

## THE GROWTH BARRIERS OF INFORMAL SECTOR ENTERPRISES: EVIDENCE FROM INDIA

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The present study investigates the growth barriers of informal sector enterprises in India. The empirical analysis is based on the National Sample Survey Organization's unit-level data for three years, 2000–2001, 2005–6, and 2010–11. The results of the study reveal: proprietary and large firms survive and grow; enterprises managed by women are less likely to decline; inadequate power supply poses a severe growth obstacle to all categories of firms; and proprietary firms encounter capital shortage while large firms are constrained by the non-availability of raw materials. We do not find evidence of sub-contracting acting as an enabling factor in firm growth.

*Keywords:* Informal sector; Barriers to growth; Multinomial logit; India

*JEL classification:* L25, L26

### I. 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 number, small firms form a majority in both developed and developing countries. These enterprises constitute over 60% of total employment in manufacturing in many countries and more than 90% in India. Therefore, small firms are accorded special status by many governments due to their employment generation potential, which has a direct impact on poverty reduction (Beck, Demirgüç-Kunt, and Levine 2005).

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In spite of two decades of economic reforms, many goods still continue to be reserved for production under small-scale industries in India.<sup>1</sup> However, even with the support of governments, many small firms face several obstacles to growth (Dinh and Clarke 2012). 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, Rajesh Raj, and Sen 2013). The largest share of output is contributed by a few large firms and a large number of small firms operating in the fringe contribute a smaller share. The vast majority of these small firms operate in the informal sector. These small firms rarely graduate to the formal sector and their operations are on a small scale. In terms of numbers, informal sector firms far outweigh registered firms in India.<sup>2</sup> However, informal sector firms are found to be less productive in India and the gap has widened in recent years (Kathuria, Rajesh Raj, and Sen 2010). The low productivity of firms in the informal sector 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, and legal hurdles.

Studies examining firm growth dynamics mainly focus on testing Gibrat's law of proportionate growth (Coad 2009).<sup>3</sup> 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 of small firms in the informal sector. Fortunately, the availability of large-scale firm-level data sets has helped researchers focus attention on the constraints encountered by small firms belonging to the formal sector. Existing studies have 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).

We add to the growing body of research in understanding the growth dynamics of small business firms in the following ways. First, we make an attempt to locate the factors that propel the growth of small firms in the informal manufacturing sector in India. Second, for the first time in the context of India, we attempt to unearth the growth obstacles of informal sector enterprises. Further, the present work assumes greater significance since the firms included in the empirical analysis belong

<sup>1</sup> Recent evidence suggests that nearly one-third of products is still reserved for production in the small-scale sector in India (Kathuria, Rajesh Raj, and Sen 2013).

<sup>2</sup> Our estimates suggest that registered firms constitute less than 1% of total firms in the Indian manufacturing sector.

<sup>3</sup> According to Gibrat (1931), firm growth is independent on the size of the firm and follows a random process.

exclusively to the informal sector.<sup>4</sup> Studies pertaining to the growth obstacles of informal sector enterprises are scant.<sup>5</sup> An understanding of these issues will help policymakers identify the problems encountered by informal sector enterprises and guide in framing suitable policies to foster the growth of these firms.

The rest of the paper is organized as follows. Section II reviews relevant literature on growth barriers of small firms. In Section III we discuss the data source and the variables used in the study. This section also provides a brief description of the econometric methodology employed in the study. The descriptive statistics and results of the empirical analysis are presented in Section IV. The final section concludes the paper.

## II. THEORETICAL BACKGROUND AND REVIEW OF THE LITERATURE

The theoretical literature highlights three important factors affecting the growth<sup>6</sup> and performance of firms: (1) firm characteristics; (2) entrepreneur characteristics; and (3) contextual factors (the environment in which the entrepreneurs and firms operate). Firm and entrepreneur characteristics have been dealt with in detail by many studies.<sup>7</sup> Regarding the latter, environmental constraints faced by firms often consist of the existence and functioning of financial and other markets, infrastructural bottlenecks, the presence of a legal framework, and the regulation and enforcement of this framework (Pissarides, Singer, and Svejnar 2003).

