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Does Local Financial Development Matter for Entrepreneurship in the Informal Sector? Evidence from India

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1. Introduction

The regional dimension of entrepreneurship has been a subject of great importance to scholars of regional development (Acs and Storey 2004, Acs and Armington 2006). Small firms are an important source of economic dynamism and particularly job creation, and the formation of such firms can be a crucial determinant of economic growth and employment generation, especially in lagging regions (Fritsch 1997, Audretsch and Thurik 2004, Parker 2004, Audretsch and Keilbach 2004, Fritsch et al. 2005). Historically, in most countries, whether in the developed or developing world, rates of new firm formation differ significantly across regions within the same country (Keeble and Walker 1994, Braunerhjelm and Borgman 2004). Such variation in the rate of new firm formation is often seen as a cause of wide divergence across regions in the same country in economic growth and employment opportunities, and can become a matter of significant policy concern for policy-makers.

Why do we see such wide regional variations in entrepreneurship? While an emerging literature has attempted to address this question, we still do not know enough on what explains the regional dimension of entrepreneurship, and what governments can do to

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promote entrepreneurship in the more backward regions (Lloyd and Mason 1984, O'Farrell 1986, Armington and Acs 2002). As Acs and Storey (2004) argue, "the instruments available – such as government assistance programme, local expenditure patterns or even political parties – seemed to exert little or no explanatory power" (p. 872). One crucial determinant of entrepreneurship is the availability of external finance.The theoretical literature postulates an unambiguous positive relationship between the easing of credit constraints on entrepreneurs and the rate of new firm formation (Evans and Jovanovich 1989, King and Levine 1993). While much of the previous literature has studied other determinants of the spatial variations in entrepreneurship such agglomeration economies, demographic structure, infrastructure and human capital (see for example, Bartik 1989, Ellison and Glaeser 1999, Glaeser 2007, Bonte et al. 2009, Doms et al. 2010), there has been less research on the role that local financial development can play in explaining why entrepreneurship development can differ so starkly across regions in a single country.[1]This is a crucial omission – the empirical literature on financial development finds a strong positive effect of the latter on business start-ups (Parker 2002, Cassar 2004) and at the same time, levels of financial development differ greatly within countries, providing a clear reason why local financial development may matter for regional variations in entrepreneurship development (Guiso and Sapienza 2004).In this paper, we attempt to rectify this omission in the literature by examining whether local financial development can exert a positive effect on the regional dispersion of entrepreneurship.

Another significant omission in the literature on the regional dimension of entrepreneurship, especially in the developing country context, has been the relative neglect of the informal sector in the analysis of entrepreneurship. This is a surprising omission, given the large presence of the informal sector in developing countries. For instance, the ILO (2002) estimates that 48 per cent of workers in North Africa, 72 per cent in Sub-Saharan Africa, 51 per cent in Latin America and 65 per cent in Asia, are employed in the informal economy. De Soto (2000) argues that many entrepreneurs in developing economies prefer to be in the informal sector, as the bureaucratic procedures involved in permission to set up a business in the formal sector discourages nascent entrepreneurs. The informal sector is the preferred site where many entrepreneurs would like to start their operations, and it is often the sector where the most dynamism and creativity among small firms can be found in developing economies

[1] An exception is de Guevara and Maudos(2009), who investigated the role of regional financial development on firm growth in Spanish provinces and found that firms in industries with a greater dependence on external finance grew faster in more financially developed provinces.

(Maiti and Sen 2010, Prahalad 2005, Godfrey 2011). Yet it is usually the entrepreneurs in the informal sector who are most likely to be credit constrained and dependent on external finance, as these entrepreneurs generally tend to be low-wealth, and therefore, not having the necessary savings to start an operation on their own funds (Blanchflower and Oswald 1998, Parker 2000 and 2002, Hurst and Lusardi 2004). Since entrepreneurs in the informal sector would not be able to borrow from bond or stock markets that are not geographically confined, they would have to rely on local financial intermediaries for their sources of funds for investment. In this case, levels of local financial development would be expected to have a significant role to play in explaining variation in entrepreneurship development and new firm formation across regions in the same country.

In this paper, we examine the role of local financial development in explaining new firm formation in the informal manufacturing sector of a developing country. The country we study is India, where about 80 per cent of manufacturing employment and 17 per cent of manufacturing output is in the informal sector (NCEUS 2007). India provides an ideal context to study the relationship between local financial development and entrepreneurship growth in the informal sector for three reasons. Firstly, regional development is very uneven in India, with more prosperous Indian states having per capita incomes that are close to five times that of the poorest states, and there has been an increase in regional growth divergence since the economic reforms of 1991 (Nayyar 2008; Ramaswamy, 2007; Bhattacharya and Sakthivel 2004). The location of informal manufacturing enterprises also shows a highly uneven regional distribution (Ghani et al. 2012). Secondly, while the Indian government actively promoted an equitable spread of financial institutions till 1991 under a system of branch licensing policy for nationalised commercial banks which made it mandatory for these banks to open branches in rural and semi-urban areas and remote regions of the country, this policy has been considerably weakened since the financial liberalisation enacted as part of the 1991 economic reforms. This may have led to greater inequality in local financial development in more recent years (Cole 2009, Burgess and Pande2005). Finally, the analysis of the determinants of entrepreneurship variation across regions within a country allows for institutional, legal and cultural factors to be more adequately controlled for, since there are fewer differences among regions than among countries (de Guevara and Maudos 2009).

In this paper, we use district level data for India to examine whether the level of financial development can explain entrepreneurship growth in the same district. We measure entrepreneurship growth by a wide variety of variables – the changes in the number of enterprises, number of workers, capital and output – and our dependent variables are changes in enterprises, number of workers, capital stock and output of informal manufacturing enterprises at the district level. Our period of analysis is 2000-2005. One innovative feature of our analysis is that we distinguish between three types of informal enterprises when we examine the effect of local financial development on entrepreneurship growth in the informal sector. The three types of enterprises we study separately are household enterprises which are usually very small in size as they only use family labour, (called Own Account Manufacturing Enterprises – OAMEs – in India), household enterprises which use a combination of family and wage labour(called Non-Directorate Manufacturing Enterprises – NDMEs), and larger informal enterprises who use mostly wage labour(called Directorate Manufacturing Enterprises – DMEs). These three types of enterprises capture the different organisational forms in the informal sector, and analysing the effects of financial development separately allows us to assess whether finance constraints are more binding among some organisational forms in the informal sector than others.

We use a rich data-set of large representative surveys of informal firms with the census-cum-sample data on formal manufacturing firms. The data are beginning in 2000-01 and ending in 2005-06. We find thatlocal financial development promotes entrepreneurship and aids firm growth in the informal sector in India. The effect is, however, confined to the smallest firms in the informal sector, and local financial development seems to play less of role in fostering the growth of the larger enterprises in the informal sector.

The rest of the paper is in six sections. In the next section, we summarise related literature on the finance-entrepreneurship linkage and on the regional dimension of entrepreneurship in India. Next we provide a brief discussion of financial policies in India. In Section 4, we describe the data and the variables used in the empirical analysis. Section 5 discusses spatial patterns of financial development and entrepreneurship in India. Section 6 presents the results of the empirical analysis. Section 7 concludes.

