Does Social Identity Constrain Rural Entrepreneurship? The Role of Financial Inclusion [1]

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Abstract

This paper examines whether better financial access can mitigate the impact of social identity on entrepreneurship. Using a novel dataset of Indian villages and distance to bank branches, we find that proximity to a bank branch improves entrepreneurship of under-privileged caste groups in the non-agricultural sector and sectors previously dominated by the privileged caste groups. We find that this effect is mediated by the uptake of institutional credit by under-privileged groups, driven by lower access costs for borrowers and better assessment of creditworthiness by proximate lenders. Our results show that financial inclusion can break rigid social norms around caste and occupation in India.

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1. Introduction

Social identity plays a critical role in influencing people's livelihoods. In India, the graded caste identity segregates and limits an individual's occupational choices. Audretsch *et al.* (2013) show that persons belonging to social classes that are lower in social hierarchy are less likely to be self-employed than their counterparts in high castes. Specifically, Scheduled Castes (SCs) - the historically most disadvantaged castes in India, and Scheduled Tribes (STs), comprise 16.4% and 7.7% of the population, respectively but owned only 9.8% and 3.7% of enterprises (Iyer *et al.*, 2013).

Enterprises owned by under-privileged groups face significant social, economic and political barriers. These enterprises are observed to be relatively new in age; smaller in size; operate with smaller capital base and traditional technology; exhibit slower growth; and are mainly run by single owner or family labour (Thorat and Sadana, 2009; Jodhka, 2010; Audretsch *et al.*, 2013; Iyer *et al.*, 2013). Based on caste-wise analysis of MSME sector in India, Deshpande and Sharma (2013), infer that the enterprises run by SC and ST are survival based and not business oriented. Caste identities in India are tied to the occupation with little mobility into other sectors (Banerjee and Knight, 1985; Thorat and Joshi, 2020). This restriction may force under-privileged groups to remain in less productive sectors.

Lack of access to formal credit may be one of the key obstacles for such differences. Raj and Sasidharan (2018) show that firms owned by socially-disadvantaged groups have a lower probability of obtaining credit from a formal institution. Caste-based disparities also appear in farmer's access to bank credit in rural India (Kumar, 2013; Karthick and Madheswaran, 2018; Kumar and Venkatachalam, 2019; Fisman *et al.*, 2017; Rao, 2018; Tiwari *et al.,* 2022), as well as in the informal markets (Khanna and Majumdar, 2020). Additionally, smaller size of firms owned by under-privileged groups may serve as a further detriment since small firms have significantly less access to formal credit (Beck and Demirguc-Kunt, 2006; Beck *et al.*, 2006; Ayyagari *et al.*, 2008; Bloom *et al.*, 2010).

Though several studies have recorded caste-based disparities in access to formal credit, the contribution of finance in mitigating the impacts of caste identity and encouraging entrepreneurship among under-privileged castes remains largely unexplored. We address this issue by studying whether access to finance mitigates the impact of social identity on entrepreneurial development. Caste identity restricts individuals' mobility across occupations and sectors (Banerjee and knight, 1985; Thorat and Joshi, 2020). Does access to financial

sources help in mitigating these caste rigidities? We test it in two ways. First, we explore their entrepreneurial expansion into non-agricultural sector – a sector with higher productivity than the agricultural sector. Second, we reclassify sectors based on high concentration of *general* caste owners, defined as those non-agricultural sectors where *general* caste occupied majority of the enterprises (more than 50%) in the base year of the study (1998). We explore whether under-privileged groups have been able to enter *General*-dominated sector. The proximity between a bank and borrowers should reduce access costs for borrowers and also improve information gathering by banks about the under-represented groups, thereby spurring credit delivery for them. On the other hand, any discrimination based on social identities in the credit markets or elite capture would erode the impact of financial access for the under-privileged groups. To test the mediating role of credit, we investigate whether an improved proximity between the banks and the borrowers leads to entrepreneurial activity through the credit channel, i.e., an uptake of formal credit.

We design the empirical analysis in the following manner. We define an unbanked village as proximate to a bank branch when the village receives a branch within a distance of 5kms.[5] Garg and Gupta (2023) describe in detail the construction of this metric. Using SHRUG (Asher *et al.,* 2021)*,* we merge this dataset with the Economic Census (EC) 1998, 2005 and 2013 to obtain for each village the number of enterprises owned by the following four caste groups- General, Other Backward Castes (OBCs), Scheduled Castes (SCs), and Scheduled Tribes (indigenous tribes). Although we study entrepreneurial activity for all caste groups, our main focus remains on SC and ST category. Both these caste groups have not progressed on entrepreneurial front as much as other castes such as *General* and OBCs.

We utilize the withdrawal of Service Area Approach (SAA) in 2005 as a natural experiment. It removed several restrictions on bank operations and expanded bank branch network. The next section describes this policy in detail. Figure 1 shows the growth in bank branches from 2005 onwards, which was substantially higher in rural areas.

We use a Difference-in-Differences (DiD) research design to compare outcomes of un-banked villages which received a bank in its *neighbourhood* of 5 km after 2005 (Treatment Group) against the villages where the nearest bank remained more than 5 kms away in 1998, 2005 and 2013 (Control Group).

[5] Our threshold of 5kms is motivated by RBI's latest financial inclusion strategy of establishing a bank branch within 5kms of every village in India by the year 2022 (RBI, 2019). As a robustness check, we also conduct our analysis with the threshold of 3km and 10km.

We find the following results. Proximity to a bank branch improves the number of SC enterprises in a village. The impact arises mainly from the non-agricultural sector – a high-productivity sector. For the ST group, we observe a decline in the agricultural enterprises and no impact in the non-agricultural enterprises. Further, for enterprises owned by the privileged groups - General and OBCs, we find a positive impact in the non-agricultural sector.

Though surprising, our results on the ST group align with evidence from other studies on tribal population. For example, Howard and Prakash (2012) and Prakash (2020) record negligible impact of reservation quotas on the consumption expenditure, and probability of finding a high-skilled job. Gang *et al.* (2017) record no occupational diversification for ST population group. To better understand our results on ST enterprises, we analyse occupational categories of the ST group as their villages become proximate to bank branches. We find a decline in the number of ST individuals employed as household industry workers, agricultural labourers, and cultivators. However, there is a sharp increase in the category of 'other workers' which includes government servants, teachers, factory workers, plantation workers, engaged in mining, banking, trade, transport, commerce, construction, social work etc. Thus, ST group has gained employment while exiting entrepreneurship as physical access to banking improves.

Further, we find that after improved proximity to a bank branch, SC enterprises expand into the sectors dominated by the *General* caste. These results show that financial inclusion efforts can help overcome disadvantages associated with traditional practices and social identities by enabling sectoral mobility.

The proximity not only reduces access cost for borrowers but also enables banks to understand the financial profile of the local area, verifying the productivity through in-person communication. Subsequently, this improves the soft information on borrowers to assess their creditworthiness (Liberti and Petersen, 2019; and Nguyen, 2019). In India, under-privileged groups do not possess hard information on creditworthiness such as credit history, land rights and other tangible assets (Mohanty, 2001; and Prakash, 2015). Proximity should, thus, allow assessment of their creditworthiness, thereby leading to more credit disbursement and spurring entrepreneurship. We test this hypothesis by showing that the impact on SC enterprises (overall, non-agricultural, and in *General*-dominated sectors) appears to be mediated by formal credit uptake. In addition, the impact on SC enterprises arises specifically in those areas where they have lower endowments of assets, such as land value. In such places, credit assessment is more likely to be based on soft-information.

We conduct heterogeneity tests to explore factors which may strengthen or weaken the observed impact. We find that the evidence on sectoral mobility weakens as the distribution of caste groups becomes more skewed i.e., the dominance of the *General* caste group increases to 70%. It indicates that as barriers to entry increase, the impact of credit in entrepreneurship diminishes.

Our results are robust to several additional checks. These include rejecting divergence in pre-treatment trends between the treated and control groups; using 3km and 10km as a threshold to define proximate bank branches; using an alternative Two-way Fixed Effects (TWFE) specification which uses contemporaneous covariate and a subset of control group villages matched on propensity for treatment.

Our work contributes to several strands of the literature. First, we show that the lack of credit is a binding constraint for groups with disadvantaged identity (Jodhka, 2010; Iyer *et al.*, 2013; Raj and Sasidharan, 2018). Recently, Goraya (2023) has shown that the under-privileged caste groups have a higher marginal product of capital but lack credit. Removing credit constraints for these groups will yield higher growth in the country. We study the removal of one type of constraint—physical proximity between enterprises and banks—and find significant gains in entrepreneurship for under-privileged group (SCs) in the overall, non-agricultural sector and also in the sectors dominated by general caste. Further, entrepreneurship of this group improves due to uptake of formal credit.

