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ABSTRACT

The present study investigates the growth barriers of informal sector enterprises in India. The empirical analysis is based on the NSSO unit level data for three years, 2000-01, 2005-06, and 2010-11. The results of the study reveal proprietary and large firms survive and grow. Enterprises managed by women are more likely to decline. Inadequate power poses a severe growth obstacle to all categories of firms. Proprietary firms encounter capital shortage while large firms are constrained by non-availability of raw materials. Further, sub-sample analysis based on modern vs. traditional industries classification of sample firms reveal that firms located in the rural areas are vulnerable to raw material and labor shortage, recovery of loans, marketing problems and competition from large firms. Firms' belonging to the traditional industries suffer from lack of marketing avenues and working capital shortage.

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INTRODUCTION

It is well recognized that small firms are crucial drivers of economic growth (Nichter and Goldmark 2009). This is true, since in terms of the number, small firms form majority in both developed and developing countries. They account for major share of employment and output in many countries. These enterprises constitute over 60 percent of total employment in manufacturing in many countries and more than 90 percent in India. Therefore, small firms are accorded special status by many governments due to its employment generation potential, which has direct impact on the poverty reduction in a country(Beck et al 2005). In this context, Hallberg (2001) rightly summarizes that "SMEs are the emerging private sector in poor countries and thus form the base for private sector-led growth".

In the case of India, many goods still continue to be reserved for production under small scale industries. In spite of the support from the governments, many small firms face several obstacles to growth (Dinh and Clarke 2012). In spite of the two decades of economic reforms with emphasis on the removal of barriers faced by the small firms, industrial structure in India continues to be dualistic with the size of the informal sector growing rapidly, even outpacing the organized segment of manufacturing (Kathuria et al., 2013). The largest share of output is contributed by few large firms and large number of small firms operating in the fringe contributes a smaller share. The vast majority of these small firms operate in the informal sector. These small firms rarely graduate to formal sector and confine their operations to small scale. Some studies argue that this phenomenon of "missing middle"[1] as the consequence of a set of formidable barriers to growth (Biggs and Oppenheim 1986). In terms of the numbers, the informal sector firms far outweigh the registered firms. Our estimates suggest that registered firms constitute only less than one per cent of total firms in the Indian manufacturing sector. However, informal sector firms are found to be less productive in India and the gap is widening in the recent years (Kathuria et al. 2010). The low productivity of the firms in the informal sector perhaps may be due to a combination of severe constraints in obtaining external finance, power shortage, labor problems, management of resources, lack of infrastructure, transport costs, market constraints, competition from large units, marketing problems, land as well as legal

[1]'missing middle' is referred to the presence of a strong bi-polar distribution in employment with a strong concentration of employment in the small (5-9 workers) and large (500 workers and above) with the proportion of employment in the intermediate middle size groups being conspicuously small. Small firms rarely move into the next size category within a firm size distribution (Mazumdar and Sarkar 2013)

hurdles.

Studies examining the firm growth dynamics mainly focus on testing Gibrat's law of proportionate growth (Coad 2009)[2]. However, these studies fail to address the firm dynamics that are unique to the industrial structure of developing countries. Further, less attention is paid to the factors constraining growth especially in the case for small firms in the informal sector. Fortunately, the recent availability of large-scale firm level data sets has helped researchers to focus attention on the constraints encountered by small firms. The existing literature has identified factors like informality, access to finance, tax administration and legal hurdles as some of the prominent obstacles to growth of small firms (Nichter and Goldmark 2009).

Therefore, based on the growing research interest in understanding the growth dynamics of small business firms, this study attempts to examine the obstacles to growth of informal sector firms in the context of a developing economy, India. We hypothesize that growth process of these firms in India is moderated by environmental and institutional factors. Further, we also investigate the type and nature of the firms (modern vs. traditional) that are vulnerable to growth obstacles. This work assumes greater significance since the firms included in the analysis belong exclusively to the informal sector[3]. Very little research exists related to obstacles to growth faced by informal sector enterprises especially in the case of India.

The rest of the report is organized as follows. Section 2 reviews relevant literature on growth barriers of small firms. The trends and patterns of informal firms in manufacturing sector in India are discussed in section 3. In section 4 we discuss the data and the variables used in the study. The section also provides a brief description of the econometric methodology employed in the study. The descriptive statistics and preliminary results of our empirical analysis are presented in section 5. The final section concludes.

BARRIERS TO SMALL FIRM GROWTH: A REVIEW OF THE LITERATURE

Theoretical literature has highlighted three important factors affecting the growth[4] and performance of firms: (i) firm characteristics, (ii) the entrepreneur characteristics and (iii) the

[2] According to Gibrat (1931), the firm growth is independent of the size of the firm and follows a random process

[3] We follow the definition of NCEUS "*The informal sector consists of all unincorporated private enterprises owned by individuals or households engaged in the sale and production of goods and services operated on a proprietary or partnership basis and with less than ten total workers*". However, in our database we find many of the informal enterprises with number of workers exceeding the threshold level which requires registration under the Factories Act of 1948.

[4] Existing studies mainly measure firm growth in terms of changes in sales, output or employment

contextual factors (environment in which the entrepreneurs and firms operate). Therefore, the empirical studies attempting to examine the factors influencing the obstacles to growth of small firms have concentrated on understanding the role of business environment and institutional factors. The firm characteristics and entrepreneur effect have been dealt in detail by many studies[5]. Regarding the former, constraints of the environment faced by firms often consist of the existence and functioning of the financial and other markets, the infrastructural bottlenecks and the presence of a legal framework, regulation and institution of enforcement (Pissarides et al., 2003).

As pointed out in the theoretical literature on capital market imperfections, small firms face difficulty in obtaining external finance due to asymmetric information and very little collateral to offer. Based on a cross-country study using firm level data, Ayyagari et al. (2008) investigate the impact of access to finance and a host of other factors influencing business environment and political stability on firm growth. The study reveals that among the set of factors considered, access to finance as most significant variable influencing firm growth. Some of the recent studies using large firm level data sets reveal that small and medium enterprises are more constrained in their operation and growth compared to large firms (Ayyagari et al 2007). Beck and Demirgüç-Kunt (2006) find that though small firms face many barriers lack of access to financial services is the most prominent among them. Pissarides et al. (2003) report in the case of Russian and Bulgarian firms, constraints on external financing limit in important way the ability to expand production. In a 98 country study by Dinh *et al.* (2012) using World Bank Enterprises Survey Data find access to finance as the most important obstacle that matters for firm growth. These studies were mainly based on cross-sectional data.

Studies examining obstacles to growth attempted to verify whether it varies according to the size of the firm. Along the expected lines, it turns out that small firms report higher growth obstacles compared to medium sized firms (Schiffer and Weder 2001).A recent study based on the experience of small registered firms in India (Coad and Tamvada 2012) report that power shortages, management and raw materials as the major obstacle faced by the rural firms[6]. Some studies have also taken into consideration the role of barriers in influencing small firm

[5] See Nichter and Goldmark (2009) for an excellent survey of literature related to developing countries

[6]They use cross-sectional data based on the Third Census of the registered Small Scale (SSIs) firms carried out in the year 2001-02. Their paper explores the determinants of firm growth and various types of barriers faced by registered small scale firms (organized sector) in India. However, unlike their paper, the present study analyses the growth barriers of the informal sector enterprises in India.

growth.[7]Broadly these barriers have been used to predict the characteristics of growing firms and also to understand how far these barriers are responsible for reducing the predicted growth rate (Doern, 2009).

There exists few studies which report informal enterprises grow slowly than their formal counterparts based on the experience of Cote de Ivorie (Sleuwagen and Goedhuys, 2002). In the case of Pakistan, difficulty in technology adoption is cited by the small firms in the informal sector as the main obstacle to growth (Aftab and Rahim 1989). Based on the evidence from the literature discussed above, we can conclude that most of the studies pertain to the experience of formal sector firms and they have relied on the cross-country data. There are not many studies with specific focus on the growth obstacles of informal sector enterprises.[8]Therefore, the proposed study aim to add to the existing literature based on the experience of an emerging economy, India.

INFORMAL MANUFACTURING IN INDIA: TRENDS AND PATTERNS

The onset of economic reforms has increased the extent of dualism in Indian economy (Mazumadar and Sarkar, 2008). In India, informal sector accounts for a major share in employment. As evident from Figure 1, about $4/5^{th}$ of the workers in 2005-06 are employed in the informal sector. We also observe a consistent increase in the size of informal sector in Indian manufacturing. Between 1989-90 and 2005-06, the employment in absolute figures has registered an increase from 32 to 36 million (Table 1).There has been a dramatic increase in gross value added and number of enterprises too, resulting in almost doubling of output per capita of informal sector firms.

Despite its huge size in terms of employment and the magnitude of the number of units, the firms in informal sector are plagued by low productivity (Kathuria *et al.*, 2013).[9] One plausible reason for this apparent paradox, as highlighted in the recent literature (for instance see

[7]Barriers are defined as those internal or external factors or conditions that constrain growth potential in firms that wish to grow (Storey, 1994).

[8]Most of the studies related to the informal sector firms in India have focused mainly on the productivity differentials (Unni et al., 2000; Kathuria et al 2010,) or on examining the effect of international trade on employment (Raj and Sen, 2012)) and productivity (Nataraj, 2011). Some attempts have been also made to analyze the nature of relationship between firms in the formal and informal sectors (Sundaram et al., 2012; Moreno-Monroy, 2012).

