier for entrepreneurs, reducing the need for them to rely on their identity-based political connections. Therefore, if there are lower firm entry effects of electoral wins in SEZ districts than in others, then they would indirectly indicate that when and where regulatory costs are high for entrepreneurs, same-caste politicians can help engender firm formation by reducing these costs. Figure 7a presents a comparison of our estimates for entry effects of electoral wins for SEZs and other districts. We observe that firm formation effects of shared identity with winning politicians is systematically lower in SEZ districts than in others for most winning margins. For winning margins of 2, 3, and 5 percentage points, we observe

barely any increase in same-caste firm entry in SEZ areas. This result provides evidence in support of the potential channel that politicians aid firm entry by reducing regulatory burdens for entrepreneurs.

Additionally, we examine whether election winners help create or widen in-group entrepreneurs' economic opportunities or networks. To this end, we split our sample based on the national median intensity of nightlights across districts at the beginning of the sample period and re-estimate equation 1 for the two sub-samples. Since nightlight intensity is highly positively correlated with income and economic activity, we expect that it will also be closely associated with economic opportunities and networks. Thus, we take districts with above (below) median national nightlight intensity as reflecting areas with high (low) levels of economic opportunities. Figure 7b presents the results for our main estimand when estimating the regression for winning margins ranging from 1 through 10 pps. We find a higher entry of firms in districts with below-median nightlight intensity, while there is a nearly zero firm entry effect in others. These results indicate that in areas where entrepreneurs do not have deep networks or easily available opportunities, they rely more on their newly-formed political connections to support their firm formation efforts.

Finally, in districts with lower access to capital (as proxied by lower bank penetration) entrepreneurs might try to ease their credit constraints by relying on their caste-based networks for finance. As explained in Section 4, we split the entire sample of districts based on the national medians of credit limits and outstanding loan volumes per capita. We present our findings in Figure 8. For both measures of district-level access to credit, we observe that in low credit access districts (i.e., those below the national medians of credit limit or outstanding loan volume per capita), firm formation effects for entrepreneurs who share identity with winning politicians are larger than in high credit access districts. These effect differences are present for most winning margins, although they are not always large in magnitude or statistically significant. We view these results as providing some evidence, albeit not very strong, that winning politicians might aid in-group entrepreneurs by positively influencing

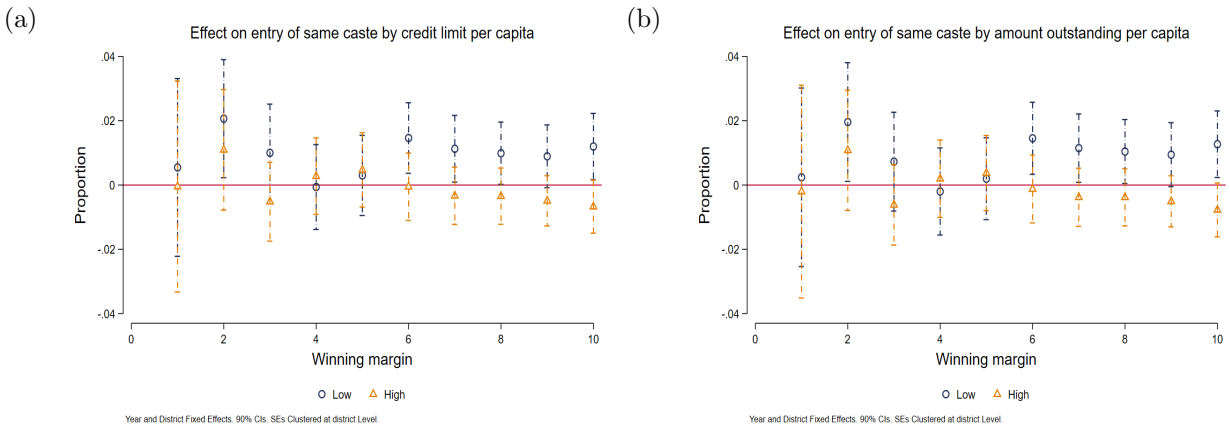
Figure 7: Effect on entry of same caste firms by SEZ status and district's income level



Notes: In subfigure 7a, using the official list of notified Special Economic Zones (SEZs), we split our sample between districts with and without SEZ status. For each sample, the figure presents estimates for our main estimand, which shows the same-caste firm entry effects of a unit increase in the fraction of close elections in a district won by candidates of a given caste. Controls include the past share of firms of the same identity as the winning politician and district and year fixed effects. Standard errors are clustered at the district level. Results are presented for close elections defined over several winning margins ranging from 1 pp to 10 pps. In subfigure 7b, we split our sample into districts with high and low incomes, as proxied by above- and below-national median levels of nightlights intensity, respectively. For both sub-samples, the figure presents estimates for our main estimand that shows the same-caste firm entry effect of a unit increase in the fraction of close elections in a district won by candidates of a given caste. Controls include the past share of firms of the same identity as the winning politicians and district and year fixed effects. Standard errors are clustered at the district level. Results are presented for close elections defined over several winning margins ranging from 1 pp to 10 pps.

their credit access.