Second, we contribute to the literature on the role of caste system in economic outcomes. Traditionally, under the *Jajmani* system, the occupations are segregated by castes, where an individual born in one particular caste is restricted to adopt occupations limited to that particular caste. Existing research has shown that the markets are segmented based on caste identities in today's India as well. Jodhka (2010) finds that a majority of respondents in a survey in Haryana and Uttar Pradesh, felt that their caste identity was perceived as more important than their professional identity. Guerin *et al.* (2015) based on a survey of two districts of Tamil Nadu, show that the practice of 'untouchability' restricts 'Dalits' to enter sectors related to food, clothing and transportation. In particular, caste identities made lower-caste individuals to transport small quantities over small distance, whereas the more lucrative long-distance transportation was captured by upper and middle castes. Thorat and Joshi (2020) provide evidence that the modern India is not free from the social evils like 'untouchability'. Further, Thorat and Madheswaran (2018) provide evidence of how discrimination based on identity

leads to economic loss in terms of closing down of business and operating at lower profit margins. We show that such rigidities can be partially attenuated through financial inclusion. Specifically, our results on sectoral mobility demonstrate that the under-privileged groups can enter conventionally secluded economic spaces.

Based on an experiment in the state of Odisha, India, a recent study by Oh (2023) shows that "workers have intrinsic desire to protect their identity". They forgo higher wages from tasks associated with other caste identities in favour of their own caste-based occupations. We find some contrasting results. We provide evidence that as financial opportunities arise, SCs become entrepreneurs and they expand into sectors associated more with privileged castes. However, this sectoral mobility lowers as the social barriers increase. More research is required to understand preference for protecting identity in paid employment vis-à-vis self-employment.

Finally, our paper contributes to the literature on finance and entrepreneurship. The role of credit in the establishment and growth of enterprises is well recognised (Rajan and Zingales, 1998; Fafchamps and Schundeln, 2013; Bruhn and Love, 2014; Qin and Kong, 2022), specifically in poorer regions (Paulson and Townsend, 2004). Beck and Demigruc-Kunt (2006) and Ayyagari *et al.* (2008) consider finance to be the most important constraint impacting the growth of firms. Based on a systematic review of SME finance literature, Kersten *et al.* (2017) find a positive and significant effect of SME finance on capital investment, firm performance, and employment. In the context of India, Kapoor *et al.* (2017) show that the availability of subsidised credit to eligible firms in 1998 improved their growth and also established firm-bank relationship in the long run. Unfortunately, despite these benefits, not all population groups have uniform access to credit. We provide evidence that access to banks can improve entrepreneurial activity for those who lacked credit.

The paper is organised as follows. Section 2 provides the institutional background on caste structure and why proximity to banks is important. This is followed by a review of policies on bank branch expansion in India over the years in Section 3. In Section 4, we discuss our novel village-bank matched panel data, along with other datasets that we use. Section 5 describes the methodology. Section 6 presents our key results and mechanism. Section 7 presents the heterogeneity results and Section 8 presents various robustness checks. We conclude in Section 9. For SC and ST caste groups, we will use under-privileged and marginalized groups inter-changeably.

2. Institutional Background

a. Caste-System in India

India is a Hindu majority country which has followed a graded caste system for centuries. It divides the society into four major groups called *Varnas* – Brahmins (priests), Kshatriyas (warriors), Vaisyas (community of traders), Sudras (workers and craftsmen). Apart from these four major categories, there was fifth category known as the *Ati-Sudras* who were called *Dalits*. This segment of the society was treated as the outcastes and completely excluded from the Hindu caste system.

The *jajmani* system essentially imposed a labour structure on the caste structure in the country. In this system, each caste was assigned traditional occupations. The Brahmins, Kshatriyas and Vaisyas were labelled as high caste groups and they were the land owners whereas the Sudras - lower castes were engaged in low-paying menial jobs such as sweeping and provided services to the upper castes. The last group- *Ati-Sudras* were assigned jobs which were considered physically and socially impure such as cremation of dead bodies, manual scavenging etc. As these were also the outcastes, they had no right to use public goods such as public wells or schools; they were not allowed to own land, participate in religious activities and festivals, and were not allowed to enter houses or shops of the high castes. The system restricted mobility across occupations and sectors so much that the occupations assigned to one caste were passed from generation to generation.

The Constitution of India, defines the hierarchy in a different manner. The first three varnas – Brahmins, Kshatriyas, and Vaisyas are considered the *general* (forward) caste. The *Ati-Sudras* who suffered social evils like extreme deprivation, social exclusion, and untouchability, form the population group that we know today as the scheduled castes – SCs. Constitution defines the tribal population (*Adivasis)* as scheduled tribes (STs). The people in-between higher castes and SC/STs, who are socially and educationally backward are called Other Backwards Castes (OBCs).

The government has implemented affirmative action policies for the welfare of the population who were lagging behind socially, economically and politically. Initially, affirmative action defined reservation quotas in educational institutes, which were later extended to employment in the government sector as well. The categorisation of population in different classes is important as these define who can avail benefits in reservation quotas. For instance, the reservation policies initially defined for SCs and STs were also extended to the OBCs in 1980,

with the recommendation of the Mandal Commission. Despite these affirmative action policies, SCs and STs significantly lag behind the other castes in the entrepreneurial activities (Table 2). Hence, it is important to analyse their entrepreneurial growth.

b. Relevance of proximity between the lender and the borrower

Distance between the borrower and lender could play an important part in lending decisions due to two reasons. Firstly, the large distance, by itself implies a large travel cost posing as an additional financial burden on the borrower. Secondly, unlike credit scores and credit history, soft information is costly to obtain, difficult to quantify and transmit. Improved proximity may strengthen the relationship between the banks and borrowers. Banks can better understand the financial profile of informationally opaque borrowers in the proximate area. Additionally, banks can monitor the loans more accurately and reduce the supervision cost. Proximity can lower the cost of collection of soft information. Obtaining it, thus, improves the lending decision by banks (Peterson and Rajan, 1994; Brevoort and Hannan, 2006; Agarwal and Hauswald, 2010; Ergungor, 2010; Knyazeva and Knyazeva, 2012; Ho and Mallick, 2017; Nguyen, 2019).

Arguably, the advent of digital means of banking may lower the importance of proximate bank branches. Borrowers may rely less on brick-and-mortar branches. Similarly, banks may also obtain credit histories and other information about the creditworthiness of the borrowers without being proximate. Peterson and Rajan (2002) demonstrate this in the USA, where technical advancements make communication between lenders and borrowers more impersonal and enable banks to lend at a distance. On the contrary, some studies show that the proximity between the lender and the borrowers is still crucial despite several improvements in technology. For example, Brevoort and Hannan (2006) show that the large distance between the lender and the borrower acts as a deterrent to lending. This holds more for the small banks as they rely more on the 'relationship banking' whereas the larger banking organisations can obtain hard information about the potential borrowers. Ergungor (2010) also finds that, in low- to moderate-income neighbourhoods of Ohio (USA) where people lack credit histories, the mortgage lending increases with the presence of a bank branch. However, no impact occurs in high income neighbourhoods where borrowers are likely to furnish credit scores. In a recent study on branch closures in USA, Nguyen (2019) provides evidence that the distance between the borrowers and lenders is crucial despite the outreach of technology. The branch closures led to a decline in small business lending and the impact was most severe in cases where credit disbursement is heavily dependent on soft-information about the borrower.

This suggests that, in areas where people do not have credit histories, the physical presence of banks can fill the gap. A developing economy like India with large rural population is suitable to test such hypotheses. Based on a survey of 17,100 bank customers across 17 countries including India, Srinivas and Wadhwani (2020) found that branches are still the dominant channel for simple operations, such as account opening and obtaining debit cards, as well as complex operations, such as obtaining loans. A recent survey by NABARD (2018) on financial inclusion in India recorded low usage of online means of banking. The proportion of respondents who reported having used mobile and internet banking was only 1.6 percent and 0.8 percent respectively. Thus, adoption of digital banking may be limited to urban areas and at early stages in the rural parts of the country, thereby, highlighting the important role of a brick-and-mortar branch in financial services.

c. Why proximity may matter more for under-privileged groups?

In the context of our study, information friction in credit market becomes even more pertinent. Marginalized caste groups in India are asset poor. Thus, accessing formal credit remains an obstacle unless the lender can compensate absence of hard information with soft information (Liberti and Petersen, 2019). Further, informal networks of credit which use soft information may also remain inaccessible to the marginalized groups since rich moneylenders usually belong to the upper caste groups. Thus, proximity between lender and borrowers may remove information friction in the credit market. Evidence for such information frictions have been recorded elsewhere. Fisman *et al.* (2017) show how cultural proximity between lender and borrower in India may mitigate information frictions in the credit market thereby improving "*credit access and loan size dispersion*".