<sup>4</sup> The informal or unorganized sector comprises the set of firms that fall outside the scope of the *Factories Act* of 1948. They generally do not pay taxes and are outside the purview of government regulations (Kanbur 2011). Firms have to register with the Indian government under the *Factories Act* if they employ 10 or more workers and use electricity in their operations, or if they employ 20 or more workers without the use of electricity in their operations (Kathuria, Rajesh Raj, and Sen 2013). The Act regulates the conditions of work in the formal manufacturing sector, including minimum safety, sanitary, health, and welfare standards, as well as stipulating regulations on hours of work, leave with wages, and holiday provisions for workers which employers in the formal sector need to follow or face stiff penalties (NCEUS 2008). The informal manufacturing sector, by default, comprises firms that employ 10 or fewer workers and use electricity or those that employ less than 20 workers without the use of electricity in their operations. However, in our database we find many of the informal enterprises exceed the threshold level, which requires registration under the *Factories Act* of 1948.

<sup>5</sup> Most of the studies related to informal sector firms in India focus mainly on productivity differentials (Kathuria, Rajesh Raj, and Sen 2010) or on examining the effect of international trade on employment (Rajesh Raj and Sen 2012) and productivity (Nataraj 2011). Some attempts have also been made to analyze the nature of the relationship between firms in the formal and informal sectors (Moreno-Monroy, Pieters, and Erumban 2012).

<sup>6</sup> Existing studies mainly measure firm growth in terms of changes in sales, output, or employment.

<sup>7</sup> See Nichter and Goldmark (2009) for an excellent survey of literature related to developing countries.

Small firms find it difficult to obtain external finance due to asymmetric information and because they have very little collateral to offer. Based on cross-country firm-level data, Ayyagari, Demirgüç-Kunt, and Maksimovic (2008) report access to finance as the most significant variable influencing firm growth. Beck and Demirgüç-Kunt (2006) also find lack of access to financial services is the most prominent barrier. Similarly, Dinh, Mavridis, and Nguyen (2012), using cross-country data, report access to finance as the most important obstacle. Further, studies examining obstacles to growth attempt to verify the importance of the size of the firm (Schiffer and Weder 2001). A study based on small registered firms in India reports power shortages, management, and raw materials as the major obstacle faced by small firms (Coad and Tamvada 2012).<sup>8</sup>

In the case of studies based on informal enterprises, slower growth compared to formal counterparts is reported (Sleuwaegen and Goedhuys 2002). Difficulty in technology adoption is cited by small firms in the informal sector in Pakistan as the main obstacle to growth (Aftab and Rahim 1989). Based on the above discussion, we conclude that most studies focus on the experience of formal sector/registered firms and are primarily based on cross-country data. Therefore, the present study adds to the existing literature by focusing exclusively on the experience of informal sector enterprises in the context of an emerging economy, India.

### III. DATA SOURCE, METHODOLOGY, AND VARIABLE DESCRIPTION

#### A. *Data*

Our main data source regarding the informal sector is the surveys on India's unorganized or informal manufacturing establishments provided by the National Sample Survey Organization (NSSO).<sup>9</sup> The data are collected 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.<sup>10</sup> Our analysis is based on the unit-level data pertaining to three years, 2000–2001, 2005–6, and 2010–11. The choice of time period for the study was

<sup>8</sup> They use cross-sectional data based on the Third Census of registered Small Scale (SSIs) firms carried out during 2001–2. 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 analyzes the growth barriers of informal sector enterprises in India.

<sup>9</sup> The two terms “informal sector” and “unorganized sector” are used interchangeably in the Indian context.