2. Related Literature

Finance and Entrepreneurship

A very rich empirical literature has shown that that the development of a country's financial sector greatly facilitates its economic growth (Goldsmith 1969, Shaw 1973, King and Levine, 1993a, 1993b; Beck et al (2000), Rajan and Zingales (1998)). One important mechanism by which greater financial development increases economic growth is by facilitating more business start-ups and greater entrepreneurial activity (Parker 2004). From a theoretical standpoint, financial development can positively affect entrepreneurial activity in three ways. Firstly, a higher level of financial development implies that more resources are mobilised to finance entrepreneurial activity (King and Levine 1993b). Secondly, financial development allows for the better screening of prospective entrepreneurs and the choice of more promising projects that are likely to succeed (Paulsen and Townshend 2004). Thus, financial intermediaries are better able to assess the ability of the entrepreneur to succeed with the proposed project and are less likely to reject low-wealth but high-ability investors who are not able to offer a high level of collateral when borrowing from these intermediaries (Hurst and Lusardi 2004). Thirdly, more developed financial systems (especially equity markets) allow entrepreneurs to diversify risk from innovative activities that lead to better functioning financial systems, allowing them to take on more risky but high return projects.

The empirical evidence on whether financial development has a strong positive effect on entrepreneurial activity is limited. Among the few studies that have studied the effect of financial development on entrepreneurship, Paulson and Townsend (2004) find that liquidity constraints play an important role in determining who becomes an entrepreneur, using data from rural Thailand. In the Indian case, Bell and Rousseau (2001) find a positive relationship between financial development and industrialisation using time-series data from 1950 to 1990 (check) but do not directly study the effect of financial development on entrepreneurial activity.

Other Determinants of Entrepreneurship

Agglomeration economies are widely seen as being the most important determinant of why new firms locate in regions where other firms are present, and why we see clear spatial clustering of entrepreneurial activity (Henderson 1988). Firms tend to cluster together in regions with good access to markets, leading to greater external economies of scale, through

the use of specialized labor andinvestment in cost reducing technologies (Lall 2004).Beyond the firm level, agglomeration economies can also be driven by industry andregional factors. Industry benefits would include access to specialized know-how (i.e., knowledge diffusion), thepresence of buyer–supplier networks, and opportunities for efficient subcontracting (ibid.).Employees with industry-specific skills will be attracted to such clusters giving firmsaccess to a larger specialized labor pool. At the regional level, agglomeration economies would accrue from easier access to complementary services (e.g., publishing, advertising,banking), and information transfers between industries.

In addition to agglomeration economies, the literature has also identified human capital, infrastructure and social and cultural factors as being important determinants of the spatial variation in entrepreneurship. Acs and Armington (2002) argue for the importance of human capital and the propensity of locally available knowledge to stimulate innovative activity which culminates in new firm formations. Highly educated populations provide the human capital embodied in their general and specific skills for implementing new ideas for creating new businesses. They also create an environment rich in local knowledge spillovers, which support another mechanism by which new firm start-ups are initiated and sustained (Ozer 2010). The availability of good quality infrastructure such as roads and telecommunication links would play an important role why firms prefer to locate in regions with high levels of infrastructural services. Social factors such as the orientation of the population towards risk-taking activities and norms and social values that reward self-employment rather than wage employment would also be important in explaining why some regions within a country tend to see higher entrepreneurial activity than others.

In the Indian context, several studies have shown the importance of agglomeration economies, human capital and infrastructure in determining the spatial variation in entrepreneurial activities. For example, Ghani et al. (2011) find that the incumbent composition of manufacturing influence new firm entry, and that educational levels and infrastructure matter in fostering greater entrepreneurship development. Kambhampati and McCann (2007) find strong positive effects of agglomeration economies in the regional performance of Indian industry. Lall et al. (2004) find significant concentration of manufacturing firms in large cities, driven in part by the presence of transport infrastructure linking these cities to domestic markets. With the exception of Ghani, these studies do not look at the spatial determinants of entrepreneurship in the informal sector, and none of these

studies examine the role of local financial development in explaining regional variations in entrepreneurship. This omission is significant, given the changes in Indian financial policies since the 1990s, which may have led to greater inequality in financial development. We turn to these policies next.

3. Financial policies in India

In the 1950s and 1960s, the Indian financial sector operated in a fairly liberal environment. This period saw the consolidation of the Reserve Bank of India (RBI) in its role as the agency in charge of the supervision and control of banks. An important feature of the banking sector during the period 1951-1968 was that a large proportion of bank credit went to the industrial sector, and within it, to the large borrowers, with the agricultural sector getting a little over 2 per cent of bank credit. There was a growing realisation among Indian policy-makers that there was a need for extensive social control of the Indian banking system. In July 1969, as a consequence, 14 of the largest commercial banks were nationalised (Sen and Vaidya 1997).

The evolution of the Indian financial sector beginning from 1969 can be divided into two distinct sub-periods: first, a period of financial repression from the early seventies to the mid-eighties; second, from 1991, a period of an increasingly liberalised financial sector. In the first period, the Indian government's intervention in financial markets began with the nationalisation of 14 private sector banks in 1969 followed by the nationalisation of six more private sector banks in 1980. The primary objective of the nationalisation was to ensure that credit availability matched the wider development objectives of the government (Kochar 2011). Banks were increasingly pressurised to lend to the "priority sector", comprising agriculture and allied activities, small-scale industry, retail trade, transport operators, professionals and craftsmen. This meant that more credit was available to small-scale firms.. At the same time, there was an increasing recourse to the banking sector via mandatory investment by commercial banks in government securities to finance the ever-widening budget deficits of the central government in the seventies and the eighties, possibly crowding out bank financing of private investment. While the commercial banks essentially provided short term credit to small firms in the manufacturing sector, long term loans to this group of firms were provided by the Small Industries Development Bank of India (SIDBI) (Sen and Vaidya 1997).

While social control of the banking sector may have led to increasing inefficiency in the financial intermediation process (Athukorala and Sen2002), there was significant growth in the commercial banking system in the country both in geographical coverage and amount of resources mobilised. This was in great part due a strictly enforced branch licensing policy followed by the RBI from 1977 onwards. Under this policy, the RBI restricted banks from opening branches in urban and metropolitan areas. Instead, the thrust of branch expansion was mostly to the 'under-banked' districts in rural and semi-urban areas. The RBI mandated that to obtain a license for a branch opening in a location with one or more branches (a banked location), a bank must open branches in four eligible unbanked locations. The policy remained in place till 1990. In addition, to ensure that banks did not concentrate their lending in urban areas, the RBI required that every bank branch maintained a credit-deposit ratio of 60 per cent within its geographical area of operation (Burgess and Pande 2005). This led to an increase in bank deposits as a percentage of national income from 15.3 in 1969 to 51.8 in 1994. Furthermore, in contrast to the experience with financial repression in other developing countries, the real rate of return on bank deposits has been positive more or less all through the 1970s and 1980s. Primarily due to the branch licensing and real interest rate policies, there was a significant financial deepening in the Indian economy in the seventies and eighties, with an increase in bank deposits as a percentage of national income from 15.3 in 1969 to 51.8 in 1994.[2]

In 1991, as a part of the IMF financed structural adjustment programme, interest rates were deregulated and government regulation of financial markets substantially reduced. The most significant change in financial sector policies was the relaxation of branch licensing policies by the RBI, with banks now allowed to close down loss-making rural and semi-urban branches as well as open branches in regions where there were already a large presence of bank branches. Burgess and Pande (2005) show that while from 1977 to 1990, there was a rapid expansion of bank branches in financial underdeveloped states, there was a dramatic reversal in the regional dispersion of commercial banks since 1990, especially in rural unbanked areas.