3. Expansion of banking sector in India

The banking sector has expanded in urban as well as rural areas of India. Figure 1 plots the number of new branches opened in rural and urban areas during 1950-2019. The pace of its expansion varied under different policy regimes of bank branch expansion. From 1949 to 1969, RBI provided branching licenses in areas with adequate demand for financial services. In the social banking period (1969-1990), RBI devised mandatory location-based quotas for establishing new branches. Specifically, banks with less (more) than 60% branches in rural areas were supposed to open 3 (2) rural branches for every 1 urban branch (RBI, 1970). Consequently, there was a sudden jump in the rate of branch establishment in rural areas.

In 1990, quota-based restrictions were withdrawn. Instead, to serve the credit needs of rural areas, RBI adopted a Service Area Approach in 1989. Under this policy, existing branches were designated a cluster of 15-25 villages based on contiguity and proximity between villages and banks (RBI, 2004). This designated branch, known as the Service Area Branch, was responsible for meeting the credit needs of the assigned villages. However, if a borrower wanted credit from a non-service area branch, it required a 'no-dues' certificate from the service area branch.

SAA limited the scope for banking operations. The branch expansion reversed to urban areas, as opposed to what was observed in the social banking period (Figure 1). A Study by Devarajan (2004) based on Kannur district in Kerala, observed a decline in credit-deposit ratio in the state after implementation of SAA. The study also recorded very low awareness among people in Kannur district about the scheme, as only one-eighth out of 492 persons surveyed could identify their service area bank. Banks also did not follow the prescribed procedure for planning their service area plan. Recording caveats of the financial system for rural poor, Basu (2005) described that the SAA has restricted the newer and more innovative entrants in rural lending. Further, Basu (2005) argued that the removal of SAA could help stimulate the entry of new branches in rural areas of the country.

Taking cognizance of the low entry of branches, RBI withdrew SAA in 2004. Banks were now supposed to submit annual branch expansion plans and RBI committed to evaluate the plan and respond to banks within 4 weeks. This was in stark contrast to the period from 1990 to 2005 when each application was approved on a case-by-case basis. Thus, a more predictable environment was created for banks to expand[6]. We observe the effect of these measures in Figure 1. After 2005, there is a sharp increase in bank branch establishment, especially in rural areas and a decline in closure of bank branches (Figure 2). We exploit these changes in bank branch expansion to study its impact on rural entrepreneurship.

4. Data

a. Outcome variable: Caste-wise Ownership of Enterprises

Our outcome variables come from the Economic Census (EC) of India which enumerates all non-farm enterprises in the country[7]. It collects indicators such as gender and caste of the

[6]See Young (2020)

[7]The sectors not covered in EC are the following. In case of agricultural activity, establishments classified under 011 and 012 of Section A of NIC 2008; in case of non-agricultural activity, establishments engaged in Section O of NIC 2008 (public

owner, NIC code, major source of finance, size, and size of employment of each enterprise, among others. We use EC 1998, 2005 and 2013, which record the caste categories of the owner.

To estimate the caste-wise impacts, we consider the total number of enterprises owned by four caste groups, namely, General, OBC, SC and ST.[8] We use the 3-digit NIC codes for each enterprise to compute the number of enterprises in agricultural and non-agricultural sectors, owned by each caste group. Figure 3 shows that overall entrepreneurship has increased in the country, and the share of rural enterprises has increased from 56% in 1998 to 59.4% in 2013. Table 2 presents summary statistics of all indicators.

Our final sample includes 6,34,173 village-year observations. One can observe caste-wise disparities in entrepreneurship as the *General* caste group has 11 enterprises per village on average; the number reduces to 3.45 enterprises for SCs and 2.7 for STs groups. The OBC group has the highest number of enterprises at 14 per village indicating their entrepreneurial progress. A similar level of ordering can be observed for the non-agricultural sector as well.

Further, the census documents the 'major source of finance' of each enterprise, where the response is one of the following: formal, informal, self-financed and government aid. To measure institutional credit uptake by enterprises in a village, we compute the number of enterprises with formal finance as their major source of finance for each caste group. The use of formal finance (as major source of finance) remains much lower overall, along with caste-wise differences. For instance, for *General* caste, there are 0.29 enterprises (nearly 1 enterprise per 3 villages) which have reported institutional finance as major source of finance. The number for OBC is similar at 0.29. The same indicator is much smaller for SC and ST groups at 0.06 and 0.05, respectively. In other words, there is one SC-owned enterprise with institutional credit for nearly 16 villages. This is relatively worse for STs as the same figure stands at one enterprise with institutional credit for every 20 villages.

To create a panel of villages, we use the Socioeconomic High-resolution Rural-Urban Geographic Dataset on India (SHRUG) created by Asher *et al.* (2021), which provides village-level identifiers compatible with Economic Censuses (1998, 2005 and 2013) and Population Census (1991, 2001, 2011) of India. The rich diversity of information present in the Economic

administration, defence, compulsory social security), Section T of NIC 2008 (territorial organization and bodies) and Section R of NIC 2008 (illegal gambling and betting activities)

[8] We utilize single-owner firms.

Census combined using SHRUG IDs makes it possible to observe the trends in economic activity in a village over time.

b. Explanatory variables: Access to finance

The population census 2001 and 2011 record whether a village has a bank or not, and if not, the distance to the nearest branch. However, the distance is measured in coarse intervals of 5 km such as 0-5km, 5-10km, and so on. We use a more refined measure of village-level financial access than the one used in other studies so far or available in these two rounds of population census. We define financial access as the straight-line distance of each unbanked village to its nearest banked village/town[9].

Using three datasets—RBI Commercial Bank Directory[10] (as on October 31, 2019), Population Census 2011 and GIS-shape files[11] for the boundary of Indian villages—we compute this metric from 1951 to 2019. The complete detail of the construction of our measure of financial access is explained in Garg and Gupta (2023) along with its limitations. Figure 4 plots the average distance to the nearest branch of unbanked villages. Our measure of proximity shows that bank access in rural areas has improved drastically over the past decades, as the average distance of unbanked villages to the nearest banked centre has declined from 43.5 kms in 1951 to 4.3 kms in 2019.

c. Other variables

We obtain other indicators which could potentially influence economic activity in rural areas. One such important factor is the availability of paved roads. Recent studies have estimated the impact of village roads on several aspects of human development, such as easier access to different government services e.g., health and education services, labour market, and goods market. Asher and Novosad (2020) show that the construction of new paved roads in rural areas led to a large reallocation of labour from agricultural to the non-farm work outside the village. Thus, road availability in rural areas cannot be ignored as a confounding factor in this study.

[9] Several measures have been used in literature as proxy of access to banks/finance. First is the geographic and demographic penetration of bank branches where the total number of bank branches either divided by total area or total population (Alessandrini *et al.*, 2010; Beck *et al.*, 2007, 2008; Zhao and Jones-Evans, 2017). Recent studies have used straight line distance and travel distance to the nearest bank branch, distance that users are willing and able to travel for the service (Koomson *et al.*, 2020; Langford *et al.* 2021; Camacho *et al.* 2021).

[10] The RBI Commercial Bank Directory is obtained as on October 31, 2019. It provides the details of each commercial bank branch in the country with the name of the state, district, and rural centre (roughly equivalent to a village) where the branch is situated.

[11] The spatial data we use is the GIS shape files which provides us the location of each village in terms of latitude and longitudes of the boundary of each village. This data is obtained from the research team at the World Bank. These GIS shape files are compatible with Population Census 2011 (henceforth, PC 2011).

Other indicators are the close substitute of a commercial bank branch in rural areas such as Primary Agricultural Credit Society (PACS). We also obtain population size, literacy rate, and availability of power at the village level. All these indicators are obtained from the population census of 2001 and 2011.

5. Methodology

As our objective is to analyse the impact of the proximity of a village to a bank branch on its economic activity, our study group comprises of the unbanked villages. We use a difference-in-differences research design by constructing the following treatment and control groups:

1. Control Group: This group consists of those unbanked villages which remained more than 5kms away from a banked centre in all years of study i.e., up to 2013. There are 187,814 such villages.
2. Treatment Group: These unbanked villages were more than 5kms away from a banked centre up to 2005, but a new branch was opened within 5kms between 2006 and 2013. This group comprises of 68,664 villages.[12]

Table 1 provides the distribution of the treatment and control group villages in our study.

a. Identification

Identifying the impact of bank branches on rural entrepreneurship in India is challenging. After 2005, policies introduced by RBI provided more control to banks over branch placement, which makes branch location endogenous to several unobservable village-level factors. For example, banks may enter areas which already exhibit high levels of economic activity. Additionally, banks may observe the upward trajectory in the economic potential of a village to determine branch location. Difference-in-differences research design allows for the inclusion of village-fixed effects. They address the time-invariant village factors which influence bank branch location decisions such as level of the economic activity.