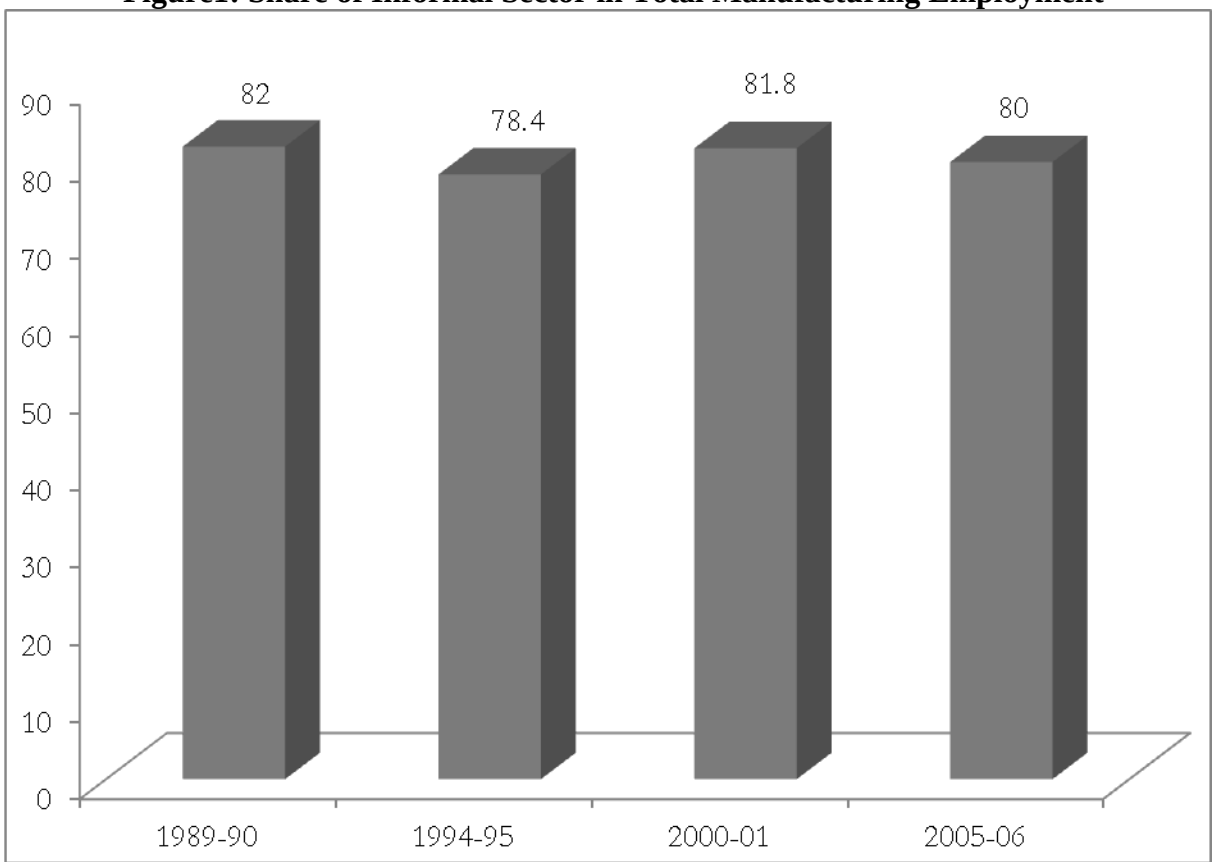
[9]Though average productivity of informal firms has almost doubled between 1989-90 and 2005-06, the productivity levels are still significantly lower than that for the formal firms (Kathuria *et al.*, 2013).

Mazumdar and Sarkar 2008), is the lack of upward mobility of these firms. The informal sector in India is dominated by own-account manufacturing enterprises (OAMEs) employing family labor. The other categories of firms viz., Non-directory manufacturing establishments (NDMEs) and the Directory manufacturing establishments (DMEs) employing both family and hired labor occupy only a smaller share in total enterprises[10]. Interestingly, this structural composition has hardly undergone any change in the last ten years (Table 2). This observed dominance of OAMEs and the apparent lack of transition possibly explains the low productivity of informal sector in India. This is clearly evident from the figures 2 and 3. There is a clear positive relationship between size and productivity indicating that larger firms are more productive than small firms (Figure 2). This trend becomes more obvious when we examine the productivity by enterprise type (Figure 3). We observe that OAMEs, the firms that employ only family labor, are the least productive category of firms compared to firms that employ both family and hired labor (NDMEs and DMEs).

The above discussion thus warrants a closer scrutiny of reasons behind the lack of firm transition leading to the low productivity witnessed in the sector. The presence of such a large number of micro sized household enterprises along with their lack of growth is often attributed to the formidable barriers these firms face which do not allow them to grow in size. For instance, Coad and Tamvada (2012) argue that firms are unable to grow in size since they encounter severe growth barriers. For this reason, a significant amount of research has focused on identifying and predicting certain characteristics of small firms (e.g. size, ownership, location etc.) and their influence on growth barriers.

[10]More details regarding this classification is provided in the section 4.3

Figure1: Share of Informal Sector in Total Manufacturing Employment



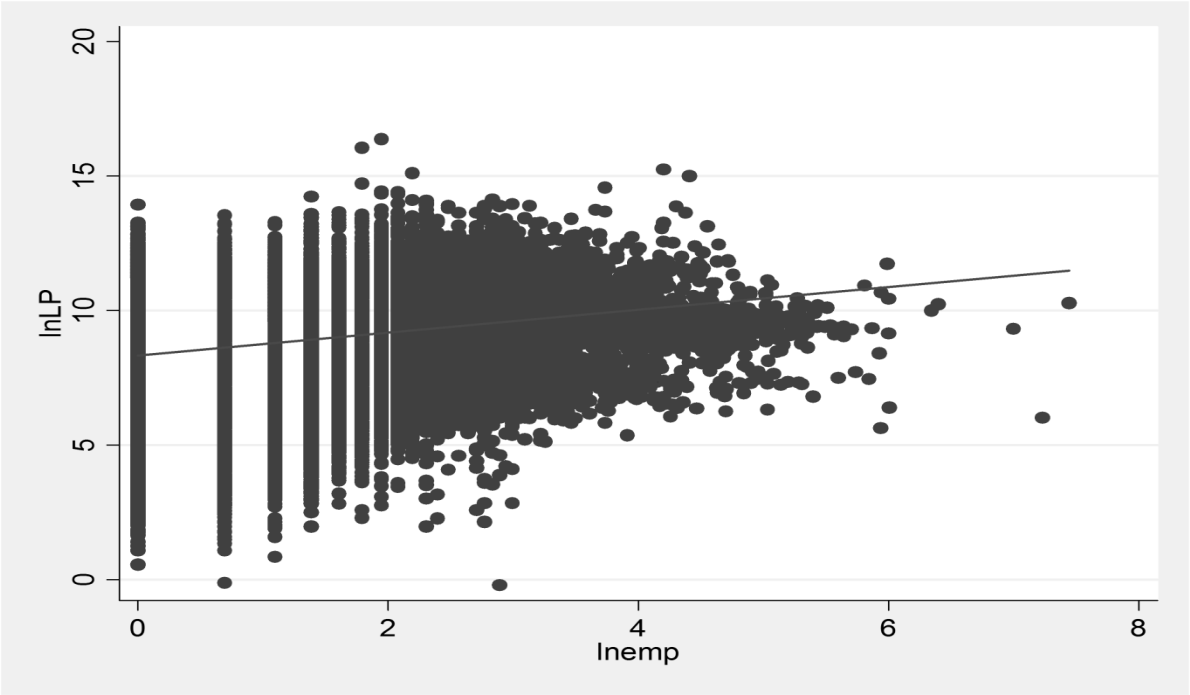
Source: Authors' calculation from NSSO datasets

Table 1: Trends in Enterprises, Employment and Gross Value Added

Year	Number of enterprises (in million)	Employment (in million)	Gross Value Added (in billion)
1989-90	14.3	32.7	238.2
2005-06	17.1	36.4	512.2

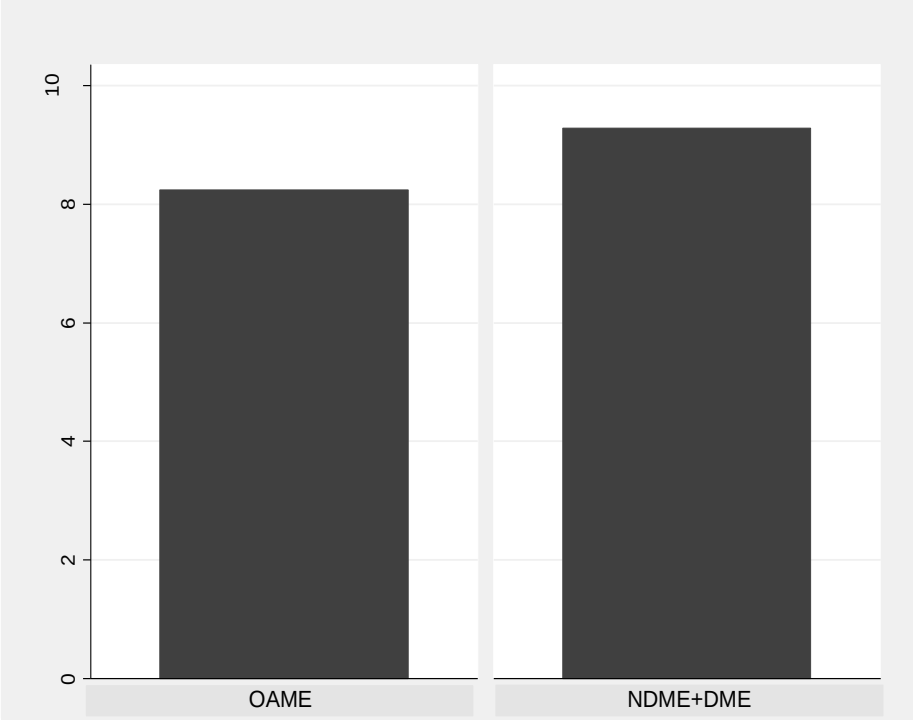
Source: Authors' calculation from NSSO datasets

Figure 2: Relationship between Labor Productivity and Size



Source: Authors' calculation from NSSO datasets
Note: lnemp and lnLP denote log of employment and labor productivity respectively

Figure 3 Average Labor Productivity by Size



Source: Authors' calculation from NSSO datasets

Table 2: Composition of informal sector by enterprise type

Year	Number of enterprises (in million)			Number of Workers (in million)			Gross Value Added (in billion)		
	OAME	NDME	DME	OAME	NDME	DME	OAME	NDME	DME
1989-90	12.5 (87.2)	1.3 (9.1)	0.5 (3.7)	22.4 (68.6)	4.2 (12.8)	6.1 (18.6)	101.2 (42.5)	56.3 (23.6)	80.7 (33.9)
1994-95	10.4 (84.8)	1.2 (10.1)	0.6 (5.1)	20.2 (68.5)	3.9 (13.2)	5.4 (18.3)	98.9 (40.3)	55.9 (22.8)	90.7 (37.0)
2000-01	14.7 (86.1)	1.7 (10.1)	0.6 (3.8)	25.1 (67.6)	5.6 (15.0)	6.5 (17.4)	179.2 (42.3)	106.1 (25.0)	138.6 (32.7)
2005-06	14.6 (85.6)	1.8 (10.4)	0.7 (4.0)	23.7 (65.0)	5.8 (15.9)	7.0 (19.1)	164.1 (32.0)	123.5 (24.1)	224.6 (43.8)

Source: Authors' calculation from NSSO datasets

Note: Figures presented in the parentheses are percentages. Separate figures for NDME and DME are not available from the NSSO survey report for the period 2010-11.