[2] Burgess and Pande (2005) show branch expansion into rural unbanked areas significantly reduced rural poverty, though the branch expansion programme left urban poverty outcomes unaffected.

4. Empirical Specification, Data and Variables

Empirical Specification: Our empirical strategy in this paper lies in examining the effect of the spread of banking facilities at the district level on the creation and expansion of informal sector firms in India.[3] As mentioned earlier, we proxy entrepreneurship using number of enterprises, employment, fixed capital stock and profit.[4] We focus on average annual changes in these variables at the district level over the period 2000-01 to 2005-06. To be specific, we make an attempt to see whether changes in enterprises, employment, capital stock and profit at the district level are driven by the availability of banking facility. We do this by running a regression of the following form:

$$\Delta ENT_{ds} = \beta_0 + \beta_1 FIN_{dst-1} + \gamma_s + e_{ds} \quad (1)$$

where $\Delta ENT_d = ENT_{dt} - ENT_{dt-1}$

where *ENT* is our measure of entrepreneurship, *FIN* is our measure of district level financial development, *d* stands for district and *t* for time. We measure FIN by a variety of measures of financial development; these are the number of bank branch offices (BKOF), number of bank accounts (BKACT), total amount outstanding (BKAMT) and total credit outstanding (BKCRDT) at the level of the district. We include state dummies, γ_s, to incorporate unobserved state specific characteristics that are likely to influence firm growth independent of financial development. This could be larger market size due to higher per capita incomes, better infrastructure, high levels of social development and high levels of human capital.

We estimate equation (1) for the whole sector and for three different enterprise types, OAMEs, NDMEs and DMEs. Our unit of analysis is the district, and our data cover 426 districts for the sector as a whole and for the OAME firms, 419 districts for the NDME firms and 360 districts for the DME firms (the lower number of districts in the cases of the NDME and DME firms is due to the fact that NDMEs and DMEs are not present in several districts). All financial variables are transformed to their natural logarithmic values.

[3] Nonbank finance remains much less important than bank finance for firms in most developing countries (Demirgüç-Kunt et al., 2008).

[4] A similar approach is followed by Musso and Schiavo (2007) where they measure firm growth in terms of output, employment and capital stock.

One potential issue of concern with equation (1) is that financial development may be endogenous to the growth of entrepreneurship if financial intermediaries choose to locate in the most dynamic regions. We address the potential endogeneity of *FIN* by using the level of financial development in 2000 to explain the growth of entrepreneurship in 2000-2005.

*Data:*For the analysis, we combine the data on bank availability at the district level with the district level data on the informal manufacturing firms for the period 2000-01 – 2005-06. Data on the informal manufacturing sector come from the surveys on the sector conducted by the National Sample Survey Organisation in its 56th (2000-01) and 62nd (2005-06) rounds. The NSSO is the agency that collects information on various aspects of the enterprises / units in the informal manufacturing sector quinquennially. In its surveys, the NSSO employ stratified sampling procedure to identify the sample enterprises and cover all the Indian states and Union Territories (UTs). The survey gives information on selected indicators – output, labour, capital, materials, profit, ownership, etc. at the unit level for the three categories of manufacturing enterprises – own-account (OAME), directory (DME) and non-directory (NDME) manufacturing enterprises. We aggregate the unit level data to the district level and arrive at the district level estimates using the multipliers supplied with the NSSO dataset.

The district level finance variables are drawn from the Reserve Bank of India (RBI) publication, Basic Statistical Returns of Scheduled Commercial Banks in India, for the period, 2000-01. These reports provide comprehensive data on state-wise/ district-wise distribution of branch offices, bank employees, number of deposits and amount deposited and outstanding credit of scheduled commercial banks in India. The data are collected through the annual statistical surveysfrom the offices of scheduled commercial banks in India including Regional Rural Banks.

The NSSO surveys provide the names of the districts in which firms are located, and we merged the NSSO and the RBI datasets using a one-to-one mapping of 426 districts for the two datasets. New districts have been created in many states during the period 2001-2006. In order to facilitate comparison over time at the district level for the period under study, these new districts have been merged with their parent districts. The study is confined to 15 major states of the Indian Union.[5]

[5] The states included are Andhra Pradesh (AP), Assam, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh (MP), Maharashtra, Orissa, Punjab, Rajasthan, Tamil Nadu (TN), Uttar Pradesh (UP), and West Bengal (WB).

Variables Used

*Variables:*We have used different measures such as changes in number of enterprises (chE), number of workers (chL), gross fixed capital stock (chK) and gross profit (chPF) as proxies for entrepreneurship.[6]This would help us to capture the creation and evolution of entrepreneurial activity in the informal sector. As we are also interested in capturing the effect of external finance on entrepreneurship across different enterprise types, we look at the effects of financial development on the four measures of entrepreneurship for the entire informal manufacturing sector, but also by firm type - that is, by OAMEs, NDMEs and DMEs. Number of workers is measured as total number of persons engaged in the production activity, which include production workers as well as employees. We include both family and hired workers irrespective of whether they are employed on a full-time basis or part-time basis.[7]For capital stock, we have used book value of total fixed assets as given in the NSSO reports, which include land, buildings and other construction, plant and machinery, transport equipment, tools and other fixed assets that have a normal economic life of more than one year from the date of acquisition. Data on profit are drawn directly from the NSSO dataset. All nominal variables are converted to real terms at 1993-94 prices.

We begin the empirical analysis by presenting the summary statistics and a discussion on the regional dispersion of bank offices. We then present the main results of the econometric analysis.

5. Spatial Patterns of Financial Development and Entrepreneurship in India

Descriptive Statistics

New firms have been created during the period 2000-01 – 2005-06 as evident from the summary statistics presented in Table 1. We also find that new firm creation is aided by the increase in the number of OAMEs and NDMEs. As is clearly evident from the table, the

[6]Many studies use self-employment as a measure of entrepreneurship (Evans and Jovanovic, 1989 and Blanchflower and Oswald, 1998). However, as Ghani et al. (2011) point out restricting entrepreneurship only to self-employment will not include enterprises that create employment for others. In our case, self-employed category corresponds to OAMEs while enterprises that employ other workers are the NDMEs and DMEs. The latter categories are important in job creation in informal sector. For this reason, we did not confine our measure of entrepreneurship to OAMEs and included NDMEs and DMEs as well.

[7] It could well be an over-estimate, however, the NSSO reports do not provide any other information on labour such as number of man-days or number of hours worked.

number of DMEs witnessed a decline during the period.A similar pattern can be observed with regard to employment generation in the sector. A surge in employment is noticed in the OAME and NDME firms. The same period has also witnessed significant investment in capital stock in all enterprise types. There has been a considerable decline in the profit earned by the sector, which was uniform across all the enterprise types. Table 1 also summarises all four indicators of financial development considered in the study.We find that average number of bank branches and accounts per district are 110 (exponential of 4.7)and 540364 (exponential of 13.2) respectively.