Following Wing *et al.* (2018), we address the concern of time-varying factors by including time trends of pre-treatment levels of some relevant covariates of the villages. We follow the literature on determinants of bank branch location to decide which covariates to include in the empirical specification. Factors such as size and density of population, level of education, the

[12] 274,009 villages had a bank branch within 5km prior to 2005. We exclude these villages in our analysis.

share of urban population, size of the profitable market, growth rate, unemployment rate, and level of economic activity are found to be significant drivers of bank branch availability (Alama and Tortosa-Ausina 2012; Ansong *et al.*, 2015; Crocco *et al.*, 2010; Fernández-Olit *et al.*, 2019; Hegerty 2016; Maudos 2017; Ghosh 2012; Zhang *et al.*, 2021). In particular, we first run a logit regression of the treatment indicator of a village (1 If the village received treatment and 0 otherwise) on various socio-demographic and economic covariates. Table 3 reports the marginal effects of each variable from the probit regression.

Infrastructure such as roads and domestic power; size of population, literacy rate, proximity to town, and presence of other financial service providers such as PACS are strong determinants of proximity to a bank branch. In particular, the presence of a road and domestic power supply increase the probability of a proximate bank branch by 2.9% and 5%, respectively. On the other hand, other lending institutions such as PACS deter proximity of bank branches by 2.4%.

b. <u>Empirical Specification</u>

Our empirical specification takes the following form:

$$y_{vdt} = \gamma . Treat_{vd} * Post_t + \varphi_v + \varphi_t + \varphi_{dt} + Z_{vd(2001)} * Trend + \varepsilon_{vdt} \quad \ldots\ldots\ldots(1)$$

where, y_{vdt} is the outcome variable in village *v*, district *d* and at time *t*. $Treat_{vd}$ takes value '1' for villages which received treatment and '0' otherwise, $Post_t$ takes value '1' for year 2013 and '0' for pre-treatment years – 1998, 2005. The coefficient, γ, on the interaction term measures the ATE on y_{vdt} after bank branch becomes proximate within 5kms.

φ_v are village fixed effects which address time-invariant village-level unobservable factors. In addition, we saturate the specification with year fixed effects, φ_t, and district-year fixed effects, φ_{dt}. The former account for macro factors while the latter address local time-varying factors affecting the district of the village. These are crucial since RBI introduced several changes in bank branch expansion policies over time. Further, RBI's push for branch expansion centred on the size of the banked population at the district-level. $Z_{vd(2001)}$ are covariates of the village from PC 2001, namely, literacy rate, size of population, distance to town, road, presence of domestic power and PACS. The interaction term $Z_{vd(2001)} * Trend$ represents the time trend of each of these variables.

c. Strength of the Treatment

Before we move to the results, we discuss the strength of the treatment received by the treatment group. Table 4 reports the average distance to the nearest banked centre. In 1998, the average distance was 8.45kms and 9.81kms for treated and control villages, respectively, which remains nearly unchanged in 2005. By 2013, proximity for treated villages improves as the average distance declines to 3.25kms. In contrast, control group villages remain 8.43kms away from the nearest banked centre.

6. Results

a. Growth in Entrepreneurship across Caste Groups

We start with examining the impact of bank proximity on caste-wise entrepreneurship. Table 5 reports the results for all enterprises across caste groups (General, OBC, SC and ST) and sectors (agricultural and non-agricultural). Each specification includes the village fixed effects, year fixed effects, district-year fixed effects, and time-trend of the control variables with robust standard errors clustered at the village level.

Panel A reports the effect on the total number of enterprises. We find a positive impact for SC owned firms (column 3) in treated villages, while ST owned firms decline significantly by -0.15 units (column 4). The effect on total number of enterprises may mask heterogeneity across sectors. In panel B, we measure the impact on the number of agricultural enterprises. We find OBC and ST-owned agricultural enterprises decrease by 0.168 (column 2) and 0.089 units (column 4), respectively. However, General and SC-owned agricultural firms do not observe a significant decline.

Panel C reports the effects on the non-agricultural sector. As expected, we find a positive impact for *General* and OBCs as these groups are more entrepreneurial in nature. It is encouraging to see that the financial access also had a positive impact on the most under-privileged caste group as SC entrepreneurship has expanded into non-agricultural sector. Specifically, General, OBC and SC-owned enterprises increase by 0.261, 0.243 and 0.088 units, respectively, while the number of ST enterprises does not change significantly. These impacts are nearly 3.51%, 2.59% and 3.79% for General, OBC and SC, respectively, as a share of their respective mean values. Thus, the SCs experience as much gain as the General caste.

A negative impact on overall ST enterprises in treated areas raises concern. Their presence in the agricultural sector declines with improved proximity to bank branches, but it does not increase in non-agricultural sector. It could partly be due to their concentration in geographically isolated areas where economic-opportunities remain lower. Kijima (2006) also shows that the differences in living standards of STs and the non-SC/STs are partly due to geographical reasons. Other evidence suggests much less progress for the STs vis-à-vis the SC population. While most of the studies in the context of minorities club the SC and ST categories, few studies segregate the analysis. For instance, Howard and Prakash (2012) show that the impact of employment quotas has not been the same across minority populations. STs are less likely to choose high-skill occupations and more likely to choose low- and middle-skill occupations than the SC population, partly because STs live in geographical areas where the opportunities of high-skill occupations are scant. In a similar study, Prakash (2020) finds no impact of employment quotas on ST members' likelihood of finding a salaried job and on the monthly per-capita consumption expenditure. The whole impact was found for SC members. Another related study by Gang, *et al.* (2017), finds that the occupational structure of SC household is converging towards that of the mainstream population, whereas the occupational diversification and the convergence story is absent for STs. They remain as cultivators and non-agricultural labourers. In this context, our results on STs do not appear too distinct. However, the concern still remains that how their occupation profile has changed when they gained proximity to the banking facilities. We provide an explanation using different occupation categories.

The EC data provides details on the enterprises, which falls in the self-employment category. To account for other occupations such as casual labour, cultivation, etc., we use the data on the occupation profile at the village level from two rounds of population census – 2001 and 2011. This data provides four categories of occupation: Household industry worker, cultivators, agricultural labour, and other workers. The last category – 'other workers'—includes occupations such as all government servants, teachers, factory workers, plantation workers, engaged in mining, banking, trade, transport, commerce, construction, social work etc. Additionally, the data also classifies a person into three categories depending on tenure in the occupation: main worker (working for six months or more during last one year preceding the date of enumeration), marginal worker (those who worked for less than one year), and non-worker (those who have not worked at all in last one year). We use the number of main workers

falling in four occupational categories. To understand the movements in occupational profiles of ST population, we use the following specification:

$$y_{vdt} = \gamma.Treat_{vd} * Post_t + \varphi_v + \varphi_t + \varphi_{dt} + Z_{vdt} + \varepsilon_{vdt} \ldots\ldots(2)$$

where y_{vdt} is the log of number of persons in different occupations; Z_{vdt} does not refer to the time trend of control variables as in previous equations, but it includes contemporaneous levels of these covariates from PC 2001 and 2011. Other parameters are same as in equation (1). Population census of 2001 and 2011 does not provide the occupation structure by caste. Therefore, we use focus our analysis on ST-dominated villages; i.e. where the share of ST population is more than 75%. Similarly, we estimate it for SC-dominated villages.

Table (6) presents the results. We observe that the ST-dominated villages experience a decline in the number of workers who worked as household industry workers; agricultural labourers, and cultivators. All three coefficients are negative and statistically significant. There is a sharp increase in the category of 'other workers'. A decline in the household industry workers is consistent with our results from economic census data (Table 5). At the same time, we observe an increase in household industry workers in SC-dominated villages. This result also aligns with our baseline results in Table 5, where we observe a positive impact on SC-owned enterprises in treated villages.

The overall results indicate that the bank proximity had an indirect impact on ST population as they have been absorbed in non-agricultural sector as workers. Our results signify that additional interventions may be required along with provision of financial access to increase ST entrepreneurship.