DATA SOURCE, METHODOLOGY AND VARIABLES DESCRIPTION

Data

Our main data source on the informal sector is the surveys on the India's unorganized or informal manufacturing establishments.[11] The National Sample Survey Organization (NSSO) is the agency that collects unit level data on various aspects of the enterprises in the informal manufacturing sector quinquennially using a stratified random sampling procedure. These are nationwide enterprise level surveys covering all the Indian states and Union Territories (UTs) and are stratified by district.[12] Since most informal enterprises are not registered with any government authority, the NSSO uses a block enumeration approach to ensure a representative sample of the informal sector in every district.

Our analysis is based on the unit level data for three years, 2000-01, 2005-06, and 2010-11. The choice of time period for our study is governed by the fact that the data on some of the firm

[11] The two terms 'informal sector' and 'unorganized sector' are used interchangeably in the Indian context.

[12] For instance, the 62nd round of NSSO survey conducted in 2005-2006 covered the whole of the Indian Union except (i) Leh and Kargil districts of Jammu & Kashmir, (ii) interior village of Nagaland situated beyond five kilometers of bus route and (iii) villages of Andaman and Nicobar Islands which remain inaccessible throughout the year. A stratified sampling design was adopted for selection of the first stage units (FSUs). The FSUs were villages in rural areas and Urban Frame Survey (UFS) blocks in urban areas. A total of 9,923 FSUs consisting of 4,798 villages and 5,125 urban blocks were surveyed. The ultimate stage units (USUs) for the survey were enterprises. The method of circular sampling has been employed for selecting the USUs from the corresponding frame in the FSU. A total of 80,637 enterprises (Rural: 42,050 and Urban: 38,587) were surveyed all over India. A detailed note on the sample design and estimation procedure followed in the 62nd survey is given in the Appendix B of the survey report (NSSO 2007).

specific variables used in the analysis are only available for these years.[13]The current data used for the present study is in the form of repeated cross-sections, and not in panel form, since the NSSO does not reveal the identity of the firm/plant in the unit level data, and the same firm may not be covered in each round. For our empirical analysis, we have 213012 firms in the pooled data-set, spanning across 25 industries, 364 districts, 15 major Indian states and three years.[14]

It is to be noted that during the study period, National Industrial Classification (NIC) has undergone certain changes. The NSSO data for 2000-01 is based on NIC 1998 and the 2005-06 data is based on NIC 2004. The 2010-2011 round uses NIC 2008 codes. Therefore, we harmonized the whole data at the NIC 2008 codes, and constructed twenty-five industry dummies for all rounds in our unit level data.

Methodology

We estimate the following multinomial logit regression to analyze the determinants of firm status in the informal sector.

$$STATUS = \alpha + \beta_1 * NDME + + \beta_2 * DME + \beta_3 * Age + \beta_4 * Proprietary + \beta_5 * Female + \beta_6 * Location + \beta_7 * Distance + \beta_8 * Reg + \beta_9 * Linkage + \beta_{10} * Assistance + \beta_{11} * Acmaint + \beta_{12} * Credit\ Deposit\ Ratio + \beta_{13} * IndustryDummies + \beta_{14} * RegionalDummies + \beta_{15} * YearDummies + \varepsilon \quad (1)$$

Our dependent variable is STATUS, which indicate whether the firm has been growing, stagnating or declining in the past three years. The NSSO in its surveys ask the firm owners whether their firm has been expanding/stagnating/declining in the past three years[15]. We code this variable 2 if the firm has been expanding, 1 if the firm is stagnating and 0 if declining. The main explanatory variables of interest are size, age, ownership dummies for proprietary and

[13] The NSSO survey data for the year 1994-95 does not provide information for the variables capital shortage (CAPSHOR), linkage with formal sector (CONTRACT), received any technical or financial assistance (ASSISTANCE), account maintained (ACMAINT), registration status(REGIS) and power supply (ELEC).

[14] 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).

[15] It is to be noted that this question does not pertain explicitly to expansion, decline and stagnation in terms of sales, employment, value added or output. Rather, it refers to the subjective perception of the owner during the last years with regard to these three dimensions.

female owned firms (*Proprietary* and *Female*), dummies for rural firms (*Location*), assistance received (*Assistance*), subcontracting enterprises (*Linkage*), maintaining book keeping (*Acmaint*) and distance from the state capital (*Distance*). The enterprises legitimacy is accounted by the registration status (*Regis*) dummies[16]. Access to finance is captured using *Credit Deposit Ratio*. The detailed description of the variables and the purpose of including them in the analysis are presented in section 4.3.

Further, we analyze the determinants of barriers to growth of firms. The firms included in the data base were asked about the main constraints to growth. We identified the following obstacles reported by the firms including working capital shortage, power shortage, labor shortage, non-recovery of financial dues, competition from large firms, marketing problems, and lack of infrastructure. We try to determine the barriers to growth of firms using Probit regression with growth barriers mentioned previously as the dependent variable.

$$\begin{aligned} \textit{Growth Barriers} = \alpha + \beta_1 * NDME + + \beta_2 * DME + + \beta_4 * Proprietary + \beta_5 * Female + \beta_6 * Location \\ + \beta_7 * Distance + \beta_8 * Reg + \beta_9 * Linkage + \beta_{10} * Assistance + \beta_{11} * Acmaint + \\ \beta_{12} * IndustryDummies + \beta_{13} * RegionalDummies + \beta_{14} * YearDummies + \varepsilon \end{aligned} \quad (2)$$

The dependent variable is a dummy variable which assume value '1' if the firm report a specific growth barrier and '0' otherwise.

We also introduce industry, regional and year specific dummies.[17] Industry dummies control for the possibilities that firms in capital intensive industries would be more likely to report the presence of barriers. The year dummies account for the possibility that economy wide demand shocks may have an impact on firms reporting barriers. The inclusion of regional dummies, on the other hand, helps us to capture the variation in infrastructure availability influencing firms reporting of barriers across regions.

[16]Registration status does not mean that they are formally registered under the Factories Act of 1948. It denotes their registration with any act or authority, industry association, co-operative society etc. Please refer to footnote 23 for a detailed discussion on this.

[17]For the sake of brevity, we do not report the coefficients

Variables and Descriptive Analysis

Description of Variables

Size

Previous studies looking at the role of size in influencing the survival of enterprises has produced mixed results (Liedholm 2002). Large firms are less susceptible to shocks since they usually do not face cash flow constraints. Besides large firms might have access to resources like collateral and financials which enable them to overcome the investment constraints and marketing expenses. On the other hand, small firms may be able to recognize opportunities and overcome obstacles (Robson and Obeng 2008). Using cross-country data of African firms, Mcpherson (1996) report that size had no effect on the survival of the firms. Based on the findings of the existing studies, we expect that the association between size and barriers can be either positive or negative.

Firms in the Indian informal sector are broadly classified into three based on the size of the enterprise and the type of labor used in the production process. They are (a) own-account manufacturing enterprises (OAMEs) employing only family labor; (b) Non-directory manufacturing establishments (NDMEs) that employ at least one hired labor on a regular basis, but the total number of workers (including family labor) do not exceed five; and (c) Directory manufacturing establishments (DMEs) employing 6-9 workers of which at least one would be a hired worker.[18] We use this classification for capturing the size dimension of sample firms. We introduce two dummy variables for two different size classes, *NDME* and *DME*.

Ownership

Many studies report that gender of the owner has a significant effect on the firm survival (Mead and Liedholm 1998). It is documented by some studies that female headed firms are likely to face more barriers than the male headed enterprises. The orthodox institutional structure, family commitments and risk averse nature prevent them from pursuing business expansion aspirations (Brush 1992). This is true especially in the case of developing countries. A recent study based on

[18] Admittedly the practice of demarcating establishments that employ hired worker into NDMEs and DMEs is to some extent arbitrary, determined by the practices of the National Sample Survey Organization (NSSO), the agency which is instrumental in carrying out a large scale nation-wide survey on the informal sector. However, as is argued by Mazumdar and Sarkar (2008), such a demarcation stands to reason as an establishment enters into a more modern economic relationship when it graduates to a six-worker employment size. Second, this size group forms a part of the formal sector in other countries in the region. In this paper, we denote these enterprise types in the informal sector into small, medium and large enterprises.

the experience of the Indian SSI (Coad and Tamvada 2012) identified market problem and raw-material as main problems faced by the female owned firms. Females are likely to self-select to low growth industries. Another study by Robson and Obeng (2008) in the case of Ghana report female firms face difficulty in obtaining finance. Unlike the findings of the previous studies which highlight severe growth barriers for female owned/managed firms[19], a recent study based on the experience of registered small firms in India report otherwise (Deshpande and Sharma 2013). They use the fourth census of the registered medium and small enterprises. They report that women owned/managed firms grow faster. They argue that the positive finding may due to the self-selection problem. However, we believe that this may not be true in the case of informal sector enterprises. In the case of informal enterprises, it can be argued that female owned firms are mainly survivalist and they may be less concerned about the growth targets. Therefore, we posit that female owned firms are less likely to encounter growth barriers compared to their male counterparts. We introduce a dummy variable, *Female*, to capture the gender dimension of ownership. This binary variable takes the value one if the firm is owned by a female and 0 if the firm has a male owner.

In our sample 96 per cent of enterprises are *proprietary* firms[20]. Coad and Tamavada (2012) find that young proprietary firms in the SSI sector grow slower and they encounter difficulty in obtaining working capital. We also intend to see whether this result holds for firms in the informal sector as well. To do this, we introduce a dummy variable, *Proprietary*, as a proxy which takes the value 1 for proprietary firms and 0 for other firms.

Location/Closeness to Market

Like the influence of size, previous studies are unable to arrive at ay consensus regarding the association of location and business performance. In the case of India, Coad and Tamvada (2012) maintain that rural firms are susceptible to problems concerning raw materials, power shortages, equipment and management, which could affect their upward progression. In the case of East African firms, Liedholm (2002) find that urban micro and small firms performed better than rural firms. Bigsten and Gebreeyesus (2007) while examining the determinants of manufacturing growth in Ethiopia find that firms located in and around Addis Ababa and surrounding towns are

[19]See Coad and Tamvada (2012) for a recent review of this literature

[20]Firms included in the NSSO are classified as proprietary and partnership. Proprietary firms are those firms owned by a single individual.

growing more than those located in other areas. On the contrary, based on the experience of the UK firms, Keeble (2003) report that firms located in the rural areas face fewer difficulties. In the case of India, we expect that enterprises which are located in the urban areas might face fewer barriers.

We include LOCATION as a variable in our analysis to capture the differences among firms in access to better infrastructure, and larger markets for skilled labor, raw materials and outputs. The NSSO surveys report whether the firms are located in rural or urban areas. LOCATION takes the value 1 if the firm is located in urban areas and 0 if they are located in rural areas. The expectation is that firms that are located in and around cities and towns (as a large market area) will experience fewer constraints as compared to their counterparts.