Table 1: Summary Statistics

Variables	All Enterprises					OAME				
	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max
chE	426	0.1	0.8	-3.2	3.4	426	0.1	0.8	-3.1	3.3
chL	426	0.04	0.8	-3.6	3.9	426	0.0	0.8	-3.1	3.1
chK	426	0.2	0.9	-4.9	3.7	426	0.2	0.9	-4.0	2.8
chPF	424	-2.1	1.0	-6.4	3.2	425	-2.4	0.9	-6.0	0.3
BKOF	426	4.7	0.7	2.1	7.3	426	4.7	0.7	2.1	7.3
BKACT	426	13.2	0.9	10.1	16.6	426	13.2	0.9	10.1	16.6
BKAMT	426	22.1	1.1	19.1	27.2	426	22.1	1.1	19.1	27.2
BKCRT	426	21.1	1.2	17.3	27.0	426	21.1	1.2	17.3	27.0
	NDME					DME				
Variables	N	Mean	SD	Min	Max	N	Mean	SD	Min	Max
chE	419	0.1	1.2	-4.8	5.3	360	-0.1	1.9	-7.5	7.6
chL	419	0.1	1.2	-4.4	5.9	360	-0.1	2.0	-7.5	8.0
chK	419	0.2	1.3	-4.9	4.5	360	0.2	2.1	-6.8	7.4
chPF	415	-2.2	1.3	-7.9	2.2	357	-1.3	2.3	-8.0	7.2
BKOF	419	4.7	0.7	2.8	7.3	360	4.9	0.6	2.9	7.3
BKACT	419	13.3	0.9	10.1	16.6	360	13.4	0.8	10.7	16.6
BKAMT	419	22.1	1.1	19.1	27.2	360	22.3	1.0	19.3	27.2
BKCRT	419	21.1	1.2	17.3	27.0	360	21.3	1.1	18.5	27.0

Note: BKOF, BKACT, BKAMT and BKCRT are in natural logarithms.

Despite significant steps towards extending the bank coverage to unbanked regions, there still exists substantial dispersion in the degree of financial development across Indian states (Table 2). West Bengal enjoys the highest number of bank branches per district (250) followed by Karnataka (242), Andhra Pradesh (237) and Kerala (235). The states with lowest number of bank branches per district are Assam (55), Orissa (75), Haryana (88) and Bihar (94). With regard to population per bank branch, the ratio is the lowest in Kerala and Haryana and the highest in Bihar and Assam.

Table 2: Regional Dispersion of Bank Offices

State	N	Mean	SD	Min	Max	Total	Population per office
Punjab	16	155	100.348	44	347	2473	9619
Haryana	17	88	32.37374	46	145	1495	13695
Rajasthan	32	105	64.778	38	393	3362	16457
UP	60	158	109.2527	27	598	9472	17947
Bihar	54	94	52.91595	17	330	5053	24118
Assam	23	55	33.20639	16	176	1268	20621
WB	18	250	224.7444	63	1032	4503	17465
Orissa	30	75	48.11094	19	195	2238	16127
MP	44	104	56.59345	32	302	4570	16509
Gujarat	17	217	153.379	8	605	3696	13374
Maharashtra	30	214	269.2872	44	1517	6421	14721
AP	23	237	106.3282	133	551	5459	13713
Karnataka	19	242	180.0467	95	845	4601	11256
Kerala	14	235	109.1502	72	495	3286	9588
TN	29	167	142.4872	48	807	4832	12713

Measuring Regional Dispersion

We use the Theil index to measure the regional concentration of entrepreneurship and finance variables at three levels, (a) All India , (b) Regional and (c) State , using districts as the units of analysis. We compute the Theil index for 2000 and 2005, which would help us in understanding whether there has been a trend towards increasing regional concentration (agglomeration) in the distribution of these variables.[8]

The Theil index belongs to the family of generalised entropy inequality measures and is measured as follows:

$$T = \frac{1}{D}\sum_{d=1}^{D}[S_d \,.\, logS_d] \qquad (1)$$

where*D* is the total number of districts in a region and *S* is the variable of our interest (Finance and entrepreneurship variables). For a district *d* in a given State/region, S_d gives relative importance of a characteristic vis-à-vis average value of the characteristic for the State and is given by, $S_d = \frac{y_d}{\bar{Y}}$, where y_d is the actual value of the variable for district *d* and

[8]Ruane and Zhang (2007) also used the Theil index to capture the extent of concentration in the Pharmaceutical industrial sector in Europe.

$\bar{Y}$is the mean of the variable for all districts in the region. The value of *T* indicates the skewness in distribution, and a higher Theil index indicates that the distribution of variable is highly skewed towards certain districts.

One of the properties of the Theil's index is decomposability, meaning that once the districts are grouped in exhaustive and mutually exclusive sets, the total inequality in distribution can be expressed as the sum of between-group inequality (BGI) and within-group inequality (WGI). This helps us to evaluate the inequality in the distribution *between* groups, and the inequality in the distribution among districts *within* each group. With regard to WGI, a declining WGI indicates enterprises are getting scattered within the district and an increasing WGI points to the increasing concentration of enterprises. To see the contribution of WGI and BGI in total dispersion, we decompose the Theil index as follows:

$$T = \sum_{s=1}^{k} p_k \, \varphi_k log \varphi_k + \sum_{s=1}^{k} p_k \, \varphi_k T_k \quad (2)$$

where $p_k = \frac{d_k}{D}$, the ratio of total districts in kth region to total districts, $\varphi_k = \frac{\bar{y}_k}{\bar{Y}}$, which is the ratio of mean of the attribute for the kth region to the mean for all-India. Equation (2) separates the dispersion measure into two components, the first of which represents the BGI and the second term measures the WGI.

As mentioned above, we compute the Theilidex at the all India level, at the regional level for four regions namely South (Andhra Pradesh, Karnataka, Kerala and Tamil Nadu), West (Gujarat and Maharashtra), East (West Bengal, Assam, Orissa and Bihar) and North (Uttar Pradesh, Madhya Pradesh, Rajasthan, Punjab and Haryana) regions, and also at the state level for 15 major states. We measure concentration using two finance variables - number of bank offices and number of bank accounts, and two entrepreneurship variables - number of enterprises and extent of employment. Our results clearly show an increasing trend in the concentration of bank offices and bank accounts. This is evident both at the all India level (Table 3) and at the regional level (Table 4). However, we also find that this skewness in finance availability is aided mostly by the increasing concentration of bank offices and accounts within the states. The difference in concentration across states, according to our

results, seems to have lesser role in influencing the overall concentration of finance availability in India and its regions. This perhaps points out to the fact that it is the district level characteristics rather than state level factors that is driving the decision of the banks to locate the branches in a region. Our analysis across regions also shows that the availability of finance as proxied by bank branches and accounts is less concentrated in the South as compared to other regions (Table 4). At the state level, the concentration is higher in Maharashtra, West Bengal and Uttar Pradesh and lesser in Andhra Pradesh and Kerala (Table 5).

We find completely a different picture of concentration for entrepreneurship variables. Table 6 clearly shows a decreasing trend in agglomeration of informal sector enterprises and employment during the five year period, 2000-2005. This decreasing concentration of informal sector is evident for all the regions except for the West, where we find a surge in concentration (Table 7). While the concentration of informal sector enterprises and employment with in states is aiding the overall concentration in India and its southern, western and northern regions, it is the highly skewed nature of distribution of enterprises amongst states which is determining the overall concentration in the eastern region. At the regional level, the concentration of informal sector units is the highest in the East and the lowest in the South (Table 7). Among the states, we find less concentration in Haryana, Andhra Pradesh and Kerala and high concentration in Maharashtra, Orissa and Madhya Pradesh (Table 8). In general, the results perhaps indicate that the emergence of entrepreneurship or the location decision of firms hinges on district level characteristics.