In the subsequent analysis, we will focus on SC-owned enterprises. The OBC category was defined in 1980 based on the Mandal Commission Report. Previously, this category was part of the *General* category. Iyer *et al.* (2013) discuss how OBCs are the middle castes. Although, by definition, they are labelled as socially and educationally backward, they have not suffered as extreme discrimination as SCs. In addition, OBCs have made a significant entrepreneurial progress (Iyer *et al.*, 2013). They are not under-represented in enterprises as their share in total enterprises has converged with their share in total population. Since SC caste group has been historically the most socially-excluded community, exploring the impact of financial inclusion on entrepreneurs of SC community can, thus, advise policies on their upliftment.

b. Heterogeneity across Sectors Dominated by General Caste

Caste system in India segregates individuals based on the occupations assigned to each caste (Munshi, 2019). Existing studies have shown that the mobility of the under-privileged caste groups across occupations, sectors and generations has remained low due to the rigidities of the caste system. Jodhka (2010); Guerin *et al.* (2015); Thorat and Madheswaran (2018) show instances of *untouchability*, discrimination in supply of inputs; and consumer-based discrimination against SCs.

In this context, we analyse whether proximity to bank branches enables SC group to enter those sectors which were predominantly dominated by the *General* caste. To test this, we first select the set of non-agricultural sectors where the share of *General*-owned enterprises exceeded 50% in 1998. Table 7 reports these sectors. We hypothesise that a larger presence of *General* caste indicates higher exclusion and barriers for underprivileged groups. These barriers could be in the form of the absence of business networks or a skill gap compared to the *General* castes (Drall and Mandal, 2021; and Böken *et al.*, 2023).

We then measure the impact on the number of SC-owned enterprises in these sectors. Table 8 reports these results. We find that SC entrepreneurship significantly increases in the *General*-dominated sectors (columns 1 and 2, respectively). The coefficient is 0.057 and is statistically significant at 1%. We further check how this result varies as social barriers increase by looking at the sectors where the share of *General* caste is more than 60% or 70%. Columns 2 and 3 of Table 8 provide the results. We find that the impact increases slightly to 0.062 for sectors with 60% dominance and decreases sharply to 0.008 for sectors with more than 70% *General*-caste dominance.

Overall, our results suggest that the bank branch proximity helps rural society to overcome the rigid norms set by the caste system. Böken *et al.*, (2023), based on firm-level data from West Bengal show that the caste networks drive the firm-to-firm trade. Firm-owners are more likely to trade with another firm belonging to their own caste groups. Our results support the findings of Böken *et al.* as the sectoral mobility reduces with higher social barriers, in the form of presence of caste network.

c. Mechanisms

Credit Uptake

Proximity to bank branches should lower the intermediation costs in credit markets. In the context of our study, the observed impact on the enterprises should be mediated through the credit uptake. This is because, people in rural areas generally are more credit constrained as compared to the urban population (Chaudhuri and Cherical, 2012). Understanding if this relationship holds for the SC group remains even more critical as the under-privileged groups in India are likely to lack tangible assets such as land that can be offered as collateral (Thorat, 2002; Desai and Dubey, 2012; and Khanna and Majumdar, 2020).

Economic Census records the major source of finance for each enterprise. We use this to compute the number of enterprises (in a sector-caste category) with institutional credit as the major source of finance. Using the following specification, we test for the mediating role of credit uptake in entrepreneurship:

$$y_{vdt} = \gamma.(Treat_{vd} * Post_t) + \beta_1.(Treat_{vd} * Post_t * FF_{vdt}) + \beta_2 * FF_{vdt} + \sum \varphi_i + \varepsilon_{vdt} \quad \ldots\ldots\ldots\ldots (3)$$

where, as above, y_{vdt} is the number of enterprises and FF_{vdt} is the corresponding number of enterprises which reported institutional credit as a major source of finance. In addition to the variables shown, we also include time trend of all the covariates and all fixed effects ($\sum \varphi_i$) from equation (1).

If credit uptake mediates the rise of SC entrepreneurship, the estimated effect, γ, should attenuate while the coefficient of triple interaction term ($Treat_{vd} * Post_t * FF_{vdt}$), β_1 should be positive and significant.

Table 9 shows the results for credit mechanism for SC-owned enterprises in all, non-agricultural and *General*-dominated sectors. The coefficient on triple interaction is positive and significant in all three columns and the coefficient of the DiD interaction term becomes smaller as compared to our baseline specification in Table 5. This shows that the observed positive impact on SC enterprises is mediated via the uptake of formal credit in the treated areas. Therefore, the entrepreneurial activities of the under-privileged group increase with an uptake of formal credit after access to banks improves.

Testing the Role of Soft vs Hard Information

Credit disbursal by banks requires information on the creditworthiness of the borrowers. Liberti and Petersen (2019) classify such information as either hard or soft. A key distinction between these two types of information in the context of credit markets is the "unimportance of context". Specifically, hard information can be easily verified without the need for knowledge of local context, whereas soft information becomes credible only with additional context-specific knowledge. An example of hard information for creditworthiness is physical assets such as land. A distant bank branch can lend using land as collateral. Thus, for such borrowers with high collateral, a proximate bank branch may not have a significant impact since they can establish creditworthiness easily. However, for borrowers who cannot provide hard information on creditworthiness, proximity to a bank branch is more valuable. This is because the lender can utilize soft information on the entrepreneurial activities of the borrowers, in lieu of hard information.

An implication for our study is that the impact of proximity should be higher in the districts where collateral owned by the SC group is low. To test this hypothesis, we use the All-India Debt and Investment Survey (2003) to find average land value owned by SC households. This allows us to divide our sample into two sets—districts where under-privileged caste groups had high (above national median) or low (below national median) collateral, prior to the treatment. We then conduct our analysis for these two districts separately.

Table 10 shows the results. Columns 1 and 2 show the impact on SC-owned non-agricultural enterprises in high- and low-collateral districts, respectively. The coefficient is significant and positive only in column 2, i.e. in districts with lower collateral. Similarly, for SC-owned enterprises in the *General*-dominated sectors, we find that the impact is significantly positive only in low-collateral districts (column 3 and 4). Thus, bank branch proximity has a higher impact in districts with less collateral. This is consistent with our hypothesis of soft information substituting for hard information in the assessment of creditworthiness of the borrowers.

7. Robustness

In this section, we discuss the robustness of our estimated impacts.

a. Assessment of Parallel Pre-Trends

We explore if the major variables of interest exhibit parallel trends in the pre-treatment period for the control and treated groups of villages. A diverging pre-treatment trend would indicate that the treated villages were growing faster than the control villages. In other words, the presence of factors other than the treatment (the proximity to bank branches) may have led to post-treatment results.

To check for parallel pre-trends, we limit our analysis to the pre-treatment time-periods—1998 and 2005. We use the following specification:

$$y_{vdt} = \gamma . Treat_{vd} * I(2005)_t + \varphi_v + \varphi_t + \varphi_{dt} + Z_{vd(2001)} * Trend + \varepsilon_{vdt} \ldots\ldots (4)$$

where, $I(2005)_t$ takes value '1' for the year 2005 and '0' for 1998. Other variables are as defined previously. The coefficient on $Treat_{vd} * I(2005)_t$ now measures the DID estimates between the treated and control group *prior to the treatment.* A statistically significant γ would indicate diverging pre-trends.

Panels A and B in Table 11 present the results for SC- and ST-owned enterprises respectively. Results are presented for total, agricultural and non-agricultural enterprises. γ remains insignificant for each outcome variable. Hence, all outcome variables exhibit parallel pre-trends.

b. Assessment using contemporaneous covariates:

The bank branch proximity is not random and found to be correlated with socio-economic characteristics of villages, namely, size of the population, literacy rate, distance to town, availability of PACS, roads, and power. These variables may confound with covariates of entrepreneurship at the village level. In our main specification, we control pre-treatment determinants of bank branch proximity, each interacted with time-trend, to address this concern. In a parsimonious model, one would want to include the contemporaneous levels of these variables for years corresponding to the data used from Economic Censuses (1998, 2005 and 2013). However, the population census data– a source for the village level facilities and socio-economic variables are only available for the years of 2001 and 2011.

In this section, we restrict our analysis to the years 1998 and 2013. We change the main specification by replacing the time-trend variables with the near-contemporaneous indicators for population, literacy rates, distance to town, presence of road, PACS and power supply of

the villages. We also include village, year, and district-year fixed effects. Our empirical specification takes the following form:

$$y_{vdt} = \gamma . Treat_{vd} * Post_t + \varphi_v + \varphi_t + \varphi_{dt} + Z_{vdt} + \varepsilon_{vdt} \ldots\ldots(5)$$

where Z_{vdt} does not refer to the time trend of control variables as in previous equations, but it includes *near*-contemporaneous levels of these covariates from PC 2001 and 2011.

Table 12 presents the results. Like previous results, this model also suggests an increase in the SC enterprises in non-agricultural sector and in *General*-dominated sectors in treated villages in 2013.

c. Assessment of Results with 3km and 10km as threshold to define Financial Access

In the main specification, we defined the treated group as those villages which received a bank branch within 5kms post-2005. As another robustness check, we use two thresholds to redefine proximity – 3km and 10km. We expect that the observed impacts should be higher when a bank is available within 3km and lower in 10km threshold as compared to the 5km threshold.