Some studies have used measures of market accessibility such as access to transport and distance, cost and travel time to the main market as proxies for location, and examined their impact on firm growth. We include another variable, *DISTANCE*, that signifies the remoteness of the district as captured by the distance of the district from the state capital. Our surmise is that firms that are nearer to the state capital will have access to better infrastructure and likely to face fewer constraints. Lall et al. (2004) found positive productivity effects of market accessibility for firms in India. There are also studies that find no relationship between market accessibility and firm growth. Hoogstra and Dijk (2004) show that access to motorway is not a significant variable influencing growth of firms in the Netherlands. Similarly, Almeida and Carneiro (2005) report that market accessibility is less important for firm performance.

Age[21]

There exists considerable evidence on the role of age on the growth performance of firms. Available evidence points to a negative relationship between age and growth (Variyam and Kraybill, 1992; Sleuwaegen and Goedhuys, 2002; Yasuda, 2005). However, studies on Indian firms by Das (1995) and Shanmugam and Bhaduri (2002) report that age has a significant positive association on firm growth. In a recent study on small firms in India, (Deshpande and Sharma 2013) finds a negative association between age and firm growth. In the backdrop of

[21]The information regarding the *age* of firm is provided only in the latest round of the survey, 2010-11. The previous two rounds did not provide age of the firm. Therefore, we are unable to incorporate *age* as a variable in our empirical analysis with the entire sample. However, we carry out a separate analysis for the year 2010-11 using the same specification (equation 1) with *Age* included as an additional variable.

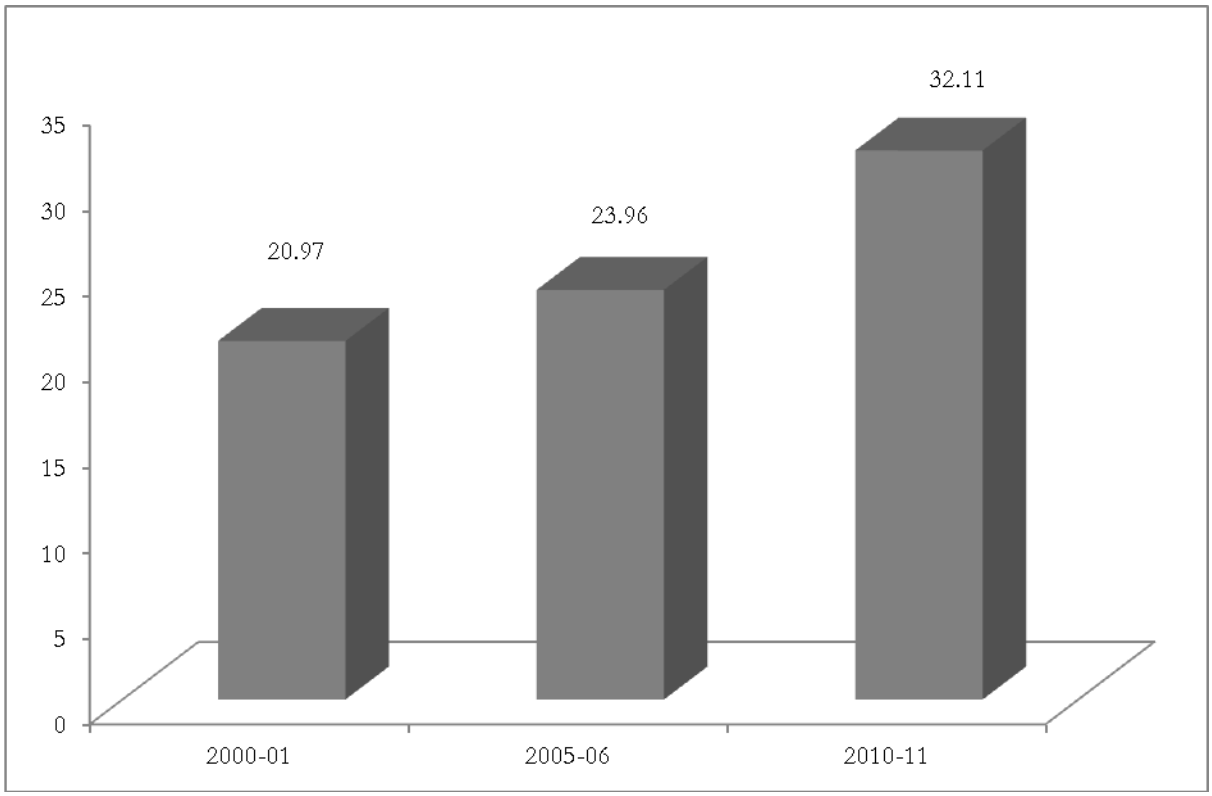
these mixed results on Indian firms, it would be interesting to see how age influences the growth and decline of firms in the informal sector. In the latest round, the NSSO reports the year of initial operation of firms they surveyed. We arrive at the age of firms as the numbers of years since the firm started operation.

Registration

Registration of the firm with any authority grants legitimacy to the owners in terms of obtaining bank loans, access to the legal systems which are instrumental in fostering growth (Levenson and Maloney 1998). Further, registration enhances the reputation of the enterprises in front of the consumers, suppliers and enables contractual relationship with third parties (Sleuwaegen and Goedhuys 2002). There is also evidence that being registered leads to significant gains in sales per employee and value added per employee (Sharma, 2013). Due to the imperfections in the factor and product markets, enterprises in the developing countries face severe competition for inputs. Small enterprises in particular face barriers in accessing scarce resources which hinders their growth. Therefore, it can be argued that registration act as means of signaling their legitimacy which reduces the growth constraints. We also examine this relationship in our study. The NSSO surveys ask the firms whether they have registered under any act or authority.[22] We maintain that being a part of an act/authority could help the owner-manager to access and secure a range of financial and non-financial resources (information, knowledge, technology, and finance) that are otherwise mostly unavailable to the firms in the informal sector. It is interesting to note that the percentage of sample firms registered with any act or authority has gone up from 20 percent in 2000-01 to nearly 32 percent in 2010-11 (Figure 4).We denote this variable *REGIS* and code it 1 if these firms report registration any act and 0 otherwise. We expect firms registered under any act/authority are likely to experience fewer obstacles.

[22] The NSSO in its schedule lists a number of Acts and Authorities where an enterprise is likely to register. They list 20 such Acts and authorities that include State Directorate of Industries, Small Industries Development Bank of India (SIDBI), State Trading Corporation of India Limited (STC), Pollution Control Board, State Financial Corporation, boards of different industries such as Coir Board, Silk Board and Khadi and Village Industries Board and Acts such as Co-operative Societies Act, Money lender's Act, Indian Charitable Act and so on. An enterprise may be registered under more than one Authority or Act. As stated later, we code this variable 1 if the enterprise is registered under one or more such Acts or authorities.

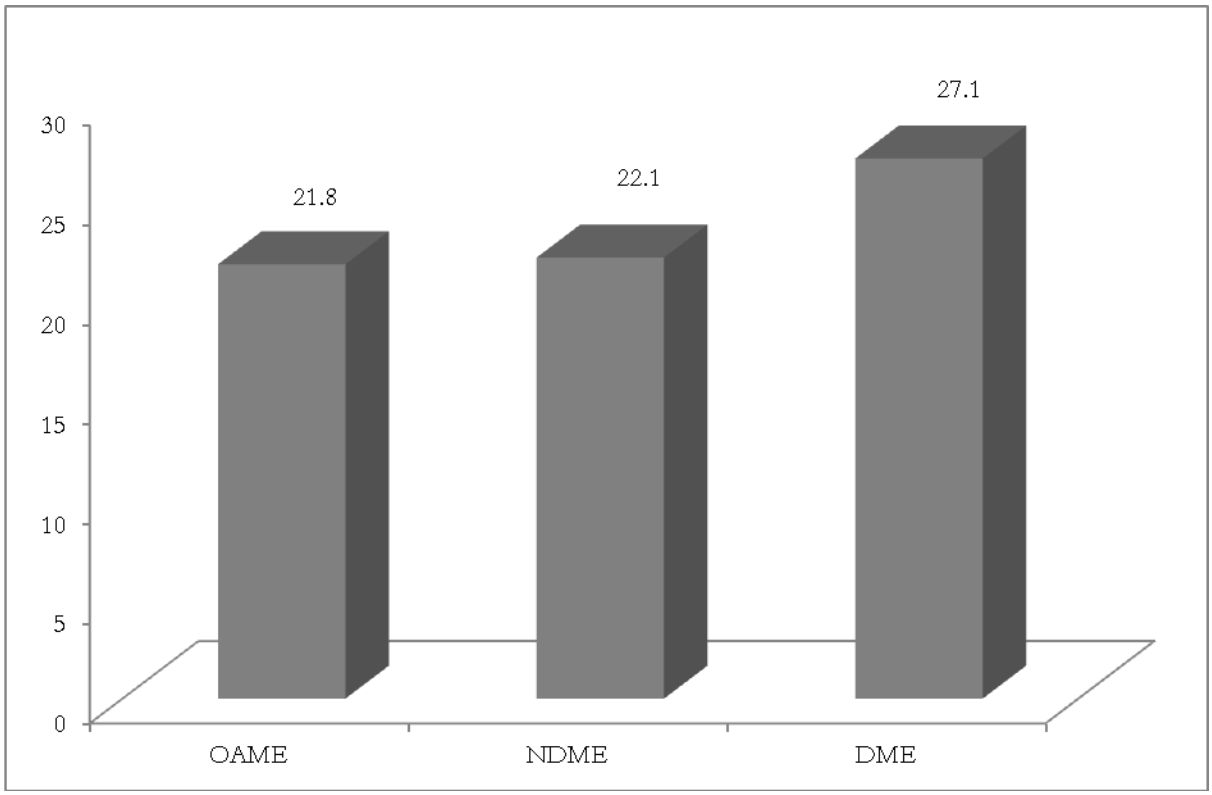
Figure 4: Number of Firms Registered under any Act/Authority, 2000-01 – 2010-11



Linkage

Studies have highlighted the role of subcontracting on firm performance (Kimura, 2002; Giunta et al., 2012). Giunta et al. (2012) envisage subcontracting as a growth strategy employed by small and marginal firms. The NSSO in its surveys asks the firms whether they work solely for a contractor. Interestingly, one can observe from the Figure 5, independent of the size class, around 20-25 percent of the sample firms have established linkage with the formal sector. We denote this variable as *LINKAGE* and code it as 1 if they work for a contractor and 0 otherwise.

igure 5: Firms with Linkages with the Formal Sector by Size



Assistance

Various programmes have been devised by the governments across nations to provide assistance to small firms. However, the empirical evidence on the significant role of these assistance programmes on firm performance is scanty. In the case of Romania, Brown et al. (2005) find no statistically significant association of technical assistance with the growth of the firm. In this study, we also examine whether assistance act as a means of reducing the growth barriers for informal firms. The NSSO survey asks the firms whether they receive any assistance from the government towards training and marketing. We label this variable *ASSISTANCE* and assign the code 1 if the firm received any assistance and 0 if they did not receive any assistance.