<sup>10</sup> For instance, the 62nd round of the NSSO survey conducted in 2005–6 covered the whole of the Indian Union except: (1) the Leh and Kargil districts of Jammu and Kashmir; (2) the interior village of Nagaland situated 5km beyond the bus route; and (3) the 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 are villages in rural areas and Urban Frame Survey blocks in urban areas. A total of 9,923 FSUs consisting of 4,798 villages and

governed by the fact that the data on some of the firm-specific variables included in the analysis were only available for these years.<sup>11</sup> The data used in the present study is in the form of repeated cross-sections, since the NSSO does not reveal the identity of the firm/plant, and the same firm may not be covered in each round. For our empirical analysis, we have 213,012 observations, spanning 25 industries, and 364 districts belonging to 15 major Indian states.<sup>12</sup>

## B. Methodology

We employ a multinomial logit regression model to analyze the determinants of firm status in the informal sector. The NSSO in its surveys asked the firm owners whether their firm had been expanding/stagnating/declining in the past three years.<sup>13</sup> We name this variable *STATUS* and code this variable 2 if the firm has been expanding, 1 if it has been stagnating and 0 if it has been declining. Thus, the dependent variable *STATUS* in our model is an ordered categorical variable ranging from 0 to 2 denoting the status of the firm. The equation we estimate at firm level is given by:

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

The main explanatory variables of interest are size (*NDME* and *DME*), age (*Age*), ownership dummies for proprietary and 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

5,125 urban blocks were surveyed. The Ultimate Stage Units (USUs) for the survey are enterprises. Circular sampling was 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 of the survey report (NSSO 2007).

<sup>11</sup> The NSSO survey data for 1994–95 does not provide information for the variables capital shortage (*Capshor*), linkage with formal sector (*Linkage*), technical or financial assistance (*Assistance*), account maintained (*Acmaint*), registration status (*Regis*), and power supply (*Elec*).

<sup>12</sup> 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).

<sup>13</sup> 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.

for by the registration status (*Regis*) dummies.<sup>14</sup> Access to finance is captured using *Credit Deposit Ratio*. The detailed description of the variables and the justification of including them in the empirical exercise are presented below.

Further, we analyze the determinants of barriers to growth and survival these informal firms face. The NSSO surveys also collect information relating to specific obstacles faced by firms in the growth process. These obstacles reported by firms include working capital shortage, power shortage, labor shortage, delay in payments, competition from large firms, marketing problems, and lack of infrastructure. We investigate the internal determinants of these obstacles by using probit regressions, with each of the growth obstacles mentioned previously as the dependent variable. Our empirical approach is similar to previous works by Sleuwaegen and Goedhuys (2002), Robson and Obeng (2008), and Coad and Tamvada (2012).

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

The dependent variable *GB* is the dummy variable that assumes a value of 1 if the firm reports a specific growth barrier and 0 otherwise. We also introduce industry, regional, and year-specific dummies.<sup>15</sup> 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 to capture the variation in infrastructure availability influencing firms' reporting of barriers across regions.

Our empirical analysis involves two stages. In the first stage, we employ multinomial logit regressions to investigate the factors explaining firms' operational status.<sup>16</sup> The dependent variable in our estimations take the value 0, 1, or 2 if the firm is declining, stagnating, or expanding, respectively. A multinomial logistic regression model assigns one of 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

<sup>14</sup> 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, cooperative society, etc. Please refer to footnote 19 for a detailed discussion on this.

<sup>15</sup> For the sake of brevity, we do not report the coefficients.

<sup>16</sup> For the purpose of comparison, we also estimate two linear regression models. One relates growing to stagnation (conditional on being in one of these two) and the other relates declining to stagnation (conditional on being in one of these two). The analysis yielded similar results to the multinomial logit model. We thank Jeffrey Wooldridge for this suggestion.

base group in our analysis. The second stage involves estimating probit regressions to determine 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 (*NRECFIN*); competition from large units (*COMPTN*); problems relating to marketing of product (*MKTING*); and lack of infrastructure (*LACKINF*).<sup>17</sup>

### C. Description of Variables

#### 1. Size

Previous studies examining the role of size in influencing firm survival have produced mixed results (Liedholm 2002). Large firms are less susceptible to shocks since they usually do not face cash flow constraints. 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) reports that size had no effect on the survival of the firms. Based on the findings of existing studies, we expect the association to be either positive or negative.

Firms in the Indian informal sector are broadly classified into three groups based on the size of the enterprise and the type of labor used in the production process. They are: (1) own-account manufacturing enterprises (OAMEs), which employ only family labor; (2) non-directory manufacturing establishments (NDMEs), which employ at least one hired laborer on a regular basis, but the total number of workers (including family labor) does not exceed five; and (3) directory manufacturing establishments (DMEs), which employ six to nine workers, at least one of which would be a hired worker.<sup>18</sup> 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*.