Figure 8: Effect on entry of same caste firms by district's access to capital



Notes: We split our sample into districts with low vs high bank penetration - i.e. districts with above- and below- national-median level of credit limit per capita (Figure 8a) and outstanding loan volume per capita (Figure 8b). For both sets of sub-samples, the figures present estimates for our main estimand that shows the same-caste firm entry effects of a unit increase in fraction of close elections in a district won by politicians of a given caste. Controls include the past share of firms of the same identity as the winning politician and district and year fixed effects. Standard errors are clustered at the district level. Results are presented for close elections defined over several winning margins ranging from 1 pp to 10 pps.

5.4 Entry effects of political connections by religion and caste hierarchy

Does the favoritism displayed by politicians engender firm entry by in-group entrepreneurs to varying extents based on their social "dominance" or historical privilege? If entrepreneurs belonging to disadvantaged castes and religions face higher entry barriers, they may benefit more from their identity-based connections with winning politicians.

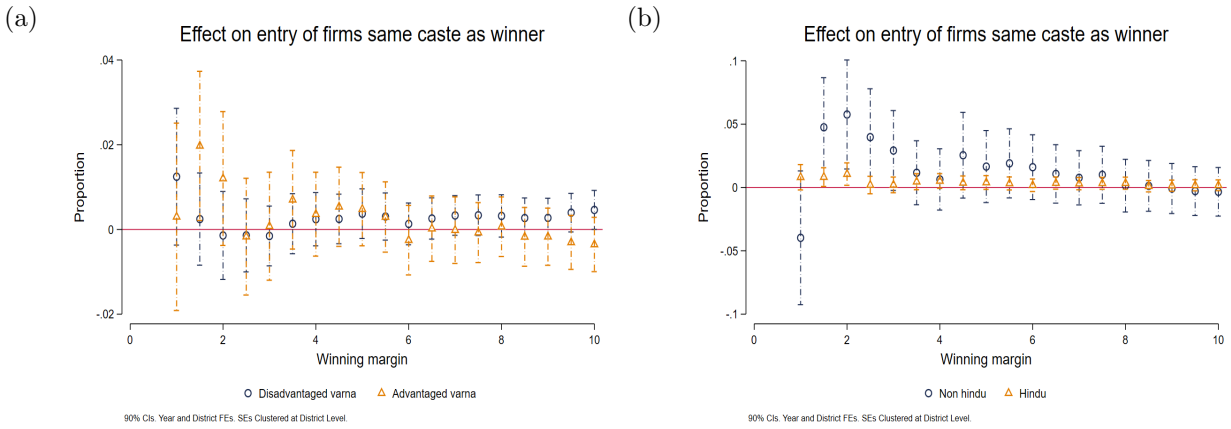
To investigate this possibility, we conduct two lines of inquiry. In the first, we separately estimate equation 1 for two sub-samples: one that includes *jatis* belonging to the historically advantaged "upper" castes (i.e., the three highest *varnas* in the hierarchy (*Brahmins*, *Kshatriyas*, *Vaishyas*) and the other that includes *jatis* belonging to the historically disadvantaged "lower" castes (i.e., the two lower *varnas* in the hierarchy – *Shudras* and (de facto) *Dalits*). Results are presented for several electoral winning margins (in increments of 0.5 pp) in Figure 9a. We observe that for winning margins of 2.5 pp and higher, there is almost no difference in the post-election annual firm entry between historically advantaged and disadvantaged groups. Note that in the latter category, our data mostly consist of *Shudras* and hardly any *Dalits*. The latter group is characterized by particularly poor socio-economic outcomes and has suffered considerable discrimination in Indian society. If *Dalit* entrepreneurs do see larger gains from political connections with *Dalit* winning politicians, we are unable to detect that in our data.[21] In contrast, *Shudra* owned firms appear to constitute a substantial fraction of our sample (Figure 1) and are also dominant in several districts (Figure A.5). In our sample of close elections, *Shudras* also win elections in a large fraction of districts all over the country (Figure A.7). Moreover, they come from a wide range of *jatis* (Figure A.8d). In other words, despite being a "lower" caste group, *Shudras* do own a large number of firms across several regions in the country and similarly hold political power across the

[21] Note, however, that *Dalits* constitute a non-negligible proportion of close election winners (Figure A.7). Further, these *Dalit* elected leaders come from several *jatis* (Figure A.8e).

country.