Results are reported in Table 13. We observe a positive and significant coefficient for SC enterprises for 3km threshold (column 1 and 2). The coefficients are higher for non-agricultural and the *General*-dominated sectors as compared to the baseline estimations in Table 5 and 8, respectively. On the contrary, we do not observe any significant result for 10km threshold. These results reassure that the proximity to the banks matters for financial inclusion and entrepreneurial activities.

d. Assessment using a Matched Control Group

To further assess the robustness of our results, we conduct the analysis using a matched control group. We match the treated villages to a subset of a control group using the Coarsened Exact Matching method (Iacus *et al.*, 2012). Variables used for matching are size of population, literacy rate, distance to town, availability of PACS, roads, and power. Table 14 provides the results for SC-owned enterprises in the non-agricultural and *General*-dominated sectors. The

results remain similar to our main analysis—SC-owned enterprises increase in the non-agricultural sector and in *General*-dominated sectors.[13]

8. Conclusion

Under-privileged social groups in India have been historically excluded from certain sectors of the economy due to the rigidities of the caste system. They lacked mobility across occupations, sectors of operation, and across generations. Due to social evils like 'untouchability', they suffered consumer discrimination. In this paper, we explore the role of financial inclusion in improving entrepreneurship among under-privileged social groups in India. Our study shows that the expansion of bank branches into rural areas has provided economic gains not only to the forward and middle class but also to the under-privileged caste group, mainly SCs. Using a novel dataset of Indian villages, we show that the proximity to a bank branch, defined as the presence of a bank within 5kms of a village, improves the non-agricultural entrepreneurship for SC caste group. We show evidence of sectoral mobility for SC group as they also enter those sectors which were dominated by upper castes enterprises prior to the treatment. However, the sector mobility declines as the dominance of the upper-caste group increases indicating the role of caste networks (Böken *et al.*, 2023).

The impact on SC enterprises is mediated by the uptake of credit from institutional sources. Our results further show that the proximity creates higher impact in areas where SC borrowers have low collateral. This is consistent with the soft-information based lending. These results are critical for SCs who face more financial exclusion as they lack tangible assets such as land for the purpose of collateral (Thorat, 2002; Desai and Dubey, 2012; Raj and Sasidharan, 2018 and Khanna and Majumdar, 2020).

On the contrary, we do not find any positive impact on the entrepreneurial activities for STs – other under-privileged caste group in the country. They experienced a decline in the agricultural enterprises, whereas no impact occurs for non-agricultural enterprises. This result is in line with other studies which also find either negligible or no impact on STs in the context of reservation quotas and occupational diversification (Howard and Prakash, 2012; Prakash, 2020; Gang *et al.*, 2017). The observed pattern could partly be due to their geographical isolation from the rest of the population as also recorded by Kijima (2006). Although ST group

[13] The results are robust to other matching techniques such as propensity score matching.

has declined as entrepreneurs, they entered in non-agricultural sectors as workers which includes government services, teachers, factory workers, plantation workers, engaged in mining, banking, trade, transport, commerce, construction, social work etc.

We contribute to the literature on the benefits of financial inclusion. The geographic proximity to the 'brick and mortar' bank branches, where the rural population have lower dependence on digital means of banking, remains important for credit allocation. The subsequent institutional credit uptake allows under-privileged, specifically SCs to improve entrepreneurship.

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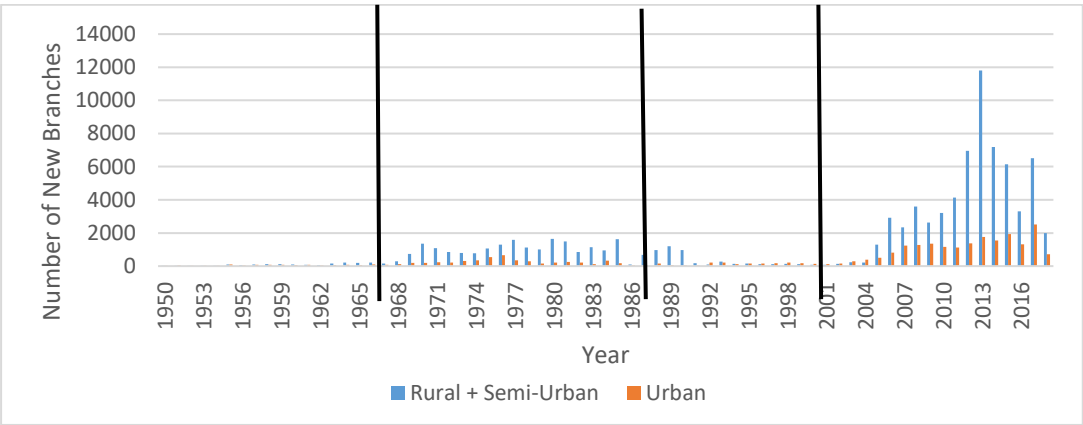
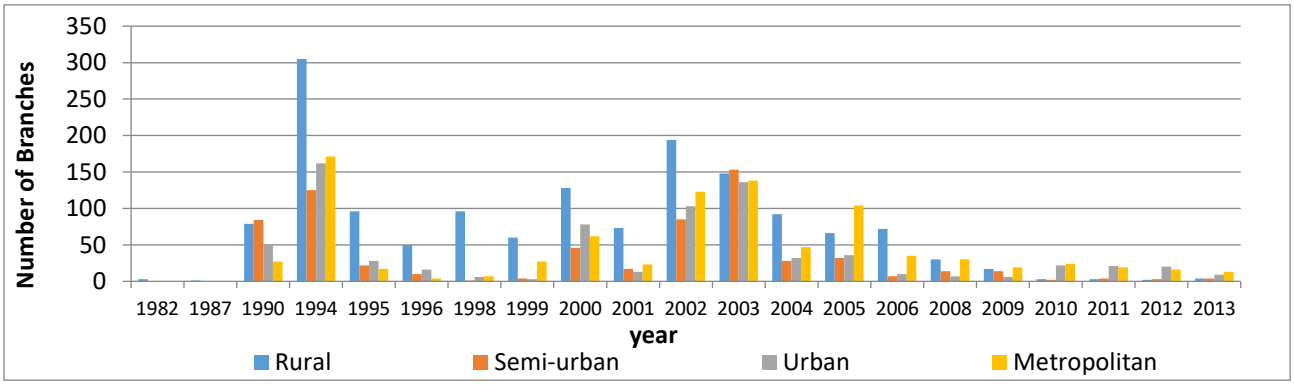
Tables and Figures

Figure 1: Number of New Branches opened each year in Rural and Urban Areas



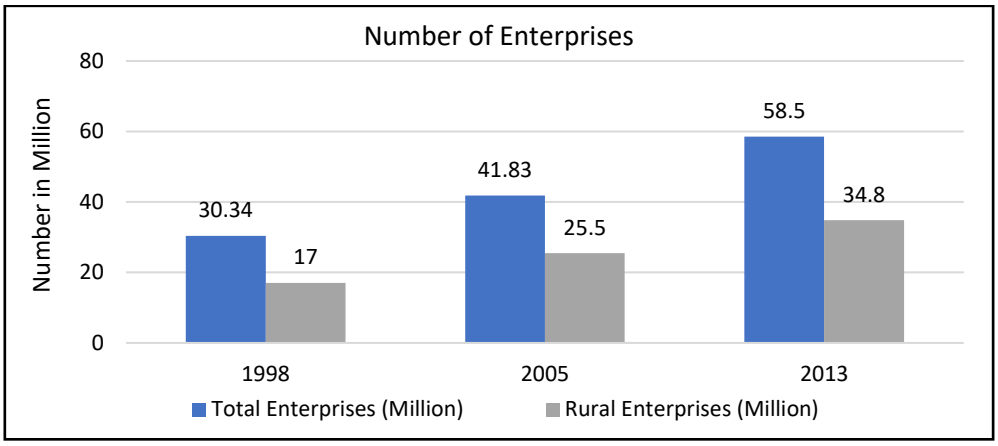
Notes: (i) Data Source: RBI Commercial Bank Directory as on October 2019.