<sup>17</sup> The last three problems, namely, competition from large units, marketing problems, and lack of infrastructure were 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.

<sup>18</sup> Admittedly the practice of demarcating establishments that employ hired workers into NDMEs and DMEs is to some extent arbitrary, determined by the practices of the NSSO, the agency which is instrumental in carrying out a large-scale nationwide 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 six-worker employment size. Second, this size group forms a part of the formal sector in other countries in the region. For the present study, we categorize enterprise types NDMEs and DMEs as medium and large enterprises while OAMEs are considered small firms.

## 2. *Ownership*

Many studies report that the gender of the owner has a significant effect on firm survival (Mead and Liedholm 1998). Women-led firms are likely to face more barriers because they are up against orthodox institutional structures, the women also have family commitments, and women are more risk averse, which prevents them from pursuing business expansion aspirations (Brush 1992). Unlike the findings of the previous studies which highlight severe growth barriers for female-owned/managed firms,<sup>19</sup> a recent study based on the experience of registered small firms in India reports otherwise (Deshpande and Sharma 2013). Deshpande and Sharma argue that the positive finding may be due to the self-selection problem. Therefore, we expect either a positive or negative effect of female ownership. We introduce a dummy variable, *Female*, to capture the gender dimension of ownership.

In our sample 96% of enterprises are proprietary firms.<sup>20</sup> Coad and Tamvada (2012) find that young proprietary firms in the small-scale sector grow more slowly and they have difficulty in obtaining working capital. We also intend to see whether this result holds for firms in the informal sector as well. We include a dummy variable, *Proprietary*, as a proxy which takes the value 1 for proprietary firms and 0 for other firms.

## 3. *Location/closeness to market*

As with the influence of size, previous studies are unable to arrive at any consensus regarding the association of location and business performance. Bigsten and Gebreeyesus (2007), while examining the determinants of manufacturing growth in Ethiopia, find that firms located in capital regions grow faster than those located in other areas. However, on the contrary, based on the experience of UK firms, Keeble (2003) reports that firms located in rural areas face fewer difficulties. In the case of India, we expect that enterprises that are located in urban areas face fewer barriers.

We include *Location* as a variable in our analysis to capture the differences among firms regarding access to better infrastructure, and larger markets for skilled labor, raw materials, and outputs. *Location* takes the value of 1 if the firm is located in an urban area and 0 if it is located in a rural area. The expectation is that firms located in and around cities and towns will experience fewer constraints compared to their counterparts. We include another variable, *Distance*, which signifies the remoteness of the district as captured by the distance of the district from the state capital. A firm's proximity to the state capital can result in better infrastructure and

<sup>19</sup> See Coad and Tamvada (2012) for a recent review of this literature.

<sup>20</sup> Firms included in the NSSO are classified as proprietary and partnership. Proprietary firms are those firms owned by a single individual.



fewer constraints. Lall, Shalizi, and Deichman (2004) find positive productivity effects of market accessibility for firms in India.

#### 4. *Age*<sup>21</sup>

Available evidence points to a negative relationship between age and growth (Sleuwaegen and Goedhuys 2002). In the case of India, a negative association between age and firm growth is reported by Deshpande and Sharma (2013). We also examine whether age influences growth of firms in the informal sector. In the latest round (2010–11), NSSO reports the year of initial operation of firms surveyed. We arrive at the age of firms as the numbers of years since commencement of operation.

#### 5. *Registration*

Registration of the firm with an authority grants legitimacy to the owners in terms of obtaining bank loans and access to legal systems, which are instrumental in fostering growth (Levenson and Maloney 1998). There is some evidence that shows formal registration leads to significant gains in sales per employee and value added per employee (Sharma 2014). It is argued that registration acts as a means of signaling legitimacy, which reduces growth constraints. Therefore, we explore this relationship in the present case. The NSSO surveys contain information pertaining to the registration status of the firms under any act or authority.<sup>22</sup> We maintain that being part of an act/authority could help the owner-manager access and secure a range of financial and non-financial resources (information, knowledge, technology, and finance) that are otherwise mostly unavailable to firms in the informal sector. We denote this variable *Regis* and code it 1 if these firms report registration and 0 otherwise.