In the second line of inquiry, we assess whether the firm entry effects of political connections differ between Hindu and non-Hindu entrepreneurs. Hindus constitute about 84% of India's population (according to the 2010 Census), and other religions (Muslims, Sikhs, Jains, Christians, Parsis, and Buddhists) account for the remaining 16%. Because of their sheer numbers, Hindus are likely a dominant group among entrepreneurs and, therefore, less reliant than others on political connections since they may already have deep networks, access to credit and opportunities, and effectively lower barriers to entry. Results are presented for a range of electoral winning margins in Figure 9b. We see that the entry effects of political connections for non-Hindu entrepreneurs are indeed higher than those for Hindu entrepreneurs.

Figure 9: Varna and religion heterogeneity in firm entry effects of political connections



Notes: We split our sample by *varna* hierarchy, classifying Brahmins, Kshatriyas and Vaishyas as advantaged and Shudras and Dalits as disadvantaged (Figure 9a). Similarly, we split our sample into Hindus and all other religions. For both sets of sub-samples we presents estimates for our main estimand that shows the same-caste firm entry effect of a unit increase in the fraction of close elections in a district won by candidates of a given caste. Controls include the past share of firms of the same identity as the winning politician and district and year fixed effects. Standard errors are clustered at the district level. Results are presented for close elections defined over several winning margins ranging from 1 pp to 10 pps.

6 Conclusion

While much work stresses how political favoritism and in-group preferential treatment are detrimental to the economy, we argue that in contexts where significant frictions exist, such favoritism may correct certain inefficiencies and bring us closer to a second-best. Our evidence demonstrates that shared identity with winning politicians helps entrepreneurs form businesses. Importantly, the new entrants do not entail resource misallocation but rather alleviate it to some extent. We infer this based on our finding that the politically connected new entrant firms are more productive relative to previous entrants. Further, the beneficial in-group firm entry effects do not come at a cost to other caste groups who do not witness adverse firm formation effects. We also find evidence suggesting that politicians might be aiding firm entry by effectively reducing regulatory red tape, easing access to credit, and helping tap into networks and opportunities. The implications of our study do not necessarily imply we should encourage more political favoritism, but rather that we should universally reduce barriers to entrepreneurship, especially for those that are not politically connected.

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Appendix

Figure A.1: The caste concentration of firms is falling over time

Notes: The figure above shows the Herfindahl–Hirschman Index (HHI) for all dominant castes of firms that entered during the sample period 2006 – 16. The small decline in caste HHI of entering firms shows that market power of castes as measured in their shares of firm ownership has fell slightly in this time period.

Table A.1: Summary Statistics

Firms data	Sample		
# unique firms	621,517		
# founding directors after name-caste mapping	2.62		
# different caste among founding directors	1.73		
Paid up capital at entry (in 1000 INR)[a]	8.5		
Average revenue (in 100K INR)[b]	1.27		
% of firms in agriculture, forestry and fishing	2.80%		
% of firms in mining, utilities and construction	2.76%		
% of firms in manufacturing	19.96%		
% of firms in services[c]	73.77%		
% firms with dominant religion as Hindu	78.65%		
% firms with dominant *varna* advantaged[d]	68.36%		
Elections data	Raw data	Margin ≤ 10	Close elections[e]
Average number of years between elections	4.97	5.70	5.72
# constituencies	4,663	3543	2106
# districts	586	586	563
Total number of constituency elections (constituency-year pairs)	11,017	5,834	2,613
Average vote % won by the winner	45.2%	40.8%	39.0%
% winners and runners-up belonging to different castes/*jati*	-[f]	95%	
% elections won by Hindus	79.74%	79.13%	77.87%
% elections won by advantaged *varna*	45.83%	45.61%	45.18%

[a]Deflated by CPI for industrial workers for comparison across years (Base = 2001)

[b]Revenue deflated by CPI for industrial workers((Base = 2001) and also based on firms' balance sheet data which reports financials for a sample of firms every year