Figure 2: Branch Closure/Merger/Conversion: All India Level



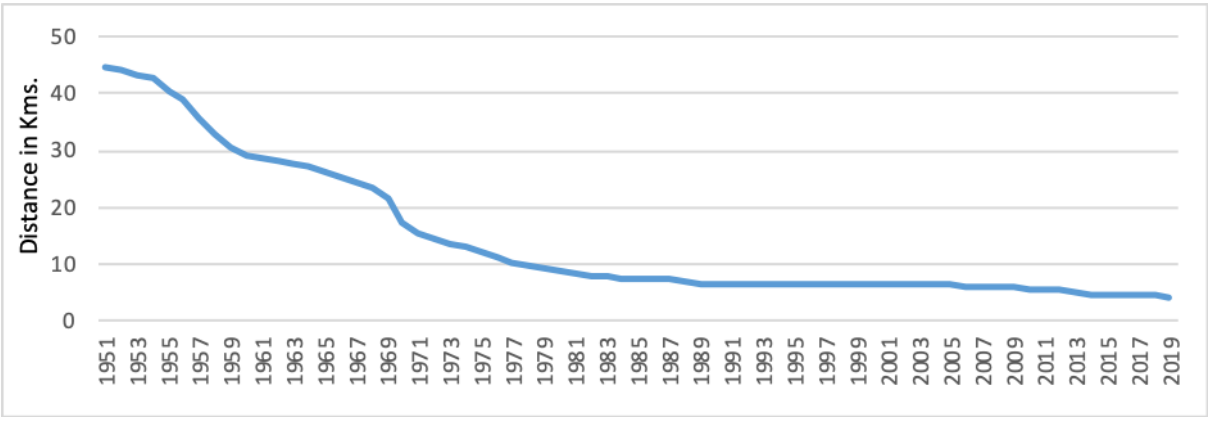
Data Source: Data obtained from RBI Branch Banking Statistics of various years.

Figure 3. Number of Enterprises: All India Level



Data Source: Economic Census rounds of 1998, 2005, and 2013.

Figure 4: Average distance to nearest village/town with commercial bank: All unbanked villages (1951-2019)



Note: (i) Data Source: Computed by authors using following data sets: (a) RBI Commercial Bank Directory as on Oct, 2019. (b) Population census 2011. (c) Spatial Database for South Asia - World Bank.

Table 1: Treatment and Control Groups

	Number	Proportion*
Treatment Group	68,664	12.80
Control Group	187,814	35.06

Notes: (i) *Proportion of villages with respect to all 535,663 villages in Economic Census 2013. While computing the total number of unbanked villages, we remove uninhabited villages as per Population Census 2011. (ii) Treatment group consists of those unbanked villages which were more than 5kms away from a banked centre up to 2005, but came within 5kms between 2006 and 2013. (iii) The control group consists of those unbanked villages which remained more than 5kms away from a banked centre in all years of study i.e., up to 2013.

Table 2: Summary Statistics (1998, 2005, 2013)

	Observations	Mean	SD	Min	Max
General	6,34,173	11.10368	60.67506	0	19069
OBC	6,34,173	14.54717	49.97081	0	8827
SC	6,34,173	3.453586	13.67178	0	2495
ST	6,34,173	2.743382	15.54861	0	6615
Non-agricultural					
General	6,34,173	7.428547	54.68873	0	18917
OBC	6,34,173	9.369387	37.86877	0	8632
SC	6,34,173	2.322187	9.89327	0	1275
ST	6,34,173	1.500302	10.24775	0	6227
Agricultural					
General	6,34,173	3.675133	19.94523	0	1939
OBC	6,34,173	5.177786	25.45204	0	2114
SC	6,34,173	1.131399	7.357388	0	1738
ST	6,34,173	1.243072	10.44845	0	1362
Formal Finance					
General	6,34,173	0.299291	3.673309	0	1013
OBC	6,34,173	0.297214	3.407983	0	828
SC	6,34,173	0.065659	0.88493	0	157
ST	6,34,173	0.054949	1.015705	0	444

Notes: (i) Observations refer to number of villages over three rounds of data. (ii) Mean refers to average value of respective indicator per village.

Table 3: Determinants of Treatment

Correlates of treatment dummy		
	Coefficient	SE
Literacy rate$_{2001}$	0.316***	0.008
Population (log) $_{2001}$	0.005***	0.001
Distance to nearest town$_{2001}$	-0.002***	0.0001
Pavel road dummy$_{2001}$	0.029***	0.002
Ag credit society$_{2001}$	-0.024***	0.003
Power dummy$_{2001}$	0.051***	0.003
Observations	2,33,398	
District Dummy	Yes	

Notes: (i) Table reports results form a Probit model. The dependant variable is the treatment dummy. It takes value 1 if an unbanked village comes within 5kms of a banked centre between 2005 and 2013 and 0 otherwise. (ii) Explanatory variables are taken from PC 2001. (iii) Results show that which kind of villages received treatment by 2013. (iv) Significance levels: * 10%, ** 5%, *** 1%.

Table 4: Mean Distance of un-banked villages to the Nearest Banked-Centre (kms)

	1998	2005	2013
Treated	8.45	8.3	3.23
Control	9.81	9.84	8.42

Data Source: The financial access is derived using spatial data, PC 2011 and RBI commercial bank directory.

Table 5: Impact on Enterprises: By Social Group

	General	OBC	SC	ST
	(1)	(2)	(3)	(4)
Panel A. Dependant Variable: Number of All Enterprises				
Treated*Post 2005	0.224	0.051	0.105*	-0.156***
	(0.137)	(0.171)	(0.058)	(0.036)
Panel B. Dependant Variable: Number of Agricultural Enterprises				
Treated*Post 2005	-0.047	-0.168*	0.016	-0.089***
	(0.075)	(0.098)	(0.03)	(0.02)
Panel C. Dependant Variable: Number of Non-Agricultural Enterprises				
Treated*Post 2005	0.261***	0.243**	0.088**	-0.015
	(0.081)	(0.1)	(0.036)	(0.02)
Village Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
District-Year Fixed Effects	Yes	Yes	Yes	Yes
Time trend of Covariates	Yes	Yes	Yes	Yes
Observations	6,34,145	6,34,145	6,34,145	6,34,145

Note: (i) The table reports impact on caste-wise ownership of enterprises (total and sector-wise) in a village level panel for 1998, 2005 and 2013. (ii) The estimates are computed on the basis of equation (1). (iii) Top 1% of each outcome variable are winsorized. (iv) Each specification includes village fixed effects; year fixed effects; and district - year fixed effects. (v) Each specification also includes time trend of covariates – size of population, literacy rate, distance to the nearest town, paved road dummy, PACS dummy and power-supply dummy. (vi) Following Abadie et al (2017), standard errors are corrected for heteroscedasticity within villages. (vii) Values in parentheses are standard errors. (viii) Significance levels: * 10%, ** 5%, *** 1%.

Table 6: Impact on occupations structure of SC and ST groups (2001 and 2011)

	Household Industry worker	Agricultural Labourer	Cultivators	Other occupations
Panel A: Villages where share of ST population > 75%				
Treated*Post 2005	-0.078*	-0.091**	-0.045**	0.08***
	(0.043)	(0.036)	(0.021)	(0.021)
Observations	34,296	70,994	88,950	76,175
R-square	0.068	0.16	0.46	0.36
Panel B: Villages where share of SC population > 75%				
Treated*Post 2005	0.175*	-0.078	0.0006	-0.054
	(0.105)	(0.069)	(0.045)	(0.049)
Observations	3,909	8,503	9,639	8,873
R-square	0.09	0.28	0.448	0.36

Note: (i) The table reports impact on caste-wise occupations in a village level panel for two rounds of population census: 2001, and 2011. (ii) The estimates are computed on the basis of equation (2). (iii) Each specification includes village fixed effects; year fixed effects; and district and year fixed effects. (iv) Each specification also includes covariates – size of population, literacy rate, distance to the nearest town, paved road dummy, PACS dummy and power-supply dummy. (vi) Following Abadie et al (2017), standard errors are corrected for heteroscedasticity within villages. (vii) Values in parentheses are standard errors. (viii) Significance levels: * 10%, ** 5%, *** 1%.

Table 7: General-caste dominated Sector as per EC 1998

Sector	Share of General-owned enterprises in 1998
Health and Social Work	0.506
Financial Intermediation	0.508
Real Estate	0.521
Manufacture of Wood Products	0.525
Manufacture of Other Non-Metallic Mineral Products	0.527
Manufacture of Other Transport Equipment	0.532
Computer and Related Activities	0.537
Activities Auxiliary to Financial Intermediation	0.587
Other Retail Trade	0.596
Retail Trade	0.611
Air Transport	0.618
Other Business Services	0.624
Manufacture of Precision Instruments	0.625
Land Transport	0.627
Insurance	0.654
Recycling	0.678
Water Transport	0.688
Manufacture of Fab Metallic Products	0.697
Manufacture of Electrical Machinery	0.719
Auxiliary Transport Activities	0.719
Manufacture of Furniture	0.734
Manufacture of Textiles	0.750
Hotels and Restaurants	0.826

Note: (i) Computed based on the Economic Census data of 1998.