#### 6. *Linkage*

Studies have highlighted the role of subcontracting on firm performance (Kimura 2002; Giunta, Nifo, and Scalera 2012). Giunta, Nifo, and Scalera (2012)

<sup>21</sup> The information regarding the age of the firm is provided only in the latest round of the survey, 2010–11. The previous two rounds did not provide the age of the firm. Therefore, we are unable to incorporate age as a variable in our empirical analysis for 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.

<sup>22</sup> 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 the State Directorate of Industries, the Small Industries Development Bank of India (SIDBI), the State Trading Corporation of India Limited (STC), the Pollution Control Board, the State Financial Corporation, boards of different industries such as the Coir Board, the Silk Board, and the Khadi and Village Industries Board, and acts such as the Co-operative Societies Act, the Money Lender's Act, the Indian Charitable Act and so on. An enterprise may be registered under more than one authority or act.

envisage subcontracting as a growth strategy employed by small and marginal firms. Subcontracting is a conduit through which an automatic expansion of production occurs for micro-firms that are into subcontracting relationships with large firms (Sahu 2010). The most widely acknowledged benefit for small firms under subcontract is an assured market for their products (Sahu 2010). Other benefits include technological upgrading and training for employees (Ranis and Stewart 1999). Therefore, it is expected that subcontracting firms will perform better. Although financial assistance is sometimes offered by the parent firm, it is the least preferred strategy. Another view of subcontracting argues that small firms are hurt by links to large firms due to their low bargaining power (Tokman, 1978). Perhaps this could be the reason why delayed payments to subcontracting units are a very common feature in India. Sahu (2010) notes in the context of India that almost 88% of subcontracted small firms regard delay in payments by the parent company as a major concern. Uchikawa (2011) reports that informal-sector enterprises were unable to benefit from their relationship with the formal sector in India since they were unable to meet the quality requirements. Since there are contradicting views about the role of subcontracting, we attempt to analyze the effect of subcontracting on firm growth. The NSSO data provided information about firms that work solely for a contractor. We denote this variable as *Linkage* and code it as 1 if they work for a contractor and 0 otherwise. Based on the above discussion, we expect that *Linkage* would have a positive or negative effect on the growth of informal firms.

#### 7. *Assistance*

Various programs have been devised by many governments to provide assistance to small firms. Brown, Earle, and Lup (2005) do not find any significant association of technical assistance and firm growth in Romania. We examine whether assistance to firms acts as a catalyst for the growth of informal firms. Our database contains information regarding whether the sample firms receive any assistance from the government toward training and marketing. We label this variable *Assistance* and assign the code 1 if the firm receives any assistance and 0 otherwise.

#### 8. *Account maintained*

Sound accounting practices by firms can be an important factor influencing firm growth (Acar 1993). 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 constraints to their expansion. 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.

#### D. *Descriptive Statistics*

We present the summary statistics for the main variables used in our empirical analysis in Table 1. 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 96% of firms are under single ownership. Among the sample firms, female-owned firms constitute only 19%. More than 50% of the firms included in our dataset are located in urban areas. More than one-fifth (23%) of firms are registered under any act/authority and around 22% of the firms have linkages with formal sector firms. Very few firms reported receiving any kind of assistance toward training and marketing from outside sources. Similarly, the number of firms maintaining accounts is also found to be very low. Around 39% of the firms included have their unit/plant located outside the household premises.