Table 3: Decomposition of Total Dispersion in Distribution of Bank offices and accounts, India

	Number of Bank Offices			**Number of Bank Accounts**		
	2000	**2005**	**Change**	**2000**	**2005**	**Change**
Total dispersion	0.122	0.140	0.028	0.208	0.238	0.029
Decomposition						
"Within" group dispersion	0.085	0.101	0.031	0.153	0.181	0.031
"Between" group dispersion	0.038	0.039	0.004	0.055	0.057	0.006
"Between" disperionas a percentage of total dispersion	31	28		26	24	

Table 4: Decomposition of Total Dispersionin Distribution of Bank offices and accounts across Regions

	Number of Bank Offices			Number of Bank Accounts		
	2000	**2005**	**Change**	**2000**	**2005**	**Change**
South						
Total dispersion	0.073	0.079	0.014	0.111	0.117	0.009
Decomposition						
"Within" dispersion	0.067	0.073	0.015	0.108	0.113	0.008
"Between" dispersion	0.006	0.006	0.000	0.003	0.005	0.111
"Between" dispersionas a percentage of total dispersion	8	8		3	4	
West						
Total dispersion	0.149	0.152	0.003	0.302	0.347	0.025
Decomposition						
"Within" dispersion	0.149	0.152	0.003	0.301	0.347	0.025
"Between" dispersion	0.000	0.000	0.000	0.001	0.000	-0.167
"Between" dispersion as a percentage of total dispersion	0	0		0	0	
East						
Total dispersion	0.145	0.154	0.01	0.290	0.272	-0.010
Decomposition						
"Within" dispersion	0.085	0.091	0.012	0.167	0.172	0.005
"Between" dispersion	0.060	0.063	0.008	0.124	0.100	-0.032
"Between" dispersion as a percentage of total dispersion	41	41		43	37	
North						
Total dispersion	0.080	0.116	0.075	0.142	0.185	0.050
Decomposition						
"Within" dispersion	0.069	0.107	0.092	0.111	0.153	0.063
"Between" dispersion	0.011	0.009	-0.030	0.031	0.032	0.005
"Between" dispersion as a percentage of total dispersion	14	8		22	17	

Table 5: Extent of Concentration of Bank Offices and Bank Accounts across States

State	Number of Bank Offices		Number of Bank Accounts	
	2000	2005	2000	2005
Punjab	0.081	0.080	0.112	0.104
Haryana	0.027	0.052	0.046	0.076
Rajasthan	0.062	0.070	0.175	0.125
Uttar Pradesh	0.083	0.135	0.107	0.183
Bihar	0.061	0.072	0.123	0.149
Assam	0.064	0.071	0.123	0.173
West Bengal	0.119	0.120	0.215	0.202
Orissa	0.081	0.087	0.142	0.137
Madhya Pradesh	0.054	0.112	0.102	0.167
Gujarat	0.098	0.094	0.126	0.131
Maharashtra	0.178	0.186	0.389	0.466
Andhra Pradesh	0.036	0.036	0.073	0.061
Karnataka	0.086	0.096	0.139	0.173
Kerala	0.043	0.046	0.079	0.055
Tamil Nadu	0.100	0.108	0.137	0.159

Note: Concentration is computed using the Theil index

Table 6: Decomposition of Total Dispersionin Distribution of Informal Enterprises and Employment, India

	Number of Enterprises			Employment		
	2000	2005	Change	2000	2005	Change
Total dispersion	0.227	0.217	-0.007	0.247	0.238	-0.006
Decomposition						
"Within" dispersion	0.138	0.138	0.000	0.153	0.159	0.007
"Between" dispersion	0.089	0.079	-0.019	0.094	0.078	-0.028
"Between" dispersion as a percentage of total dispersion	39	36		38	33	

Table7: Decomposition of Total Dispersionin Distribution of Informal Enterprises and Employment across Regions

	Number of Enterprises			Employment		
	2000	**2005**	**Change**	**2000**	**2005**	**Change**
South						
Total dispersion	0.149	0.124	-0.028	0.148	0.134	-0.016
Decomposition						
"Within" dispersion	0.133	0.121	-0.015	0.133	0.129	-0.005
"Between" dispersion	0.016	0.002	-0.146	0.015	0.005	-0.111
"Between" dispersion as a percentage of total dispersion	11	2		10	4	
West						
Total dispersion	0.206	0.251	0.036	0.132	0.135	0.004
Decomposition						
"Within" dispersion	0.198	0.251	0.045	0.121	0.135	0.019
"Between" dispersion	0.008	0.001	-0.146	0.011	0.000	-0.167
"Between" dispersion as a percentage of total dispersion	4	0		8	0	
East						
Total dispersion	0.340	0.331	-0.004	0.318	0.312	-0.003
Decomposition						
"Within" dispersion	0.144	0.152	0.009	0.136	0.149	0.016
"Between" dispersion	0.196	0.180	-0.014	0.182	0.164	-0.016
"Between" dispersion as a percentage of total dispersion	58	54		57	53	
North						
Total dispersion	0.208	0.194	-0.011	0.183	0.166	-0.015
Decomposition						
"Within" dispersion	0.163	0.161	-0.002	0.151	0.137	-0.015
"Between" dispersion	0.045	0.033	-0.044	0.032	0.029	-0.016
"Between" dispersion as a percentage of total dispersion	22	17		17	17	

Table 8: Extent of Concentration of Informal Enterprises and Employment across States