Account maintained

There is evidence that sound accounting practices by firms can be an important factor associated with firm growth (Acar, 1983). The maintenance of accounts by a small informal firm may allow the owner/manager of the firm to access external finance via the presentation of these accounts to bank managers, and help overcome the constraints to their expansion. We examine the

importance of this variable in the upward progression of firms in the informal sector. The survey collects information from each firm on the status of maintenance of accounts. We denote this variable *ACMAINT* and code it 1 if the firm maintains a regular account and 0 otherwise.

Descriptive Statistics

We present the summary statistics for the main variables used in our empirical analysis in table 3. We present these descriptive statistics separately for growing, stagnating and declining firms. In our dataset, single ownership is the most prevalent form of ownership. About 96per cent of firms are under single ownership. Among the sample firms, female owned firms constitute only 19per cent. More than 50 per cent of the firms included in our dataset are located in urban areas. More than a fifth (23 percent) of firms are registered under any act/authority and around 22per cent of the firms have linkages with the formal sector firms. Very few firms reported to have received any kind of assistance towards training and marketing from outside sources. Similarly, the number of firms maintaining accounts is also found to be very low. Around 39 percent of the firms included have their unit/plant located outside the household premises.

Majority of firms in our sample employ only family labor. As given in table 3, more than two-third of the sample units are OAMEs followed by NDMEs (21per cent) and DMEs (11per cent). We observe a similar pattern as in the case of the entire sample. Table 4provides the list of barriers mentioned by the sample firms by size. The barriers are grouped into five broad categories: (a) shortage of working capital (CAPSHOR), (b) power shortage (POWER), c) non-availability of raw materials (NMAT), d) non-availability of labor (NLABOR) (e)non- recovery of service charges/fees/credit (NRECFIN), (f) competition from large firms (COMPTN), (g) marketing problems (MKTING), and (h) lack of infrastructure (LACKINF). From the table 4, it can be observed that shortage of working capital and power supply are the major barriers affecting the growth of informal firms. From the Figure 6, we observe that the accessibility of power for the sample firms varies considerable across regions in India. Around 20 percent of the DMEs and NDMEs report that competition from large firms in the organized sector as a growth barrier. Non-availability of labor seems to affect mainly the large firms (DMEs). Around one-fifth of the sample firms report marketing (MKTING) as an obstacle to growth. In table 5, we present a descriptive account of the firm status (growing/stagnating/declining) and barriers to growth. In terms of the mean value, the level of barriers to growth varies across firm status.

Firms which are growing have reported lower level of constraints compared to the other growth status. Growing firms report competition from large units and marketing problems as the major barriers (Table 5).

Table 3: Summary Statistics

Variables	All Firms			Growing Firms			Stagnating Firms			Declining Firms		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Proprietary	213012	0.95811	0.200338	37216	0.95252	0.212665	128731	0.968539	0.174561	47065	0.934006	0.248274
Female	213012	0.190276	0.39252	37216	0.155068	0.361974	128731	0.21113	0.408112	47065	0.161075	0.367604
Location	213012	0.54481	0.497989	37216	0.571125	0.494922	128731	0.534269	0.498826	47065	0.552831	0.497206
Distance	213012	253.8266	183.2722	37216	249.4026	181.2896	128731	254.8577	181.7379	47065	254.5043	188.8774
Regis	213012	0.234663	0.423789	37216	0.26631	0.442034	128731	0.196472	0.397331	47065	0.314098	0.46416
Linkage	213012	0.224955	0.417553	37216	0.227537	0.419247	128731	0.234101	0.423437	47065	0.197897	0.398418
Assistance	213012	0.087455	0.282502	37216	0.094932	0.293125	128731	0.069991	0.255133	47065	0.129311	0.335547
OutsideHH	213012	0.395687	0.488999	37216	0.415735	0.492855	128731	0.355633	0.478707	47065	0.489387	0.499893
Acmaint	213012	0.076151	0.26524	37216	0.075263	0.263819	128731	0.05757	0.232929	47065	0.127675	0.333731
NDME	213012	0.21742	0.412491	37216	0.230062	0.420878	128731	0.192091	0.393945	47065	0.276702	0.447373
DME	213012	0.117444	0.32195	37216	0.116617	0.320967	128731	0.092814	0.290172	47065	0.185467	0.38868

Source: Authors' calculation from NSSO datasets

Table 4: Proportion of firms reporting growth obstacle, by size class

Variable	OAME	NDME	DME
N (%)	141682(66.51)	46313(21.74)	25017(11.74)
CAPSHOR	45.3	44.3	39.6
POWER	16.5	35.2	39.5
NMAT	13.5	9.4	13.6
NLABOR	0.9	7.8	14.4
NFIN	7.8	7.9	4.9
COMPTN	13.2	20.0	19.2
LACKINF	3.3	2.4	2.5
MKTING	19.6	18.8	23.7

Source: Authors' calculation from NSSO datasets

Note: (1) CAPSHOR: Shortage of working capital, POWER: power shortage, NMAT: non-availability of raw materials, NLABOR: non-availability of labor, NFIN: non- recovery of service charges/fees/credit, COMPTN: competition from large units, LACKINF: lack of infrastructure and MKTING: issues relating to marketing of product.
(2) COMPTN, LACKINF and MKTING are reported only for the year 2000-01 and 2005-06.

Figure 6: Firms' Access to Power, by Region

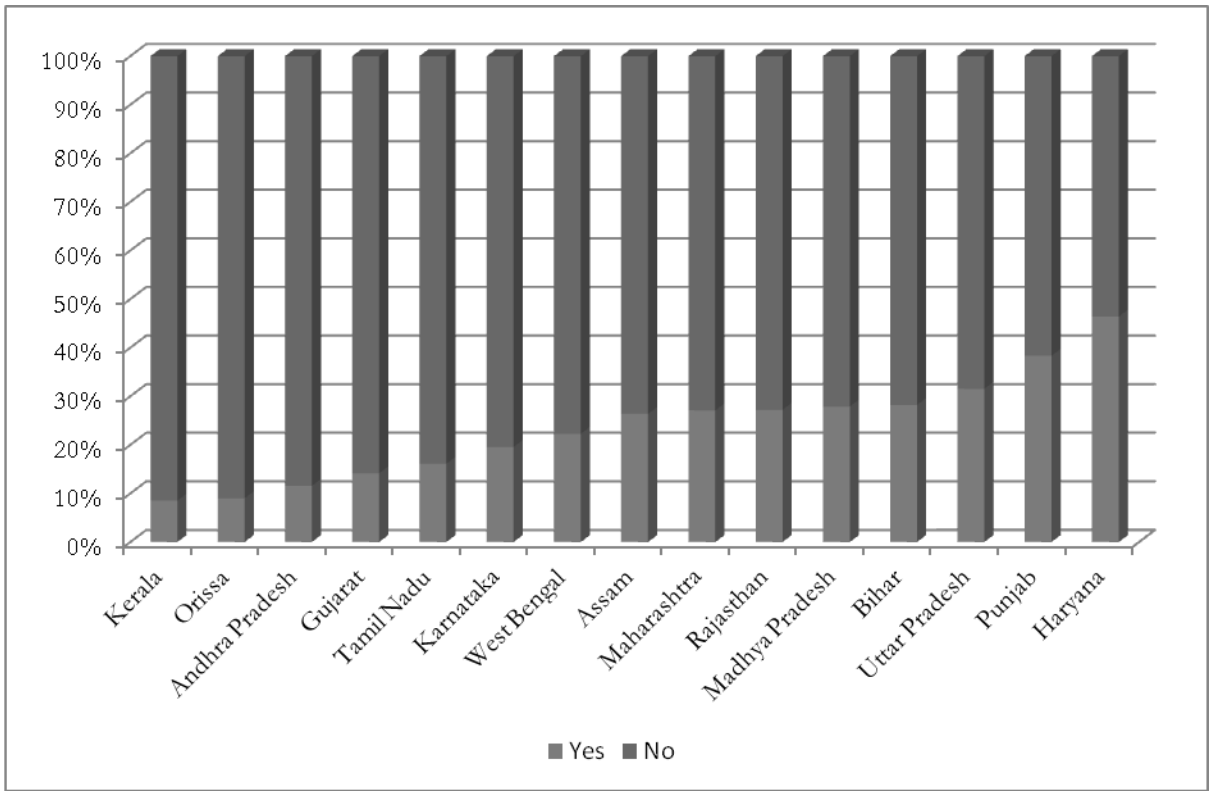


Table 5: Mean Value of Constraints by Status

Status	CAPSHOR	POWER	NMAT	NLABOR	NFIN	N	COMPTN	LACKINF	MKTING	N
Growing	0.4797936	0.2469368	0.1562231	0.0370271	0.0688951	37216 (17.5%)	0.21373	0.0304512	0.2586924	31493 (17.3%)
Stagnating	0.4450909	0.2121323	0.1280189	0.0296743	0.0700764	128731 (60.4%)	0.137308	0.0276751	0.1964517	113351 (62.3%)
Declining	0.4130458	0.2788484	0.0982259	0.068671	0.091618	47065 (22.1%)	0.1490199	0.0362911	0.1578905	37089 (20.4%)
All	0.4440736	0.232954	0.1263638	0.0395752	0.0746296	213012 (100%)	0.1529244	0.0299121	0.1993646	181933 (100%)

Source: Authors' calculation from NSSO datasets
Note: Same as in Table 4.

RESULTS AND DISCUSSION

This section discusses the factors influencing the status of firms and identifying the barriers that are the most limiting for enterprise growth. Our empirical analysis involves two stages. In the first stage, we employ multinomial logit regressions to investigate the factors explaining firm

decline in the informal sector[23]. Our dataset contains information pertaining to the status of the firm. The firm owners were asked to report whether the enterprise has been expanding, declining or stagnating over the last three years. This measure of firm status utilizes a simple yes/no format. We use this measure as a dependent variable in our estimations where it takes the value 0, 1, 2 if the firm is declining, stagnating and expanding. A multinomial logistic regression model assigns one among the three groups of the dependent variable as the base category and measures the effect of independent variables on the other groups relative to the base category. Firms that report their status as stagnating form the base group in our analysis. The second stage involves estimating probit regressions to understand the factors that explain the barriers to growth and survival faced by the firms in the sector. These reported barriers include the following: capital shortage (CAPSHOR), non-availability of raw material (NMAT), power shortage (POWER), non-availability of labor (NLABOR), non-recovery of financial dues (NFIN), competition from large units (COMPTN), problems relating to marketing of product (MKTING) and lack of infrastructure (LACKINF)[24].