The majority of firms in our sample employ only family labor. As shown in Table 2, more than two-thirds of the sample units are OAMEs, followed by NDMEs (21%), and DMEs (11%). We observe a similar pattern as in the case of the entire sample. Table 2 provides the list of barriers mentioned by the sample firms by size. The barriers are grouped into eight broad categories: (1) shortage of working capital (*CAPSHOR*); (2) power shortage (*POWER*); (3) non-availability of raw materials (*NMAT*); (4) non-availability of labor (*NLABOR*); (5) non-recovery of service charges/fees/credit (*NRECFIN*); (6) competition from large firms (*COMPTN*); (7) marketing problems (*MKTING*); and (8) lack of infrastructure (*LACKINF*). From Table 2, it can be observed that shortage of working capital and power supply are the major barriers affecting the growth of informal firms. Around 20% of the DMEs and NDMEs report competition from large firms in the organized sector as a growth barrier. Non-availability of labor seems to affect mainly large firms (DMEs). Around one-fifth of the sample firms report marketing (*MKTING*) as an obstacle to growth. In Table 3 we present a descriptive account of 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 that are growing have reported lower levels of constraints compared to other growth status. Growing firms report competition from large units and marketing problems as the major barriers.

### IV. RESULTS AND DISCUSSION

This section discusses the factors influencing the status of firms and identifies the barriers that are most limiting for enterprise growth.

#### A. *First-Stage Results*

We present the first-stage results in Table 4 for all sample firms. We also carry out the same set of analysis by including *age(Lnage)* as an additional variable

TABLE 1  
Summary Statistics

Variables	All Firms			Growing Firms			Stagnating Firms			Declining Firms		
	No. of Obs.	Mean	SD	No. of Obs.	Mean	SD	No. of Obs.	Mean	SD	No. of Obs.	Mean	SD
<i>Proprietary</i>	213,012	0.95811	0.200338	37,216	0.95252	0.212665	128,731	0.968539	0.174561	47,065	0.934006	0.248274
<i>Female</i>	213,012	0.190276	0.39252	37,216	0.155068	0.361974	128,731	0.21113	0.408112	47,065	0.161075	0.367604
<i>Location</i>	213,012	0.54481	0.497989	37,216	0.571125	0.494922	128,731	0.534269	0.498826	47,065	0.552831	0.497206
<i>Distance</i>	213,012	253.8266	183.2722	37,216	249.4026	181.2896	128,731	254.8577	181.7379	47,065	254.5043	188.8774
<i>Regis</i>	213,012	0.234663	0.423789	37,216	0.26631	0.442034	128,731	0.196472	0.397331	47,065	0.314098	0.46416
<i>Linkage</i>	213,012	0.224955	0.417553	37,216	0.227537	0.419247	128,731	0.234101	0.423437	47,065	0.197897	0.398418
<i>Assistance</i>	213,012	0.087455	0.282502	37,216	0.094932	0.293125	128,731	0.069991	0.255133	47,065	0.129311	0.335547
<i>OutsideHH</i>	213,012	0.395687	0.488999	37,216	0.415735	0.492855	128,731	0.355633	0.478707	47,065	0.489387	0.499893
<i>Acmain</i>	213,012	0.076151	0.26524	37,216	0.075263	0.263819	128,731	0.05757	0.232929	47,065	0.127675	0.333731
<i>NDME</i>	213,012	0.21742	0.412491	37,216	0.230062	0.420878	128,731	0.192091	0.393945	47,065	0.276702	0.447373
<i>DME</i>	213,012	0.117444	0.32195	37,216	0.116617	0.320967	128,731	0.092814	0.290172	47,065	0.185467	0.38868

Source: Authors' calculations from NSSO datasets.

TABLE 2  
Proportion of Firms Reporting Growth Obstacle, by Size Class

Variable	OAME	NDME	DME
<i>CAPSHOR</i>	45.3	44.3	39.6
<i>POWER</i>	16.5	35.2	39.5
<i>NMAT</i>	13.5	9.4	13.6
<i>NLABOR</i>	0.9	7.8	14.4
<i>NRECFIN</i>	7.8	7.9	4.9
<i>COMPTN</i>	13.2	20.0	19.2
<i>LACKINF</i>	3.3	2.4	2.5
<i>MKTING</i>	19.6	18.8	23.7
No. of obs. (%)	141,682(66.51)	46,313(21.74)	25,017(11.74)

Source: Authors' calculations from NSSO datasets.

Notes: 1. *CAPSHOR*: shortage of working capital, *POWER*: power shortage, *NMAT*: nonavailability of raw materials, *NLABOR*: nonavailability of labor, *NRECFIN*: nonrecovery 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 years 2000–2001 and 2005–6.