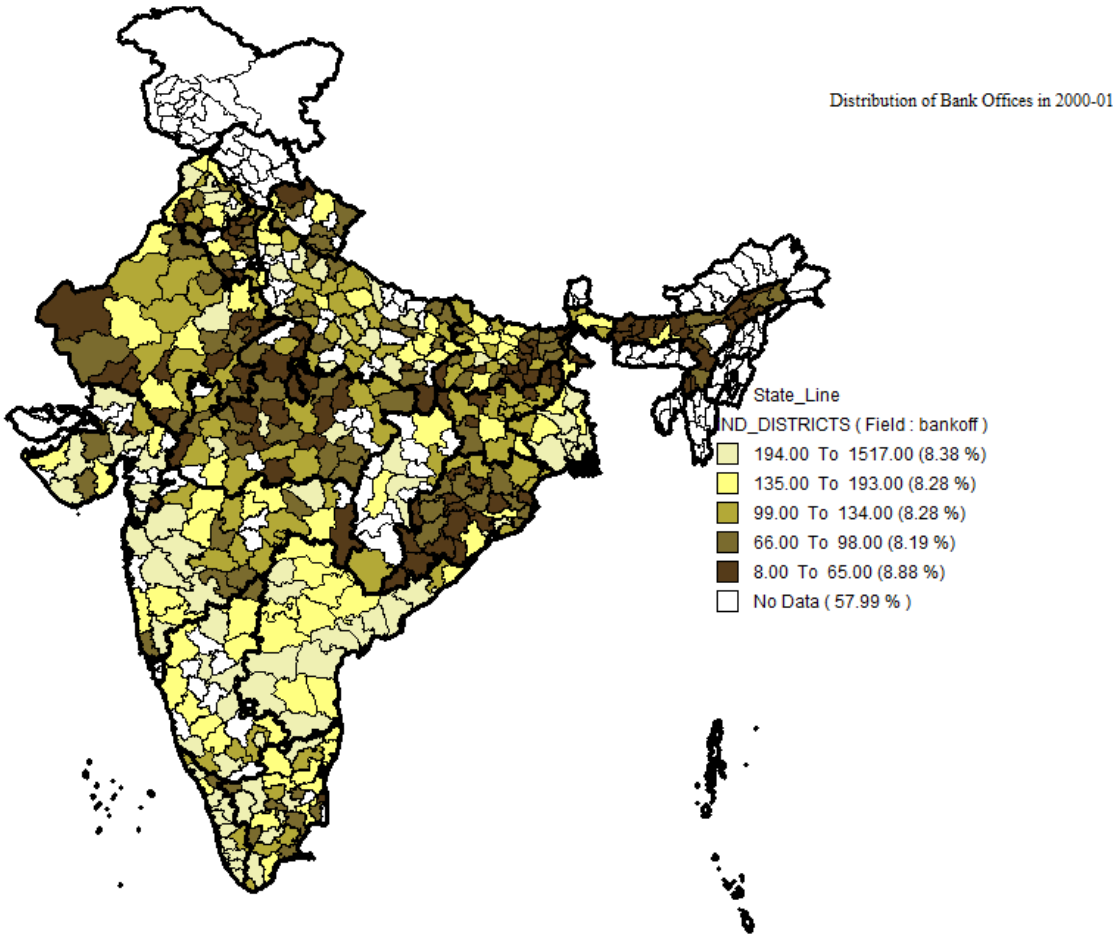
State	Employment		Number of Enterprises	
	2000	2005	2000	2005
Punjab	0.149	0.149	0.124	0.117
Haryana	0.045	0.054	0.043	0.045
Rajasthan	0.225	0.183	0.191	0.109
Uttar Pradesh	0.160	0.142	0.146	0.131
Bihar	0.100	0.142	0.089	0.154
Assam	0.112	0.112	0.104	0.109
West Bengal	0.141	0.141	0.143	0.139
Orissa	0.208	0.206	0.185	0.183
Madhya Pradesh	0.164	0.224	0.169	0.195
Gujarat	0.195	0.163	0.151	0.130
Maharashtra	0.199	0.306	0.111	0.138
Andhra Pradesh	0.121	0.083	0.105	0.083
Karnataka	0.177	0.124	0.231	0.149
Kerala	0.100	0.085	0.082	0.080
Tamil Nadu	0.137	0.168	0.136	0.185

Note: Concentration is computed using the Theil index

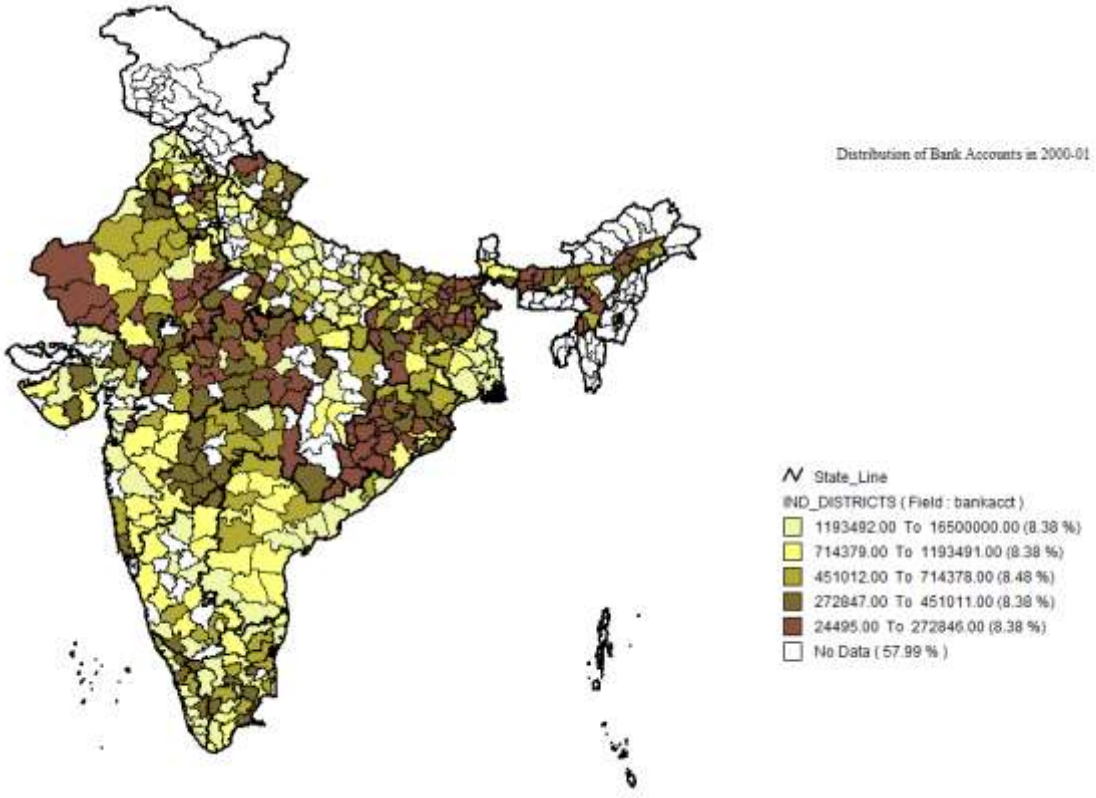
Spatial Distribution of Financial Development and Entrepreneurship

Maps 1, 2 and 3 present the geographical distribution of bank offices in 2000, bank accounts in 2000 and change in enterprsies for 2000-2005 respectively. We find that number of bank offices and accounts are concentrated in southern states of India, Maharashtra, Gujarat and Chhattisgarh. We also find significant within state variation in financial development especially in states of Tamil Nadu and Gujarat. On the other hand, there is limited presence of bank offices and accounts in eastern and northern India especially in the states of Bihar, Orissa, Assam and Madhya Pradesh.