First stage results

We present the first stage results in Table 6with entire sample firms. We also carry out the same set of analysis by including age as an additional variable (Table 7).[25] To analyze the influence of the availability of finance and the firm status we introduce credit-deposit ratio at the state level as an additional variable (column 6-9). We start with the effect of *Size* variable, captured using two dummy variables, NDME and DME. Size is found to have a negative effect on the declining firms implying that larger the *Size,* lesser is the likelihood of decline. In other words, decline is more evident among the small firms vis-a-vis the large firms. In the case of the informal sector, this finding is justified since the smaller firms (majority of them are operating within the household) are often in business simply because running small enterprises are means of supplementing income with little effort. Therefore, it is very likely that these enterprises have

[23]For comparison purpose, we also estimated two linear regression models. One relates growing to stagnation (conditional on being in one of these two) and other relate declining to stagnation (conditional on being in one of these two). The analysis yielded similar results like the multinomial logit model. We thank Jeffrey Wooldridge for this suggestion.

[24] The last three problems namely, competition from large units, marketing problems and lack of infrastructure was included in the 2001 and 2005 surveys. These questions were dropped in the 2010 survey. Therefore, we report the results of these specifications by pooling the data for 2001 and 2005.

[25]As mentioned before, information pertaining to age of the enterprise is available only for the year, 2010-11.

very little motivation to expand or invest in their businesses (Banerjee and Duflo, 2008). A comparison of magnitude of the coefficients of NDME and DME suggests that DMEs experience a faster growth than the NDMEs. With regard to ownership, we find that the coefficient of *proprietary* variable is negative and significant indicating that the likelihood of their survival is higher. While when we relate gender of the owner with firm decline, contrary to our expectations, we find that female owned firms are less likely to decline.

Does location matter for firm decline in the informal sector? To answer this question, we include two variables, *Location* and *Distance,* to capture the influence of location on firm status. Our results show that the probability of decline is higher for firms located in urban areas. We also observe a negative and significant relationship between remoteness of the district and firm decline. This implies that the probability of decline increases with the increase in the distance of the district from the state capital. It can be argued that spatial proximity and better transport infrastructure captured through lesser distance to state capital (*Distance*) and urban location (*Location*) improves market accessibility for small firms, which will have an impact on their average size and their subsequent growth (Tybout, 2000). In the case of expanding firms, proximity of urban area has a positive effect. Regarding the issue of finance availability, our results clearly show that absence of credit availability increases the rate of decline of firms. As expected, the increased availability of credit enhances the growth prospects of the expanding firms.

In line with our expectations, firms which are registered under any act/authority are likely to survive longer. This is true especially in the case of growing firms. The absence of registration prevents them from approaching any formal institutions for obtaining financial and technical assistance. Our results clearly show expanding firms that has contractual relationship with the formal sector firms' act as an enabling factor in the firm's growth. We find that firms which are receiving any assistance are likely to encounter faster growth. Assistance is more important in the case of growing firms as evident from the magnitude of the coefficient. ACMAINT that stands as a proxy for firms that maintain records of their transactions is negatively correlated with firm decline, suggesting that firm decline is more evident among firms that do not maintain any accounts. However, along the expected lines among the group of firms experiencing growth, maintenance of financial accounts has a positive and significant effect.

Table 6: Determinants of Firm Status: Multinomial Logit Regression

Variables	P(STATUS = declining)	Marginal Effects	P(STATUS = growing)	Marginal Effects	P(STATUS = declining)	Marginal Effects	P(STATUS = growing)	Marginal Effects
Size								
NDME	0.0199 (0.0164)	-0.0165*** (0.0021)	0.5023*** (0.0150)	0.0899*** (0.0028)	0.0549*** (0.0162)	-0.0130*** (0.0022)	0.5112*** (0.0147)	0.0901*** (0.0027)
DME	-0.0218 (0.0243)	-0.0347*** (0.0028)	0.7844*** (0.0202)	0.1537*** (0.0043)	-0.0010 (0.0241)	-0.0331*** (0.0029)	0.7663*** (0.0199)	0.1489*** (0.0041)
Ownership								
Proprietary	-0.1333*** (0.0324)	-0.0113*** (0.0045)	-0.1976*** (0.0276)	-0.0293*** (0.0047)	-0.1977*** (0.0319)	-0.0215*** (0.0047)	-0.2000*** (0.0272)	-0.0266*** (0.0046)
Female	-0.2861*** (0.0184)	-0.0357*** (0.0022)	-0.0514*** (0.0163)	0.0008 (0.0027)	-0.2085*** (0.0180)	-0.0267*** (0.0023)	-0.0638*** (0.0160)	-0.0033 (0.0026)
Geographical Factors								
Location	0.0845*** (0.0133)	0.0099*** (0.0018)	0.0494*** (0.0123)	0.0053*** (0.002)	0.1310*** (0.0129)	0.0182*** (0.0017)	0.0165 (0.0119)	-0.0021 (0.0019)
Distance	-0.0001*** (0.00004)	-0.00002*** (.0000)	0.0001*** (0.00003)	.00003*** (0.00001)	-0.00004 (0.00003)	-6.92e-06* (0.00000)	0.00003 (0.00003)	6.52e-06 (0.00000)
Finance								
CDR					-.0016*** (0.0003)	-0.0003*** (0.00004)	.0012*** (0.0003)	0.0003*** (0. .00004)
Other Firm Characteristics								
REGIS	0.1846*** (0.0176)	0.0234*** (0.0025)	0.0787*** (0.0160)	0.0064*** (0.0026)	0.2329*** (0.0171)	0.0322*** (0.0025)	0.0677*** (0.0155)	0.0022 (0.0025)
Linkage	0.0511*** (0.0162)	0.0093*** (0.0022)	-0.0599*** (0.0157)	-.0117*** (0.0025)	0.0652*** (0.0157)	0.0108*** (0.0023)	-.0341** (0.0152)	-0.0081*** (0.0024)
Assistance	0.1507*** (0.0231)	0.0072** (0.0031)	0.3511*** (0.0197)	0.0571*** (0.0036)	0.1881*** (0.0225)	0.0120*** (0.0032)	0.3691*** (0.0194)	0.0585*** (0.0035)
ACMAINT	-0.1520*** (0.0273)	-.0288*** (0.0032)	0.2550*** (0.0217)	0.0510*** (0.0039)	-0.1299*** (0.0268)	-0.0271*** (0.0033)	0.2466*** (0.0214)	0.0489*** (0.0038)
Cons	-1.6782*** (0.2084)	-	-2.2916*** (0.2317)	-	-1.5826*** (0.2071)	-	-2.1404*** (0.2245)	-
No of observations	213012	-	213012	-	213012	-	213012	-
Log pseudolikelihood	-191339.8	-	-191339.8	-	-194865.94	-	-194865.94	-
Pseudo R2	0.0472	-	0.0472	-	0.0296	-	0.0296	-

Note: Standard errors are given in parenthesis. *** p<0.01, ** p<0.05, * p<0.1
Base group forms those firms that report its status as stagnant.

We also look at the role of age in determining the status of the firm. We carry out the same specification with additional variable *Age* on firm status (Table 7). Our results clearly show that *Age* has differential impact on both classes of firms. In the case of growing firms, negative and significant sign of the variable confirms the idea that older firms exhibit a weak growth rate. In the case of declining firms, *Age* is found to have a positive and significant influence on firm decline, which indicates that older firms are likely to experience faster decline. This is in support of the absence of learning effect beyond a threshold as suggested by Jovanovic (1982).

Table 7 Determinants of Firm Status: Multinomial Logit Regression (with Age)

Variables	P(STATUS = declining)	Marginal Effects	P(STATUS = growing)	Marginal Effects
Size				
NDME	-0.1781*** (0.0410)	-0.0562*** (0.0048)	0.6130*** (0.0333)	0.1471*** (0.0073)
DME	-0.203148*** (0.0723)	-0.0824*** (0.0064)	1.0737*** (0.0516)	0.2658*** (0.0119)
Ownership				
Proprietary	-0.0955 (0.0971)	-0.0005 (0.0127)	-0.2273*** (0.0725)	-0.0453*** (0.0156)
Female	0.0369 (0.0508)	0.0077 (0.0070)	-0.0474 (0.0449)	-0.0121 (0.0092)
Geographical Factors				
Location	0.0699** (0.0342)	0.0121*** (0.0046)	-0.0434 (0.0287)	-0.0131** (0.0059)
Distance	-0.0004 *** (0.0001)	-0.0001*** (0.00001)	0.0005*** (0.0001)	0.0001*** (0.00002)
Other Firm Characteristics				
REGIS	-0.0861** (0.0435)	-0.0171*** (0.0056)	0.0987*** (0.0352)	0.0260*** (0.0074)
Linkage	0.1268* (0.0676)	0.0182* (0.0097)	0.0026 (0.0575)	-0.0064 (0.0118)
Assistance	-0.3926*** (0.1213)	-0.0487*** (0.0126)	0.0081 (0.0797)	0.0201 (0.0173)
ACMAINT	-0.3062*** (0.0677)	-.0490*** (0.0073)	0.2056*** (0.0474)	0.0613*** (0.0104)
Lnage	0.4347*** (0.0250)	0.0667*** (0.0033)	-0.1124*** (0.0202)	0-.0473*** (0.0042)
Cons	-2.5075*** (0.8519)	-	-1.8528*** (0.6727)	-
Number of observations	31066	-	31066	-
Log pseudo-likelihood	-30088.67	-	-30088.67	-
Pseudo R^2	0.0546	-	0.0546	-

Note: Standard errors are given in parenthesis. *** p<0.01, ** p<0.05, * p<0.1
Base group is those firms that report its status as stagnant.

Endogeneity Concerns

Instrumental Variable Estimation

A possible concern with the multinomial logit estimates of equation (1) is that the estimates of coefficient of registration status (REGIS) would be biased since it is possible that the firms which are growing are likely to register. This implies that the causality may run in the reverse direction from firm expansion to registration.[26] To address the problem of endogeneity of the registration status, we estimate equation (1) using instrumental variable (IV) method as a robustness check. We use the IV model in which registration status is instrumented. While choosing the appropriate instrument, care is taken that the assumption of valid exclusion restriction is satisfied. We consider outside household premises (*outside HH*), a dummy variable for firms that located outside the premises as a suitable instrument. We believe that firms that are located within the household premises are less likely to register as they employ mostly family labor and are in the business just to earn additional income with little effort. This instrumental variable meet the exclusion criteria since it will not have a direct effect on firm status over and above their indirect effect working through their registration status.