TABLE 3  
Mean Value of Constraints by Status

Status	Growing	Stagnating	Declining	All
<i>CAPSHOR</i>	0.4797936	0.4450909	0.4130458	0.4440736
<i>POWER</i>	0.2469368	0.2121323	0.2788484	0.232954
<i>NMAT</i>	0.1562231	0.1280189	0.0982259	0.1263638
<i>NLABOR</i>	0.0370271	0.0296743	0.068671	0.0395752
<i>NRECFIN</i>	0.0688951	0.0700764	0.091618	0.0746296
No. of obs.	37,216	128,731	47,065	213,012
(%)	(17.5)	(60.4)	(22.1)	(100.0)
<i>COMPTN</i>	0.21373	0.137308	0.1490199	0.1529244
<i>LACKINF</i>	0.0304512	0.0276751	0.0362911	0.0299121
<i>MKTING</i>	0.2586924	0.1964517	0.1578905	0.1993646
No. of obs.	31,493	113,351	37,089	181,933
(%)	(17.3)	(62.3)	(20.4)	(100)

Source: Authors' calculation from NSSO datasets.

Note: Same as in Table 2.

(Table 5).<sup>23</sup> To analyze the influence of availability of finance on firm status, we introduce a credit-deposit ratio at state level as an additional variable. 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 declining firms implying that the larger the *Size*, the less likelihood there is of a decline. In other words, decline is more evident

<sup>23</sup> As mentioned before, information pertaining to the age of the enterprise is available only for 2010–11.

TABLE 4  
Determinants of Firm Status: Multinomial Logit Regression

Variables	Pr( <i>STATUS</i> = declining)	Marginal Effects	Pr( <i>STATUS</i> = growing)	Marginal Effects	Pr( <i>STATUS</i> = declining)	Marginal Effects	Pr( <i>STATUS</i> = growing)	Marginal Effects
<b>Size:</b>								
<i>NDME</i>	0.0199	(0.0164)	-0.0165***	(0.0021)	0.5023***	(0.0150)	0.0899***	(0.0028)
<i>DME</i>	-0.0218	(0.0243)	-0.0347***	(0.0028)	0.7844***	(0.0202)	0.1537***	(0.0043)
<b>Ownership:</b>								
<i>Proprietary</i>	-0.1333***	(0.0324)	-0.0113***	(0.0045)	-0.1976***	(0.0276)	-0.0293***	(0.0047)
<i>Femate</i>	-0.2861***	(0.0184)	-0.0357***	(0.0022)	-0.0514***	(0.0163)	0.0008	(0.0027)
<b>Geographical factors:</b>								
<i>Location</i>	0.0845***	(0.0133)	0.0699***	(0.0018)	0.0494***	(0.0123)	0.0053***	(0.002)
<i>Distance</i>	-0.0001***	(0.00004)	-0.00002***	(0.0000)	0.0001***	(0.00003)	0.00002***	(0.00001)
<b>Finance:</b>								
<i>CDR</i>								
<b>Other firm characteristics:</b>								
<i>Regis</i>	0.1846***	(0.0176)	0.0234***	(0.0025)	0.0787***	(0.0160)	0.0064***	(0.0026)
<i>Linkage</i>	0.0511***	(0.0162)	0.0093***	(0.0022)	-0.0599***	(0.0157)	-0.0177***	(0.0025)
<i>Assistance</i>	0.1507***	(0.0231)	0.0072**	(0.0031)	0.3511***	(0.0197)	0.0571***	(0.0036)
<i>Acmainr</i>	-0.1520***	(0.0273)	-0.2888***	(0.0032)	0.2550***	(0.0217)	0.0510***	(0.0039)
Constant	-1.6782***	(0.2084)			-2.2916***	(0.2317)		
Log pseudo-likelihood	-191.339.8				-191.339.8			
Pseudo $R^2$	0.0472				0.0472			
No. of observations	213,012				213,012			

Notes: 1. Standard errors are given in parentheses.

2. Base group is those firms that report their status as stagnant.

\*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.10$ .