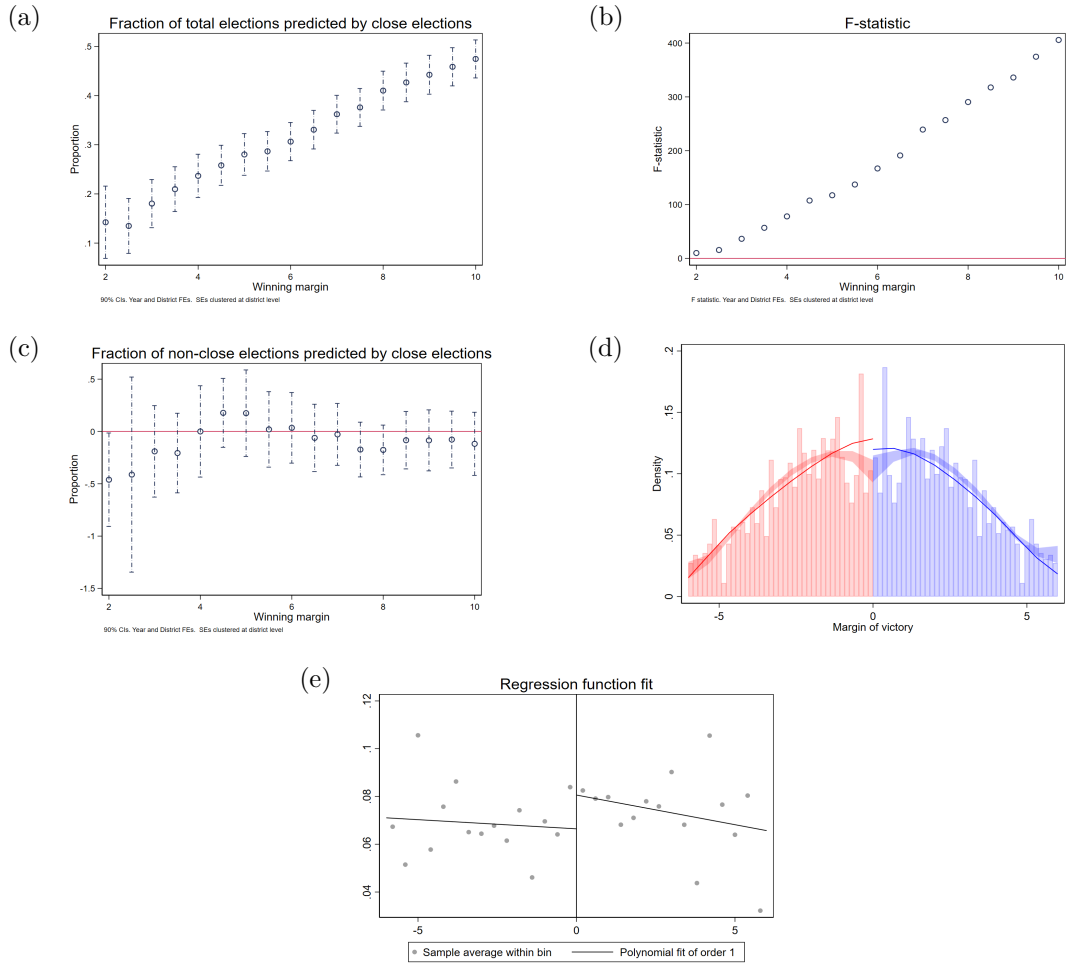
[c]Includes trade, transport and accommodation, information and communication, finance, insurance and real estate, professional, technical and admin services, education and health, arts, recreation and others

[d]*Varna* is defined only for Hinduism

[e]Winning margin ≤ 4pp

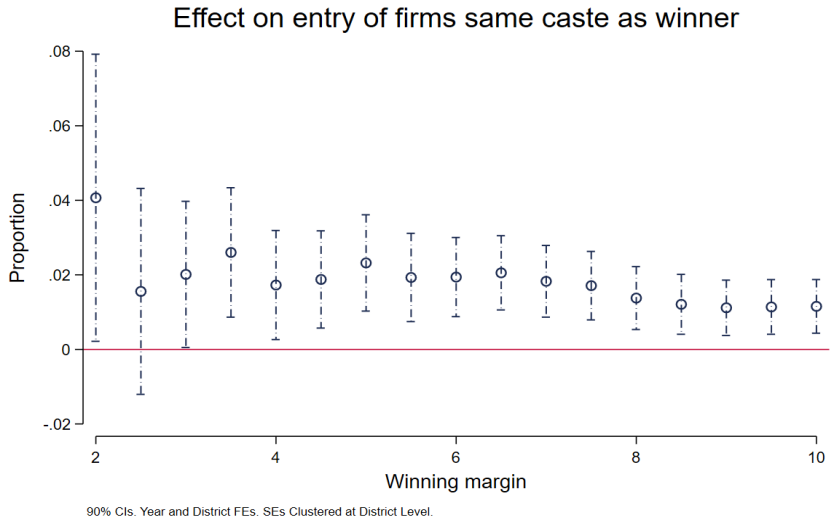
[f]We have restricted our name-matching exercise of winners and runner-up to *jatis* only for winning margin less than or equal to 10