We find that this variable is a valid proxy and the inclusion of the instrument is justified since it passes the various statistical tests for the validity of instruments (see the test results presented in the table 8). This is important since weak instruments can lead to severely biased estimates. We test whether our instrument (*outsideHH*) identify the equations using the Anderson under-identification test. We employ Cragg-Donald test to find out whether the instrument suffer from the weak instrument problem. Both the tests unequivocally establish that our instrument identifies the second-stage equation and that our instrument is reasonably strong. Though these tests were carried out on a linear version of the model, we assume that they are sufficient to demonstrate the importance of our instrument.

[26]The Durbin-Hu-Hausman test does indicate the strong presence of the endogeneity of variable representing registration status (REGIS). We also employed another procedure to test for the presence of endoegeneity. This procedure is carried out in two steps. In the first step, the binary variable registration status is regressed on a set of explanatory variables as given by equation 1 and additional variable (outside HH) which act as instrument. In the second stage we estimate the equation 1 by adding residuals from the first step as the additional explanatory variable. This two-step procedure also suggests that the REGIS variable is endogenous.

Table 8: Tests for Validity of Instruments, Linear IV Model

Varibles (Instruments)	Tests		
	Under identification Test (Kleibergen-Paaprk LM statistic)	Weak Identification Test (Cragg-Donald Wald F statistic)	Overidentification Test for the Instrument (Sargan Statistic)
Firms located outside the household premises and with fixed premises and with permanent structure	Chi Squared (1) 1.3e+04	1.4e+04 Stock-Yogo (2005) Weak ID test critical values 10% maximal IV size 16.38 15% maximal IV size 8.96 20% maximal IV size 6.66 25% maximal IV size 5.53	0.000 (equation exactly identified)

Table 9 present the results of the instrumental variable estimation. We find that the results obtained from the IV regressions are very similar to those in the Multinomial Logit regressions suggesting that the results are robust to endogeneity concerns.

Table 9: Determinants of Firm Status: IV Estimates

Variables	First Stage Dep Variable = REGIS	Second Stage Dep Variable = STATUS	
		P(STATUS = declining)	P(STATUS = growing)
Size			
NDME	0.1728*** (0.0020)	0.0688*** (0.0237)	0.3525*** (0.0222)
DME	0.3064*** (0.0027)	0.0545 (0.0359)	0.5536*** (.0324)
Ownership			
Proprietary	-0.1010*** (0.0038)	-0.1570*** (0.0335)	-0.1261*** (0.0286)
Female	(-0.0320)*** (0.0020)	-0.3039*** (0.0193)	-0.0016 (0.0172)
Geographical Factors			
Location	0.0621*** (0.0016)	0.1012*** (0.0144)	0.0004 (0.0135)
Distance	0.00001*** (4.18e-06)	-0.0001*** (0.00004)	0.0001 (0.00003)
Other Firm Characteristics			
Linkage	-0.0233*** (0.0019)	0.0428*** (0.0164)	-0.0367** (0.0159)
Assistance	0.1082*** (0.0026)	0.1753*** (0.0245)	0.2795*** (0.0212)
ACMAINT	0.2298*** (0.0030)	-0.1025*** (0.0324)	0.1031*** (0.0273)
Outside HH	0.2083*** (0.0018)	-	-
REGISHAT	-	-0.0127 (0.0714)	0.6755*** (0.0672)
Cons	0.1119*** (0.0244)	-1.6363*** (0.2098)	-2.4156*** (0.2319)
Number of obs	213012	213012	213012
R-squared/ Pseudo R2	0.4142	0.0472	0.0472
Log likelihood	-	-191342.11	-191342.11

. . Note: Standard errors are given in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

Second Stage Results

In table 10 we report the determinants of barriers to growth as perceived by the sample firms. For the estimation purpose, we assign value 1 for the dependent variable if firms report suffering from a particular growth barrier as mentioned in the previous section and 0 otherwise. In all the specifications, we have included region, industry and time dummies to control for the effect inter-state and inter-industry differences. We begin our discussion with the findings for the entire firms (Table 10).

Table 10 Barriers to growth (Probit Regressions): All Firms

Variables	2001-2011					2001-2006		
	CAPSHOR	**POWER**	**NMAT**	**NLABOR**	**NFIN**	**COMPTN**	**MKTING**	**LACKINF**
Size								
NDME	-0.0385*** (0.0080)	0.4248*** (0.0083)	-0.0949*** (0.0106)	0.8535*** (0.0166)	-0.0250** (0.0116)	0.1080*** (0.0100)	-0.0014 (0.0100)	-0.1084*** (0.0182)
DME	-0.0953*** (0.0114)	0.5528*** (0.0115)	0.0342** (0.0140)	1.2729*** (0.0196)	-0.1123*** (0.0181)	0.1224*** (0.0140)	0.1264*** (0.0135)	-0.0575** (0.0254)
Ownership								
Proprietary	0.1739*** (0.0157)	0.0713*** (0.0159)	-0.0301 (0.0194)	0.1067 (0.0241)	-0.0533** (0.0241)	-0.0255 (0.0184)	0.0167 (0.0183)	0.0281 (0.0359)
Female	-0.2937*** (0.0085)	-0.2851*** (0.0103)	-0.0289*** (0.0109)	-0.1532*** (0.0238)	-0.1104*** (0.0130)	-0.1594*** (0.0111)	-0.1278*** (0.0109)	-0.1019*** (0.0188)
Geographical Factors								
Location	0.0145** (0.0065)	0.0486*** (0.0072)	-0.1794*** (0.0080)	-0.0157 (0.0137)	-0.1929*** (0.0094)	0.2078*** (0.0084)	-0.0784*** (0.0079)	-0.0432*** (0.0137)
Distance	-0.0002*** (0.0002)	0.0003*** (0.00002)	0.0003*** (0.00002)	-0.00001 (0.00004)	0.0001** (0.00003)	0.0001*** (0.00002)	0.0002*** (0.00002)	-0.0002*** (0.00004)
Other Firm Characteristics								
Linkage	-0.0952*** (0.0079)	0.2080*** (0.0087)	-0.0322*** (0.0098)	0.0411** (0.0171)	0.1123*** (0.0121)	-0.0545*** (0.0099)	-0.4360*** (0.0100)	0.0952*** (0.0162)
Acmaint	-0.2013*** (0.0128)	0.0303** (0.0128)	0.0753*** (0.0159)	0.1062*** (0.0192)	-0.1055*** (0.0194)	-0.0901*** (0.0158)	0.0478*** (0.0153)	-0.0470 (0.0293)
Assistance	0.3656*** (0.0109)	0.2094*** (0.0115)	0.0813*** (0.0136)	0.0838*** (0.0192)	0.1651*** (0.0169)	0.0561*** (0.0128)	0.1225*** (0.0125)	0.1546*** (0.0222)
Regis	-0.0768*** (0.0087)	0.3477*** (0.0088)	-0.0553*** (0.0114)	0.1388*** (0.0149)	-0.0056 (0.0129)	0.1795*** (0.0106)	0.0470*** (0.0108)	-0.0375* (0.0201)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	213012	213012	213012	213012	213012	181933	181933	181933
Pseudo R2	0.14	0.14	0.08	0.30	0.09	0.07	0.11	0.07
Constant	-0.0632 (0.0989)	-0.6865*** (0.1009)	-1.6717*** (0.1440)	-2.8474*** (0.2098)	-1.8279*** (0.1893)	-1.7462*** (0.1417)	-1.3892*** (0.1272)	-2.1622*** (0.1957)

Note: Standard errors are given in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

Our results show that medium and large firms in the informal sector are less likely to face the problem of capital shortage as compared to small firms. However, power supply, competition

from large firms in the organized sector and non-availability of labor seem to act as a barrier for both medium and large firms. While non-availability of raw materials and marketing is an obstacle to growth of large firms, non-recovery of financial dues is likely to affect medium sized firms. Proprietary firms do not face any difficulties in obtaining raw materials and non-recovery of financial dues. On the other hand, they are constrained by the lack of access to finance, power and non-availability of labor. A recent study by Coad and Tamavada (2012) also find difficulties in obtaining working capital as a barrier facing small scale industrial units. Our results show that male headed firms are more likely to encounter these obstacles as compared to female owned firms. This result is not entirely surprising since female run firms constitute only 19per cent of the total enterprises in our sample. Among the geographical factors, we find firms that situate closer to the state capital and that locate in urban areas play an important role in explaining the likelihood of reporting barriers. Firms in the rural areas face difficulty in power supply, raw material availability, labor, recovery of loans and marketing. The results indicate that rural firms and those located far from the state capital are adversely affected by the competition from large firms. The present findings are in conformity with Mead and Liedholm (1998) who report that micro and small business firms located in rural areas had a 25 per cent lesser chance of survival compared to their urban counterparts. Urban firms' major growth barrier seems to be the shortage of working capital.

As conjectured, in general, firms that registered under any act/authority are less likely to encounter barriers with regard to obtaining external capital. This shows that lenders adopt registration status as a mechanism of screening to ascertain the credibility of the borrowing firms. Interestingly, the firms that work as subcontractors for large firms do not suffer from inadequate finance. However, their growth is hindered by the presence of obstacles to the access of power, raw materials and labor. We also find that the recovery of financial dues pose a serious barrier to the firms engaged in subcontracting, imposing constraints on their working capital. As expected, the sub-contracting firms are less likely to face competition from large firms and marketing problems. These firms growth process seem to be hindered by the inadequate infrastructure. Given the relatively less emphasis on the policies for promoting enterprises in the informal sector, we find that despite receiving technical and marketing assistance firms face severe barriers in their vertical movement. Viewed from a policy perspective, this point to a substantially small quantum of assistance which is unable to push the firm from their existing

scale of activities closer to a threshold from where a take-off might be possible. Further, our results also reveal that firms that maintain accounts face less difficulty in obtaining working capital from external sources.