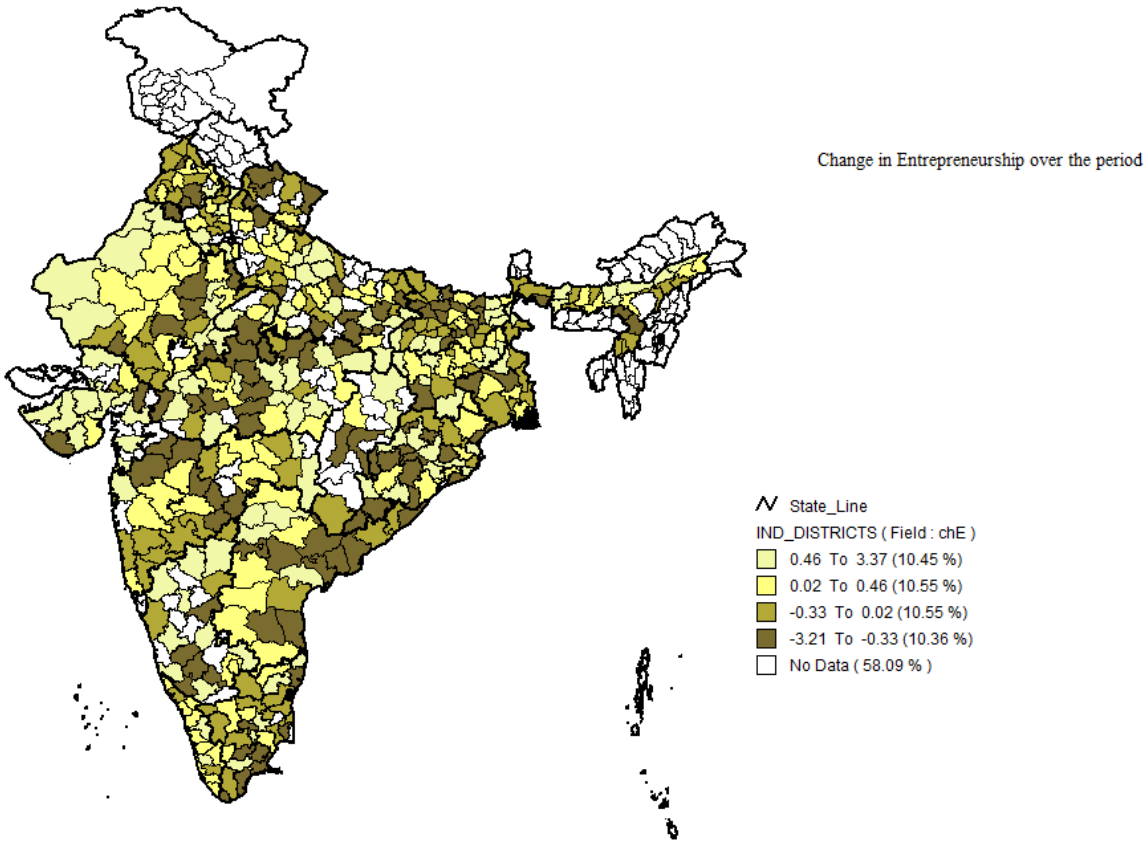
With respect to geographical distribution of firm growth, we find more number of informal firms being created in states of Gujarat, Karnataka and Chhattisgarh. We find a high degree of within states dispersion of firm growth across regions. There is suggestive evidence that districts with high degree of financial development in 2000 have witnessed greater firm growth in the period 2000-2005.



Map1: Regional Distribution of Bank Offices, 2000-01



Map2: Regional Distribution of Bank Accounts, 2000-01



Map3: Regional Distribution of Firm Creation (ChE), 2000-2005

6. Results

We present the OLS estimates of equation (1) in table 9. The table has four major columns. The first major column presents the results when we use changes in enterprises as the dependent variable. The second, third and fourth major columns present the results when we use changes in employment, capital stock and profit as the dependent variables respectively. Our results clearly show that local financial development promotes entrepreneurship and aids firm growth in the informal sector in India. The coefficients of the financial variables are positive and significant at the 5 per cent levelacross all measures of financial development suggesting that local bank availability is associated with a significant increase in enterprises, employment, investment and profit among the informal firms in India. [9]

We also investigate whether this effect of financial development (or financial constraint) on entrepreneurship varies across firms of different sizes.[10]There is evidence that the effect is stronger for smaller firms (Angelini and Generale, 2008; Beck *et al*., 2005a) as small firms are financially more constrained than large firms (Beck *et al*., 2005b). Oliveira and Fortunato (2006) find that small firms face greater financialconstraints and that these have a negative impact on their growth.Large firms, on the other hand, are more likely to have a loan and less likely to have credit constraints (Audretsch and Elston, 2002; Kumar and Francisco, 2005). Beck *et al*. (2005a) observe that financing constraints reduce firm growth by 6 percentage points, on average, for large firms but by 10 percentage points in the case of small firms. Aghion*et al*. (2007)argue that impact of financial development on firm entry is crucial for small firms,and it helps to improves market selection by allowing small firms to compete on a more equal footing.

We explore whether the effect of access to finance on entrepreneurship growth is larger for small firms in the informal sector. We test the relationship between access to external finance and entrepreneurship among OAME, NDME and DME firms. Our attempt is to see whether the relationship between availability of external finance and entrepreneurship growth is different for OAME, NDME and DME firms separately. Results are reported in Tables 10, 11

[9]This is similar to the finding by Brown et al., 2004 suggesting that access to external credit increase the growth of both employment and sales in the small firm sector in Romania.

[10] Small firms are also constrained by the availability of internally generated finance (Carpenter and Peterson, 2001), which we are not examining in this paper.

and 12. We find evidence of a differential impact of financial development on firms of different sizes. The coefficients of finance variables are positive and significant for OAMEs and NDMEs but not for the DMEs. However, we find that the effect of financial development is less on profit for OAMEs than for NDMEs as indicated by the lack of significance of some of the measures of financial development (BKACT and BKAMT) when chPF is the dependent variable.

To understand the impact of financial development on entrepreneurship, we present the elasticties for all measures of financial development and entrepreneurship across the different categories of firms. We do this in table 13. Our computations show that one per cent increase in bank offices, bank accounts, bank amount and bank credit leads to an increase in the change in number of enterprises by 3.3, 2.0, 1.5 and 1.6 per cent respectively. We find that the response of NDMEs to financial development is greater than that for NDMEs and DMEs. This suggests that firms that already made the transition out of family labour are in the greatest need of external finance and benefit the most from greater financial development. Among the measures of entrepreneurship, employment and firm creation are more responsive than capital and profits. Increase in bank accounts and bank offices seem to have the most positive effect on entrepreneurship. This indicates that the banking infrastructure may be more important for entrepreneurship growth than availability of credit per se. Overall, our results show that local financial development has a strong positive effect on firm growth in the informal manufacturing sector in India. We find that that the effect is the strongest for mid sized firms which employ both family and non-family workers as compared to small firms which employ only family workers and larger firms which employ mostly non-family workers.

Table 9: Finance and Entrepreneurship: All Enterprises

Variables	Dependent Variable															
	chE				chL				chK				chPF			
	1				2				3				4			
lnBKOF	0.226* (0.092)				0.238* (0.101)				0.309* (0.118)				0.404* (0.114)			
lnBKACT		0.137* (0.065)				0.145* (0.071)				0.199* (0.082)				0.291* (0.082)		
lnBKAMT			0.100* (0.052)				0.104* (0.057)				0.147* (0.066)				0.238* (0.066)	
lnBKCRDT				0.111* (0.050)				0.120* (0.054)				0.173* (0.063)				0.268* (0.063)
Constant	-1.158 (0.455)	-1.943 (0.898)	-2.349 (1.182)	-2.486* (1.086)	-1.290* (0.507)	-2.118* (0.981)	-2.510* (1.300)	-2.748* (1.188)	-1.475* (0.586)	-2.707* (1.131)	-3.339* (1.521)	-3.733* (1.383)	-4.121* (0.568)	-4.121* (0.568)	-7.591* (1.515)	-7.988* (1.367)
State Dummies	Y	Y	Y	Y	7Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
R-squared	0.07	0.06	0.06	0.06	0.07	0.06	0.06	0.07	0.09	0.08	0.08	0.09	0.13	0.13	0.13	0.15
F value	2.36	2.15	2.10	2.24	2.92	2.78	2.75	2.88	2.65	2.54	2.47	2.67	3.67	3.62	3.75	4.16
N	426	426	426	426	426	426	426	426	426	426	426	426	424	424	424	424