Figure A.2: Relationship With All Victories and Validation Tests



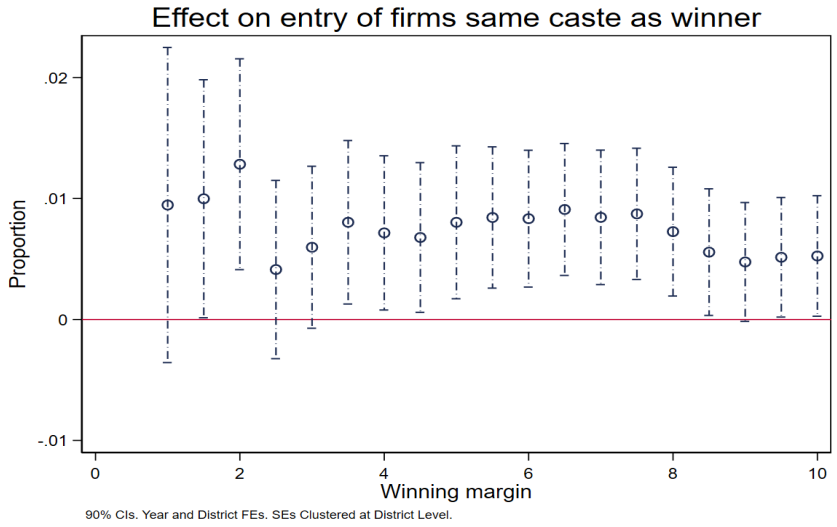
Notes: In subfigure A.2a we plot the coefficients from the regression of the fraction of total elections won by a caste in the district on the fraction of close elections won by the same caste in the district, controlling for district and time fixed effects, to check the strength of their relationship. We cluster the SEs at the district level. We find that the fraction of close elections won by a caste in a district strongly predicts the fraction of total elections won by the caste in the district. Subfigure A.2b plots the F-statistic from the same regression over all the bandwidths. Subfigure A.2c plot the coefficients from the regression of the fraction of the non-close elections won by a caste in the district on the fraction of close elections won by the same caste in the district, controlling for district and time fixed effects. SEs are clustered at the district level. Subfigure A.2d shows the Mc Crary test for validating no manipulation of the density for those districts where the close elections were won by a single caste in the election year. We find no evidence of manipulation of the running variable. Subfigure A.2e shows the regression discontinuity plot((Calonico et al., 2015)) of the districts with one caste winning the close elections. There is no evidence of the pre-trend and we notice a slight declining trend in the post period maybe due to the restricted sample size.

Figure A.3: Firm entry effect of political connection - IV-2SLS regression



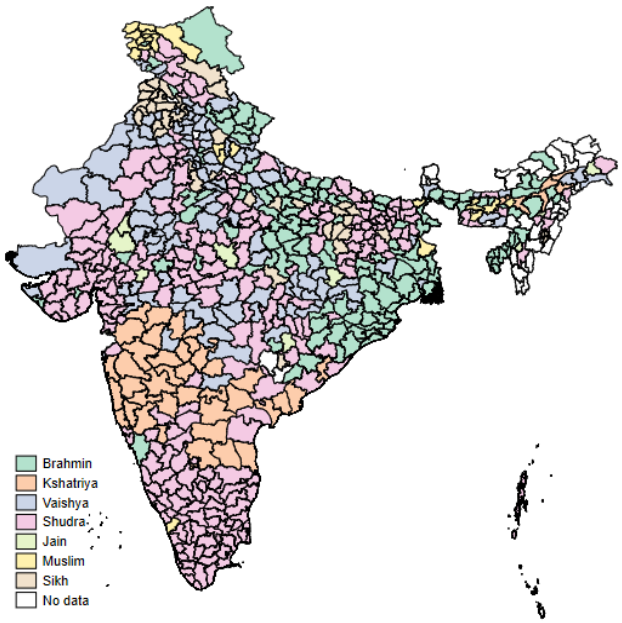
Notes: This figure presents estimates for our main estimand in the IV-2SLS regression framework and the corresponding 90% confidence intervals. The dependent variable is the proportion of all entering firms that are owned by entrepreneurs who share their caste/religion identity with winning politicians in close elections. We used the fraction of close elections won by a jati in a district as an instrument for the fraction of total elections won by the same jati in the district. Controls include the past share of firms of the same identity as the winning politician and district and year fixed effects. Standard errors are clustered at the district level. Results are presented for close elections defined over several winning margins ranging from 2 pp to 10 pps. We omitted bandwidths < 2 pp due to large SEs.

Figure A.4: Effect of electoral wins on entry of second dominant caste of firms



Notes: In this figure, we use the second dominant caste of the firms instead of the first dominant caste of the firms as a robustness check. We use our main regression specification 1 wherein we examine the effect of winning an additional close election on the entry of the firm sharing same caste with the politician in a district. We control for the past share of own-caste firms in the district and also add district and year fixed effects. We cluster the SEs at the district level

Figure A.5: Distribution of dominant varna of entrepreneurs at the district level