Table 11: Barriers to growth (Probit Regressions): Traditional Vs Moderns Firms, 2001-2011

	Traditional					Modern				
Variables	**CAPSHOR**	**POWER**	**NMAT**	**NLABOR**	**NFIN**	**CAPSHOR**	**POWER**	**NMAT**	**NLABOR**	**NFIN**
Size										
NDME	-.0263*** (.0083)	0.4175*** (0.0087)	-0.0950*** (0.0108)	0.8410*** (0.0184)	-0.0254** (0.0121)	0.1642**** (0.0029)	0.0622*** (0.0329)	-0.1900*** (0.0323)	0.9357*** (0.0546)	0.0857** (0.0410)
DME	-.1138*** (.01239)	0.5756*** (0.0127)	0.0869*** (0.0154)	1.2572*** (0.0222)	-0.1320*** (0.0199)	0.1402*** (0.0316)	0.4048*** (0.0336)	0.1043*** (0.0340)	1.4187*** (0.0578)	-0.0042 (0.0487)
Ownership										
Proprietary	.1869*** (.0176)	0.0923*** (0.0180)	-0.0654*** (0.0221)	0.1334*** (0.0282)	-0.0317 (0.0270)	0.1828*** (0.0369)	0.0161 (0.0383)	0.0768** (0.0400)	0.0406 (0.0470)	-0.0711 (0.0565)
Female	-.3811*** (.0038)	-0.3317*** (0.0102)	-0.0372*** (0.0104)	-0.1656*** (0.0253)	-0.0921*** (0.0126)	-0.5601*** (0.0380)	-0.2673*** (0.0470)	-0.3117*** (0.0452)	-0.0887*** (0.0765)	-0.2514*** (0.0720)
Geographical Factors										
Location	.0475*** (.0066)	0.0367*** (0.0073)	-0.0243*** (0.0082)	0.0239 (0.0148)	-0.1884*** (0.0096)	0.0035 (0.0205)	0.2622*** (0.0237)	-0.1492*** (0.0223)	-0.3016*** (0.0341)	-0. 0538* (0.0312)
Distance	-.00026*** (.00002)	0.0003*** (.00002)	0.0003*** (0.00002)	-0.0002 (0.00003)	0.00004 (0.00002)	-0.0026*** (0.0001)	0.0003*** (0.0001)	0.0001 (0.0001)	-0.00001 (0.0001)	0.0001 (0.0001)
Other Firm Characteristics										
Regis	-.0969*** (.0093)	0.3866*** (0.0094)	-0.0654*** (0.0118)	0.1101*** (0.0160)	-0.0280** (0.0134)	-0.1103*** (0.0293)	0.5039*** (0.0321)	-0.1233*** (0.0321)	0.1945*** (0.0407)	0.0269 (0.0438)
Linkage	-.1492*** (.0076)	0.0840*** (0.0083)	0.1985*** (0.0093)	0.0445*** (0.0174)	0.0773*** (0.0114)	-0.1634*** (0.0302)	0.2828*** (0.0343)	-0.2660*** (0.0369)	0.0951* (0.0538)	0.1250*** (0.0489)
Assistance	.3791*** (.0119)	0.1950*** (0.0125)	0.1038*** (0.0148)	0.1371*** (0.0212)	0.1618*** (0.0188)	0.3201*** (0.0308)	0.2311*** (0.0329)	0.0573* (0.0336)	-0.0091 (0.0454)	0.1517*** (0.0490)
Acmaint	-.1900*** (.0144)	-0.0237 (0.0145)	0.0919*** (0.0178)	0.0280 (0.0221)	- 0.1016*** (0.0213)	-0.3082*** (0.0327)	0.1999*** (0.0325)	0.0531 (0.0356)	0.2494*** (0.0393)	-0.1673*** (0.0486)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	191533	191533	191533	191533	191533	21479	21479	21479	21479	21479
Pseudo R^2	0.13	0.11	0.05	0.27	0.09	0.16	0.17	0.05	0.37	0.08
Constant	-.0345 (0.0232)	-0.0917*** (0.239)	-1.4830*** (0.0322)	-3.1346*** (0.0501)	-1.4379*** (0.0347)	-.0467 (0.0654)	-1.2973*** (0.0700)	-1.974*** (0.0768)	-2.8857*** (0.1054)	-1.8141*** (0.1056)

:Note: Standard errors are given in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

Table 12: Barriers to growth (Probit Regressions): Traditional Vs Moderns Firms, 2001-2006

Variables	Traditional			Modern		
	COMPTN	**MKTING**	**LACKINF**	**COMPTN**	**MKTING**	**LACKINF**
Size						
NDME	0.1126*** (0.0103)	0.0142 (0.0104)	-0.0958*** (0.0189)	0.2340*** (0.0409)	-0.1386*** (0.0345)	-0.1951*** (0.0633)
DME	0.0732*** (0.0152)	0.2168**** (0.0149)	-0.0095 (0.0278)	0.2112*** (0.0436)	-0.1335*** (0.0362)	-0.2092*** (0.0731)
Ownership						
Proprietary	-0.0065 (0.0205)	0.0015 (0.0211)	0.0472 (0.0403)	-0.0277 (0.0467)	0.0389 (0.0408)	-0.0426 (0.0777)
Female	-0.1972*** (0.0108)	-0.1736*** (0.0107)	-0.1138*** (0.0185)	-0.1875*** (0.0531)	-0.4412*** (0.0430)	-0.2267*** (0.0832)
Geographical Factors						
Location	0.2624*** (0.0086)	-0.0899*** (0.0081)	-0.0517*** (0.0142)	0.2014*** (0.0288)	-0.1791*** (0.0234)	-0.0954** (0.0448)
Distance	0.0001*** (0.00002)	0.0002*** (0.00002)	-0.0002*** (0.00003)	0.00004 (0.0001)	0.00004*** (0.0001)	-0.0001 (0.0001)
Other Firm Characteristics						
Regis	0.1576*** (0.0110)	0.0445*** (0.0113)	-0.0474** (0.0209)	0.2126*** (0.0404)	0.1470*** (0.0342)	-0.0382 (0.0676)
Linkage	-0.1244*** (0.0095)	-0.4191*** (0.0100)	0.0941*** (0.0155)	-0.0517 (0.0405)	-0.5887*** (0.0361)	0.0245 (0.0610)
Assistance	0.0401*** (0.0148)	0.1580*** (0.0137)	0.1671*** (0.0236)	0.1154*** (0.0377)	0.0467 (0.0330)	0.1693*** (0.0594)
Acmaint	-0.1995*** (0.0172)	0.0889*** (0.0173)	-0.0479 (0.0318)	-0.1823*** (0.0441)	-0.0771** (0.0384)	-0.0594** (0.0727)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Region Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	165360	165360	165360	16573	16573	16573
Pseudo R^2	0.06	0.09	0.07	0.08	0.10	0.09
Constant	-1.3804*** (0.0285)	-1.2281**** (0.0296)	-2.4066*** (0.0611)	-1.7048*** (0.0917)	-0.5933*** (0.0763)	-2.8045*** (0.3190)

Note: Standard errors are given in parenthesis. *** p<0.01, ** p<0.05, * p<0.1

Sub-Sample Analysis

The barrier to growth of a firm belonging to an industry is particularly high if the industry has lower growth and learning opportunities. Therefore, differences in learning and growth opportunities across sectors would result in inter-sectoral variations which have a direct effect in reducing growth barriers. To account for the inter-sectoral variation, we carry out the same set of analysis as above by classifying industries as traditional and modern[27]. Table 11 and 12 reports the results of the sub-sample analysis. Our results indicate that inadequate power supply

[27]The classification of the industries is provided in Appendix

seems to a universal problem. We find that large and medium firms belonging to the modern sector are more likely to face the problem of working capital. Non-availability of raw-material seems to a barrier for large firms belonging to traditional and modern sector. Similarly non-availability of labor is also a common factor hindering the growth of the sample firms irrespective of the industry affiliation. The issue of marketing is significant for those firms belonging to the traditional industries. In the case of firms belonging to the traditional sector, due to the limited customer base and perhaps the experience of the owner alone may not be sufficient in marketing their product. In both the classification, firms under propriety owner face difficulty in obtaining finance. For all the other control variables, the results obtained are very similar to the above discussion based on the entire sample.

CONCLUSION

The main aim of the present study is to analyze the barrier to growth of informal sector firms in the context of a developing economy, India. Even though considerable research work exists in the context of growth barriers of small firms, very little work has been done in the area of growth barriers of informal sector firms. Therefore, this study examines the growth barriers faced by firms in the informal sector in India. The empirical analysis examined the factors determining the status of the firms and the growth barriers. In the first stage we probed the factors influencing the firm status. We find that likelihood of survival is higher in the case of proprietary and large firms. Our results reveal that female owned enterprises are more likely to decline. The probability of decline is larger for firms located in urban areas and those which are located far from the state capital. As evidenced from the empirical analysis, older firms are likely to experience faster decline.

The second part of the empirical analysis examined the most pertinent growth barriers encountered by the sample firms and its determinants. Regarding growth barriers, the results of the present research show that that small firms and proprietary firms in the informal manufacturing sector were more likely to encounter capital shortage while large firms are constrained by non-availability of raw materials. The study finds that male-headed firms are more likely to encounter these obstacles as compared to female owned firms. Sub-sample analysis based on modern vs. traditional industries reveal that firms in the rural areas face difficulty in power supply, raw material availability, labour, recovery of loans, marketing

problems and competition from large firms. The results of the study indicate that working capital shortage is a problem for traditional industries. Inadequate power poses a severe growth obstacle to all categories of firms. Further, firms' belonging to the traditional industries suffer from lack of marketing avenues.

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Appendix

List of Traditional and Modern Industries

Sl. No	Industries	Traditional/Modern
1	Manufacture of food products	Traditional
2	Manufacture of beverages	Traditional
3	Manufacture of tobacco products	Traditional
4	Manufacture of textiles	Traditional
5	Manufacture of wearing apparel	Traditional
6	Manufacture of leather and related products	Traditional
7	Manufacture of wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	Traditional
8	Manufacture of paper and paper products	Traditional
9	Printing and reproduction of recorded media	Traditional
10	Manufacture of coke and refined petroleum products	Modern
11	Manufacture of chemicals and chemical products	Modern
12	Manufacture of pharmaceuticals, medicinal chemical and botanical products	Modern
13	Manufacture of rubber and plastics products	Modern
14	Manufacture of other non-metallic mineral products	Modern
15	Manufacture of basic metals	Modern
16	Manufacture of fabricated metal products, except machinery and equipment	Modern
17	Manufacture of computer, electronic and optical products	Modern
18	Manufacture of electrical equipment	Modern
19	Manufacture of machinery and equipment	Modern
20	Manufacture of motor vehicles, trailers and semi-trailers	Modern
22	Manufacture of other transport equipment	Modern
23	Manufacture of furniture	Modern
24	Other manufacturing	Modern

The Asian Institute of Management (AIM) is a pioneer in international management education in Asia. It is committed towards making a difference in the sustainable growth of Asian societies by developing professional, entrepreneurial, and socially responsible leaders and managers. Its programs and research focus on the nexus between business and development in Asia.

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