Table 8: Evidence of sectoral mobility: Movement of SC enterprises towards *General*-dominated sectors

Number of SC Enterprises	Sectors with presence of General caste group in 1998 (%)		
	50%	60%	70%
Treated*Post 2005	0.057***	0.062***	0.008**
	(0.022)	(0.018)	(0.004)
Village Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
District-Year Fixed Effects	Yes	Yes	Yes
Time trend of Covariates	Yes	Yes	Yes
Observations	6,34,145	6,34,145	6,34,145

Note: (i) The table reports the impact on SC enterprises in *General*-dominated sectors in a village level panel for 1998, 2005 and 2013. The dominance of general caste is defined at 50%, 60% and 70% in three models respectively. (ii) The estimates are computed on the basis of equation (1). (iii) Top 1% of each outcome variable are winsorized. (iv) Each specification includes village fixed effects; year fixed effects; and district and year fixed effects. (v) Each specification also includes time trend of covariates – size of population, literacy rate, distance to the nearest town, paved road dummy, PACS dummy and power-supply dummy. (vi) Following Abadie et al (2017), standard errors are corrected for heteroscedasticity within villages. (vii) Values in parentheses are standard errors. (viii) Significance levels: * 10%, ** 5%, *** 1%.

Table 9: Testing the Credit Channel

	Number of SC Enterprises		
	All	Non-Agricultural	Gen-dominated Sectors (at 50%)
Treated*Post 2005	0.07	0.048	0.04*
	(0.058)	(0.037)	(0.023)
Treated*Post 2005*SC_InstFin	0.526**		
	(0.21)		
Treated*Post 2005*SC_NonAg_InstFin		0.666***	
		(0.206)	
Treated*Post 2005*SC_GenDom_InstFin			0.404*
			(0.211)
Village Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
District-Year Fixed Effects	Yes	Yes	Yes
Time trend of Covariates	Yes	Yes	Yes
Observations	6,34,145	6,34,145	6,34,145

Note: (i) Table reports tests for credit channel for SC enterprises (All, Non-agricultural, and *General*-dominated sectors) in a village level panel for 1998, 2005 and 2013. (ii) The estimates are computed on the basis of equation (3). (iii) SC_InstFin refers to the number of SC-owned firms that reported institutional finance as major source of finance. Similarly, SC_NonAg_InstFin and SC_GenDom_InstFin classify those firms in non-agricultural sectors and general-dominated sectors respectively. (iv) Top 1% of each outcome variable are winsorized. (v) Each specification includes village fixed effects; year fixed effects; and district and year fixed effects. (vi) Each specification includes time trend of control indicators (literacy, population size, PACS, distance to town, paved road, power). (vii) Following Abadie et al (2017), standard errors are corrected for heteroscedasticity within villages. (viii) Values in parentheses are standard errors. (ix) Significance levels: * 10%, ** 5%, *** 1%.

Table10: Impact on SC Enterprises - Bifurcating districts based on the land value

	SC enterprises in Non-Agricultural sector		SC enterprises in *General*-dominated sectors	
Districts with land value:	Above mean (1)	Below mean (2)	Above mean (3)	Below mean (4)
Treated*Post 2005	0.039	0.141***	0.021	0.095***
	(0.047)	(0.054)	(0.03)	-0.033
Observations	3,06,385	2,92,317	3,06,385	2,92,317
R-squared	0.633	0.674	0.605	0.663
Adjusted R-squared	0.419	0.486	0.375	0.47

Note: (i) Table report results for SC enterprises (Non-agricultural and *General*-dominated sectors). The sample in columns 1 and 3 are restricted to districts where land value of SC group is above national median. The sample in columns 2 and 4 are restricted to districts where land value of SC group is below national median. (ii) The estimates are computed on the basis of equation (1). (iii) Top 1% of each outcome variable are winsorized. (iv) Each specification includes village fixed effects; year fixed effects; and district and year fixed effects. (v) Each specification includes time trend of control indicators (literacy, population size, PACS, distance to town, paved road, power). (vi) Following Abadie et al (2017), standard errors are corrected for heteroscedasticity within villages. (vii) Values in parentheses are standard errors. (viii) Significance levels: * 10%, ** 5%, *** 1%.

Table 11: Testing Parallel Trends

Panel A: SC Caste Group

Number of enterprises	All	Ag	Non-Ag
Treated*I(2005)$_t$	0.022	0.0	0.032
	(0.05)	(0.018)	(0.038)
Observations	3,57,330	3,57,330	3,57,330

Panel B: ST Caste Group

Number of enterprises	All	Ag	Non-Ag
Treated*I(2005)$_t$	0.045	0.009	-0.052
	(0.03)	(0.013)	(0.02)
Observations	3,57,330	3,57,330	3,57,330

Notes: (i) Table reports the results for pre-trends in pre-treatment period. (ii) An insignificant coefficient of interaction terms shows parallel pre-trends. (iii) The estimates are computed on the basis of equation (4). (iv) Top 1% of each outcome variable are winsorized. (v) Each specification includes village fixed effects; year fixed effects; and district and year fixed effects. (vi) Each specification includes time trend of control indicators (literacy, population size, PACS, distance to town, paved road, power). (vii) Following Abadie et al (2017), standard errors are corrected for heteroscedasticity within villages. (viii) Values in parentheses are standard errors. (ix) Significance levels: * 10%, ** 5%, *** 1%.

Table 12: Model with Contemporaneous Control Variables (2001 and 2011)

	Number of SC-owned enterprises	
	Non-agricultural sector	*General*-Dominated Sectors (at 50%)
Treated*Post 2005	0.173**	0.147***
	(0.074)	(0.044)
Village Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
District-Year Fixed Effects	Yes	Yes
Time trend of Covariates	Yes	Yes
Observations	4,24,718	4,24,718
Adjusted R-Square	0.37	0.35

Note: (i) The table reports results for outcome indicators in a village level panel for 1998 and 2013. (ii) The estimates are computed on the basis of equation (5). (iii) Top 1% of each outcome variable are winsorized. (vi) Each specification includes village fixed effects; year fixed effects; and district and year fixed effects. (vii) Each specification includes control indicators (literacy, population size, PACS, distance to town, paved road, power). (viii) Following Abadie et al (2017), standard errors are corrected for heteroscedasticity within villages. (ix) Values in parentheses are standard errors. (viii) Significance levels: * 10%, ** 5%, *** 1%.

Table 13: Impact on Entrepreneurship within 3km and 10km Threshold

	Number of SC-owned Enterprises			
	Non-Agricultural Sector	*General*-Dominated Sectors (at 50%)	Non-Agricultural Sector	*General*-Dominated Sectors (at 50%)
	3km		10km	
	(1)	(2)	(3)	(4)
Treated*Post 2005	0.155***	0.089***	-0.035	-0.033
	(0.04)	(0.026)	(0.049)	(0.029)
Observations	9,83,341	9,83,341	1,83,114	1,83,114
Village Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
District-Year Fixed Effects	Yes	Yes	Yes	Yes
Time trend of Covariates	Yes	Yes	Yes	Yes

Notes: (i) Table reports the results after we change the distance threshold to 3kms in a village level panel for 1998, 2005, and 2013. (ii) The estimates are computed on the basis of equation (1). (iii) Top 1% of each outcome variable are winsorized. (iv) Each specification includes village fixed effects; year fixed effects; and district and year fixed effects. (v) Each specification includes time trend of control indicators (literacy, population size, PACS, distance to town, paved road, power). (vi) Following Abadie et al (2017), standard errors are corrected for heteroscedasticity within villages. (vii) Values in parentheses are standard errors. (viii) Significance levels: * 10%, ** 5%, *** 1%.

Table 14: Assessment using a Matched Control Group

	Number of SC-owned Enterprises	
	Non-Agricultural Sector	*General*-Dominated Sectors (at 50%)
Treated*Post 2005	0.08**	0.044**
	(0.033)	(0.019)
Village Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
District-Year Fixed Effects	Yes	Yes
Time trend of Covariates	Yes	Yes
Observations	5,60,489	5,60,489
Adjusted R-Square	0.448	0.416

Notes: (i) Table reports the results of difference-in-difference specification (1) using matched control (ii) The matched control group villages are obtained using the Coarsened Exact Matching Method proposed by Iacus et al. (2018). Covariates used for matching are: literacy, population size, PACS, distance to town, paved road, power. (iii) Top 1% of each outcome variable are winsorized. (iv) Each specification includes village fixed effects; year fixed effects; and district and year fixed effects; time trend of control indicators (literacy, population size, PACS, distance to town, paved road, power). (v) Following Abadie et al (2017), standard errors are corrected for heteroscedasticity within villages. (vi) Values in parentheses are standard errors. (vii) Significance levels: * 10%, ** 5%, *** 1%.