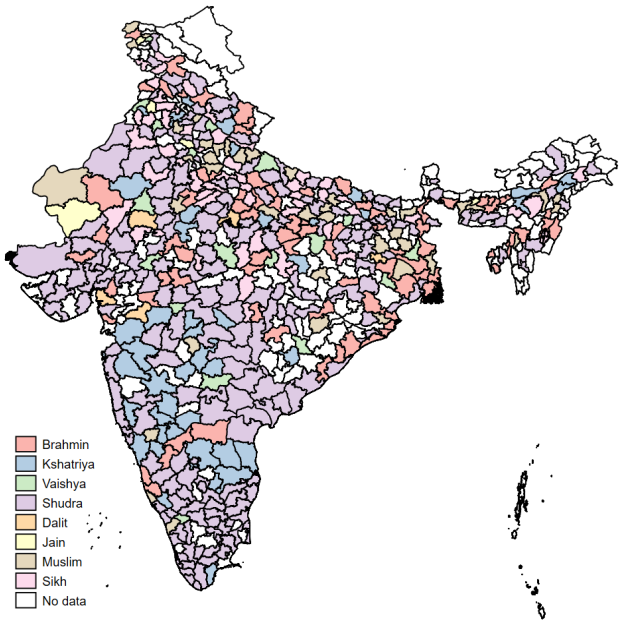


Notes: In the figure above, we plot the dominant *varna* of the entrepreneurs over all the years for every district in the country. In case of tie between the dominant *varna*, we kept one of them randomly. Districts with "No Data" either do not have an entrepreneur in the entire sample period or we could not identify the *jati* or *varna* of the directors of the firm. The figure also shows that our sample is not regionally concentrated but rather spread over the entire country.

Figure A.6: Dominant jati composition of firms by their dominant varnas

Notes: We divide our sample of firms into four groups according to the dominant *varna* of the firms' boards. Each sub-figure presents the dominant *jati* composition of firms falling in each group. Very few firms are dominated by the de-facto fifth *varna*, *dalits*.

Figure A.7: Distribution of the varna of close election winners at the district level



Notes: In the figure above, we plot the *varna* of the election winners for a close margin(≤ 4) over all the years for every district in the country. Districts with "No Data" either do not see a close election(margin ≤ 4) in the entire sample period or we could not identify the *jati* or *varna* of the electoral candidates. The figure also shows that our sample is not regionally concentrated but rather spread out over the entire country.

Figure A.8: Jati composition of close election winners by their varnas

Notes: We divide our sample of close election winners into five groups according to the *varna* of the close election winners (including the de facto fifth *varna*, *dalit*). Each sub-figure presents the *jati* composition of close election winners falling in each group.

Theoretical Framework (Proofs and Derivations)

In this section we present proofs of results stated in section 2 of the main paper.

Result 2.1 (Absolute and Fraction of New Entrants)

(i) The level and proportion of new firms of caste c and group g decreases (increases) with an increase (decrease) in firm entry cost, η_{cg}.

Let $\bar{N}_{cg}$ be the number of potential firms of caste c and group g in the population. We assume $\bar{N}_{cg}$ to be exogenous. Let N_{cg} be the number of entrants of caste c and group g, whose productivity draw is larger than the threshold, $A(\eta_{cg})$ and enter the formal sector. Particularly,

$$N_{cg} = \left(\int_{A(\eta_{cg})}^{M} f(A) dA \right) \bar{N}_{cg} \tag{5}$$

Similarly, let N_c be the number of entrants of caste c that enter the formal sector.

$$N_c = \sum_g N_{cg} = \sum_g \left(\left(\int_{A(\eta_{cg})}^{M} f(A) dA \right) \bar{N}_{cg} \right)$$

Let N be the total number of firms that enter, i.e. $N = \sum_c N_c$.

First, we evaluate the change in the absolute number of firms of caste c and group g that enter, N_{cg} (as defined in 5) with respect to changes in the fixed entry costs for firms of caste c and group g. Using Leibniz's Rule[22],

$$\frac{\partial N_{cg}}{\partial \eta_{cg}} = (-) \frac{f(A(\eta_{cg})) \bar{N}_{cg}}{\bar{K}} < 0 \tag{6}$$

[22] Recall $A(\eta_{cg}) \equiv \frac{\eta_{cg} + r\bar{K}}{\bar{K}}$ and therefore, $\frac{\partial A(\eta_{cg})}{\partial \eta_{cg}} = \frac{1}{\bar{K}}$

Let $\theta_{cg} = \frac{N_{cg}}{N_c} = \frac{N_{cg}}{\sum_g N_{cg}}$ be share of entrants of caste c that belong to group g. We find that the change in θ_{cg} with respect to the change in the fixed entry costs for firms of caste c and group g, is negative from the following expression.