Table 10: Finance and Entrepreneurship: OAMEs

Variables	Dependent Variable															
	chE				chL				chK				chPF			
	1				2				3				4			
lnBKOF	0.215* (0.092)				0.213* (0.097)				0.267* (0.103)				0.181* (0.100)			
lnBKACT		0.129* (0.066)				0.124* (0.069)				0.172* (0.073)				0.099 (0.070)		
lnBKAMT			0.091* (0.052)				0.082 (0.054)				0.115* (0.059)				0.059 (0.056)	
lnBKCRDT				0.098* (0.050)				0.091* (0.053)				0.133* (0.055)				0.086* (0.052)
Constant	-1.100* (0.461)	-1.819* (0.911)	-2.134* (1.190)	-2.184* (1.101)	-1.035* (0.483)	-1.705* (0.952)	-1.884 (1.238)	-1.989* (1.152)	-1.019* (0.510)	-2.074* (1.003)	-2.362* (1.358)	-2.614* (1.197)	-3.364* (0.496)	-3.850* (0.973)	-3.846* (1.274)	-4.363* (1.157)
State Dummies	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
R-squared	0.06	0.06	0.05	0.06	0.06	0.05	0.05	0.05	0.07	0.06	0.06	0.06	0.05	0.08	0.04	0.05
F value	2.09	1.90	1.85	1.90	2.32	2.14	2.10	2.17	2.13	2.02	1.87	2.01	1.67	1.58	1.54	1.60
N	426	426	426	426	426	426	426	426	426	426	426	426	425	425	425	425

Table 11: Finance and Entrepreneurship: NDMEs

Variables	Dependent Variable															
	chE				chL				chK				chPF			
	1				2				3				4			
lnBKOF	0.317* (0.092)				0.291* (0.094)				0.323* (0.104)				0.339* (0.112)			
lnBKACT		0.229* (0.070)				0.212* (0.071)				0.208* (0.081)				0.227* (0.089)		
lnBKAMT			0.171* (0.057)				0.154* (0.058)				0.158* (0.063)				0.192* (0.070)	
lnBKCRDT				0.161* (0.051)				0.146* (0.052)				0.176* (0.059)				0.191* (0.063)
Constant	-1.698* (0.491)	-3.299* (0.985)	-4.074* (1.318)	-3.669* (1.135)	-1.516* (0.493)	-3.010* (1.002)	-3.633* (1.344)	-3.277* (1.154)	-1.464* (0.546)	-2.748* (1.132)	-3.516* (1.456)	-3.719* (1.303)	-3.998* (0.589)	-5.461* (1.244)	-6.743* (1.617)	-6.510* (1.392)
State Dummies	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
R-squared	0.07	0.05	0.07	0.07	0.06	0.06	0.06	0.06	0.08	0.07	0.07	0.07	0.06	0.05	0.06	0.06
F value	2.80	2.65	2.62	2.67	2.56	2.44	2.38	2.43	2.47	2.20	2.20	2.38	1.70	1.51	1.63	1.71
N	419	419	419	419	419	419	419	419	419	419	419	419	415	415	415	415

Table 12: Finance and Entrepreneurship: DMEs

Variables	Dependent Variable															
	chE				chL				chK				chPF			
	1				2				3				4			
lnBKOF	0.153 (0.182)				0.167 (0.187)				0.112 (0.202)				0.229 (0.221)			
lnBKACT		0.046 (0.135)				0.054 (0.140)				0.037 (0.158)				-0.092 (0.170)		
lnBKAMT			0.048 (0.097)				0.061 (0.103)				0.050 (0.113)				0.127 (0.122)	
lnBKCRDT				0.106 (0.090)				0.128 (0.094)				0.128 (0.101)				0.211* (0.114)
Constant	-1.298 (1.081)	-1.183 (2.002)	-1.638 (2.364)	-2.872 (2.085)	-1.757 (1.159)	-1.676 (2.120)	-2.326 (2.541)	-3.727* (2.217)	-1.354 (1.163)	-1.315 (2.303)	-1.948 (2.727)	-3.612 (2.309)	-3.081 (1.250)	-3.227 (2.440)	-4.871* (2.919)	-6.584* (2.596)
State Dummies	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
R-squared	0.09	0.09	0.09	0.09	0.10	0.10	0.10	0.10	0.06	0.06	0.06	0.06	0.10	0.10	0.10	0.11
F value	2.14	2.16	2.16	2.16	2.35	2.37	2.37	2.39	1.62	1.62	1.63	1.64	3.14	3.03	3.17	3.39
N	360	360	360	360	360	360	360	360	360	360	360	360	357	357	357	357

Table 13: Responses of Entrepreneurship to Financial Development (Elasticties)

Enterprise Type	Financial Development	chE	chL	chK	chPF
All	BKOF	3.34	5.78	1.59	0.19
	BKACT	2.03	3.52	1.03	0.14
	BKAMT	1.48	2.53	0.76	0.11
	BKCRDT	1.64	2.91	0.89	0.13
OAME	BKOF	3.69	14.65	1.72	0.07
	BKACT	3.75	8.53	1.11	0.04
	BKAMT	1.56	5.64	0.74	0.02
	BKCRDT	1.68	6.26	0.86	0.04
NDME	BKOF	4.23	3.96	1.54	0.15
	BKACT	3.06	2.88	0.99	0.10
	BKAMT	2.28	2.09	0.75	0.09
	BKCRDT	2.15	1.98	0.84	0.09
DME	BKOF	2.27	2.31	0.50	0.17
	BKACT	0.68	0.75	0.17	0.07
	BKAMT	0.71	0.84	0.23	0.09
	BKCRDT	1.57	1.77	0.58	0.16

7. Conclusions

The regional variation in entrepreneurship is an important determinant of why some regions within countries tend to see higher growth than others. In this paper, we examine whether local financial development exerts a positive influence on entrepreneurship at the regional level. The country we study is India, a geographically large country, with clear and distinct variations in small firm growth and financial development. This is evident from our study which showsthatbank branches and accounts are less concentrated in the southern region as compared to other regions in India. We also find increasing concentration of entrepreneurship development in the western region while dispersion of entrepreneurial activities in other parts of the country.We focus on the effect of local financial development on the growth of firms in the informal manufacturing sector in India, and ask whether the presence of financial facilities and intermediaries make a difference in the growth of informal firms using a panel data set and Indian districts as units of analysis. We disaggregate our analysis by the different types of enterprises that are present in the informal sector – very small household enterprises that rely exclusively on family labour, somewhat larger household enterprises that use both family and non-family labour, and larger enterprises which use mostly non-family labour. We find clear evidence of local financial development having a positive and significant effect on firm growth in the Indian informal manufacturing sector. However, our disaggregated analysis suggests that the effect is most pronounced for mid-sized enterprises in the informal

sector, and that the evidence does not suggest that local financial development matters for firm growth for the larger enterprises in the informal sector.

Given the high level of regional inequality, and the wide variations in economic growth across states and regions in India, the importance of local financial development for entrepreneurship in the informal manufacturing sector in India deserves policy attention. This is particularly true in the current context where the Indian economy has witnessed significant financial liberalisation and state-directed spread of bank branches in areas with low financial development is no longer a policy option. Tax and other incentives for financial intermediaries to open up offices in financially underdeveloped areas and support for micro-finance organisations that may be willing to lend to the smallest enterprises in the informal sector are possible policy initiatives that could be considered for a more equal distribution of financial facilities across the country. If access to financial institutions cannot be made easier, an independent credit institution exclusively for micro and small firms in the informal sector can be established. The Grameen Bank of Bangladesh is a successful example of such an initiative (Raj 2011).

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