$$\begin{aligned}
\frac{\partial \theta_{cg}}{\partial \eta_{cg}} &= \frac{\partial N_{cg}/N_c}{\partial \eta_{cg}} \\
&= \frac{(N_c \frac{\partial N_{cg}}{\partial \eta_{cg}} - N_{cg} \frac{\partial N_c}{\partial \eta_{cg}})}{N_c^2} \\
&= \frac{(N_c - N_{cg})}{N_c^2} \frac{\partial N_{cg}}{\partial \eta_{cg}} \quad \left(\because \frac{\partial N_c}{\partial \eta_{cg}} = c \partial N_{cg} \partial \eta_{cg} \right) \\
&= (-) \frac{(1-\theta_{cg})}{N_c} \frac{f(A(\eta_{cg})) \bar{N_{cg}}}{\bar{K}} < 0 \qquad (7)
\end{aligned}$$

Next, we evaluate the change in the share of total entrants that belong to caste c with respect to the change in the fixed entry costs for firms of caste c and group g:

$$\begin{aligned}
\frac{\partial \theta_c}{\partial \eta_{cg}} &= \frac{\partial N_{cg}/N_c}{\partial \eta_{cg}} \\
&= \frac{1}{N^2} \left[\left(\frac{\partial N_c}{\partial \eta_{cg}} N - N_c \frac{\partial N}{\partial \eta_{cg}} \right) \right]
\end{aligned}$$

Note that $\frac{\partial N}{\partial \eta_{cg}} = \frac{\partial N_c}{\partial \eta_{cg}} = \frac{\partial N_{cg}}{\partial \eta_{cg}}$ as the entry cost, η_{cg} does not affect the entry of the other caste or the other subgroups within the same caste, i.e. $\frac{\partial N_{c\prime}}{\partial \eta_{cg}} = 0 \quad \& \quad \frac{\partial N_{cg\prime}}{\partial \eta_{cg}} = 0.$

Therefore,

$$\frac{\partial \theta_c}{\partial \eta_{cg}} = (-) \frac{(1-\theta_c)}{N} \frac{\bar{N_{cg}} f(A(\eta_{cg})}{\bar{K}} < 0 \qquad (8)$$

(ii) The proportion of new firms of caste c increases (decreases) with an increase (decrease) in the entry cost of firms of another caste.

The change in share of entrants of caste c that belong to group $g\prime$, $\theta_{cg\prime}$ with respect to

change in fixed entry costs for firms of caste c and group g:

$$\begin{aligned}\frac{\partial \theta_{cg\prime}}{\partial \eta_{cg}} = \frac{\partial N_{cg\prime}/N_c}{\partial \eta_{cg}} &= \frac{(N_c \frac{\partial N_{cg\prime}}{\partial \eta_{cg}} - N_{cg\prime}\frac{\partial N_c}{\partial \eta_{cg}})}{N_c^2} \\ &= \frac{(-N_{cg\prime})}{N_c^2}\frac{\partial N_{cg}}{\partial \eta_{cg}} \\ &= \frac{\theta_{cg\prime}}{N_c}\frac{f(A(\eta_{cg}))\bar{N_{cg}}}{\bar{K}} > 0 \end{aligned} \tag{9}$$

We also evaluate the change in the share of firms of caste $c\prime$ that enter the market with respect to the change in the fixed entry costs for firms of caste c and group g

$$\begin{aligned}\frac{\partial \theta_{c\prime}}{\partial \eta_{cg}} &= \frac{\partial N_{c\prime}/N}{\partial \eta_{cg}} \\ &= (-)\frac{N_{c\prime}}{N^2}\frac{\partial N}{\partial \eta_{cg}} \\ &= (-)\frac{\theta_{c\prime}}{N}\frac{\partial N_{cg}}{\partial \eta_{cg}} \\ &= \frac{\theta_{c\prime}}{N}\frac{\bar{N_{cg}} f(A(\eta_{cg}))}{\bar{K}} \quad > 0 \end{aligned} \tag{10}$$

Result 2.2 Total Factor Productivity

(i) The average TFP of all entering firms of the caste, c and group, g, increases with an increase in entry cost, η_{cg}.

Proof. $\bar{TFP}_{cg} = \int_{A(\eta_{cg})}^{M} \frac{A f(A) dA}{1-F(A(\eta_{cg}))}$

Using Leibniz's rule:

$$\begin{aligned}\frac{\partial T\bar{F}P_{cg}}{\partial \eta_{cg}} &= \frac{f(A(\eta_{cg}))}{\bar{K}[1-F(A(\eta_{cg}))]}\left[\frac{\int_{A(\eta_{cg})}^{M} Af(A)d(A)}{1-F(A(\eta_{jc}))} - A(\eta_{cg})\right] \\ &= \frac{f(A(\eta_{cg}))}{\bar{K}[1-F(A(\eta_{cg}))]}[T\bar{F}P_{cg} - A(\eta_{cg})]\end{aligned}$$

By the definition of $T\bar{F}P_{cg}$, $T\bar{F}P_{cg} > A(\eta_{cg})$. Therefore,

$$\frac{\partial T\bar{F}P_{cg}}{\partial \eta_{cg}} > 0$$

(ii) The change in relative TFP of all entering firms of the same caste, c with respect to its own entry costs is ambiguous.

Relative TFP of all entering firms of the same caste, c is defined as

$$\frac{\partial(T\bar{F}P_c/T\bar{F}P)}{\partial \eta_{cg}}$$

where, $T\bar{F}P_c = \sum_g \theta_{cg}(\int_{A(\eta_{cg})}^{M} \frac{Af(A)dA}{1-F(A(\eta_{cg}))}) = \sum_g \theta_{cg} T\bar{F}P_{cg}$ and $T\bar{F}P = \sum_c \theta_c T\bar{F}P_c$

We evaluate the change in relative TFP of all entering firms of the same caste, c with respect respect to own entry costs, η_{cg}

$$\frac{\partial(T\bar{F}P_c/T\bar{F}P)}{\partial \eta_{cg}} = \frac{T\bar{F}P\frac{\partial T\bar{F}P_c}{\partial \eta_{cg}} - T\bar{F}P_c\frac{\partial T\bar{F}P}{\partial \eta_{cg}}}{T\bar{F}P^2}$$

Expanding the numerator of the fraction above

$$T\bar{F}P\frac{\partial T\bar{F}P_c}{\partial \eta_{cg}} - T\bar{F}P_c\left[T\bar{F}P_c\frac{\partial \theta_c}{\partial \eta_{cg}} + \theta_c\frac{\partial T\bar{F}P_c}{\partial \eta_{cg}} + \sum_{c\prime\neq c}\frac{\partial \theta_{c\prime}}{\partial \eta_{cg}}T\bar{F}P_{c\prime} + \sum_{c\prime\neq c}\theta_{c\prime}\frac{\partial T\bar{F}P_{c\prime}}{\partial \eta_{cg}}\right]$$

Since, $\frac{\partial T\bar{F}P_{c\prime}}{\partial \eta_{cg}} = 0$ we can rewrite the equation above as

$$T\bar{F}P\frac{\partial T\bar{F}P_c}{\partial \eta_{cg}} - (T\bar{F}P_c)^2\frac{\partial \theta_c}{\partial \eta_{cg}} - T\bar{F}P_c\theta_c\frac{\partial T\bar{F}P_c}{\partial \eta_{cg}} - \sum_{c\prime \neq c}\frac{\partial \theta_{c\prime}}{\partial \eta_{cg}}(T\bar{F}P_{c\prime})(T\bar{F}P_c)$$

Using equation 8 and 10 the expression can be rewritten as

$$(T\bar{F}P - \theta_c T\bar{F}P_c)\frac{\partial T\bar{F}P_c}{\partial \eta_{cg}} + \frac{T\bar{F}P_c{}^2(1-\theta_c)f(A(\eta_{cg}))\bar{N}_{cg}}{N\bar{K}} - \frac{T\bar{F}P_c\bar{N_{cg}}f(A(\eta_{cg}))}{N\bar{K}}\sum_{c\prime \neq c}\theta_{c\prime}T\bar{F}P_{c\prime}$$

Rearranging the expression above

$$(T\bar{F}P - \theta_c T\bar{F}P_c)\frac{\partial T\bar{F}P_c}{\partial \eta_{cg}} + \frac{T\bar{F}P_c f(A(\eta_{cg}))\bar{N_{cg}}}{N\bar{K}}(T\bar{F}P_c - T\bar{F}P) \tag{11}$$

$$\frac{\partial T\bar{F}P_c}{\partial \eta_{cg}} = T\bar{F}P_{cg}\frac{\partial \theta_{cg}}{\partial \eta_{cg}} + \theta_{cg}\frac{\partial T\bar{F}P_{cg}}{\partial \eta_{cg}} + \sum_{g\prime \neq g}\frac{\partial \theta_{cg\prime}}{\partial \eta_{cg}}T\bar{F}P_{cg\prime} + \sum_{g\prime \neq g}\theta_{cg\prime}\frac{\partial T\bar{F}P_{cg\prime}}{\partial \eta_{cg}}$$

We know that $\frac{\partial T\bar{F}P_{cg\prime}}{\partial \eta_{cg}} = 0$. From 7 and 9, we know that $\frac{\partial \theta_{cg}}{\partial \eta_{cg}} < 0$ and $\frac{\partial \theta_{cg\prime}}{\partial \eta_{cg}} > 0$. From Result 2.2 (i) we know that $\frac{\partial T\bar{F}P_{cg}}{\partial \eta_{cg}} > 0$. Therefore, the sign of $\frac{\partial T\bar{F}P_c}{\partial \eta_{cg}}$ is indeterminate.

□