TABLE 5  
Determinants of Firm Status: Multinomial Logit Regression (with Age)

Variables	Pr( <i>STATUS</i> = declining)	Marginal Effects	Pr( <i>STATUS</i> = growing)	Marginal Effects
<b>Size:</b>				
<i>NDME</i>	-0.1781*** (0.0410)	-0.0562*** (0.0048)	0.6130*** (0.0333)	0.1471*** (0.0073)
<i>DME</i>	-0.203148*** (0.0723)	-0.0824*** (0.0064)	1.0737*** (0.0516)	0.2658*** (0.0119)
<b>Ownership:</b>				
<i>Proprietary</i>	-0.0955 (0.0971)	-0.0005 (0.0127)	-0.2273*** (0.0725)	-0.0453*** (0.0156)
<i>Female</i>	0.0369 (0.0508)	0.0077 (0.0070)	-0.0474 (0.0449)	-0.0121 (0.0092)
<b>Geographical factors:</b>				
<i>Location</i>	0.0699** (0.0342)	0.0121*** (0.0046)	-0.0434 (0.0287)	-0.0131** (0.0059)
<i>Distance</i>	-0.0004*** (0.0001)	-0.0001*** (0.00001)	0.0005*** (0.0001)	0.0001*** (0.00002)
<b>Other firm characteristics:</b>				
<i>Regis</i>	-0.0861** (0.0435)	-0.0171*** (0.0056)	0.0987*** (0.0352)	0.0260*** (0.0074)
<i>Linkage</i>	0.1268* (0.0676)	0.0182* (0.0097)	0.0026 (0.0575)	-0.0064 (0.0118)
<i>Assistance</i>	-0.3926*** (0.1213)	-0.0487*** (0.0126)	0.0081 (0.0797)	0.0201 (0.0173)
<i>Acmainit</i>	-0.3062*** (0.0677)	-0.0490*** (0.0073)	0.2056*** (0.0474)	0.0613*** (0.0104)
<i>Lnage</i>	0.4347*** (0.0250)	0.0667*** (0.0033)	-0.1124*** (0.0202)	-0.0473*** (0.0042)
Constant	-2.5075*** (0.8519)	—	-1.8528*** (0.6727)	—
Log pseudo-likelihood	-30,088.67	—	-30,088.67	—
Pseudo <i>R</i> <sup>2</sup>	0.0546	—	0.0546	—
No. of observations	31,066	—	31,066	—

Notes: 1. Standard errors are given in parentheses.

2. Base group is those firms that report their status as stagnant.

\*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.10$ .

among small firms vis-à-vis large firms. In the case of the informal sector, this finding is justified since smaller firms (the majority of which are operating within the household) are often in business simply because running small enterprises is a means of obtaining additional income with little effort. Therefore, it is very likely that these enterprises have 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 faster growth than NDMEs. With regard to ownership, we find that the coefficient *Proprietary* variable is negative and significant indicating that the likelihood of their survival is higher. When we relate the gender of the owner with firm decline, we find that female-owned firms are less likely to decline. This is not entirely surprising, as a number of studies have also arrived at a similar result for different countries. For instance, Deshpande and Sharma (2013) find that female-owned firms perform better than male-owned firms in their study of Indian firms belonging to the small-scale sector. On the other hand, based on the experience of US firms, Robb and Watson (2012) also rule out the argument that male-headed firms grow faster than female-headed firms.<sup>24</sup>

Does location matter for firm decline in the informal sector? We observe a negative and significant relationship between remoteness of 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, location in urban areas has a positive effect on firm growth. 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 expanding firms. A large number of studies have also highlighted the positive relationship between increased access to finance and firm growth (Rajan and Zingales 1998; Demirgüç-Kunt and Maksimovic 1998). There is evidence that the effect is stronger for smaller firms (Beck, Demirgüç-Kunt, and Levine 2005) as small firms are financially more constrained than large firms (Beck, Demirgüç-Kunt, and Maksimovic 2008; Beck and Demirgüç-Kunt 2006; Beck 2007; Kuntchev *et al.* 2014) and therefore, the presence of finance constraints would exert a greater negative influence on the growth of small firms (Oliveira and Fortunato 2006). Beck, Demirgüç-Kunt, and Maksimovic (2008) estimate that finance constraints reduce firm growth by 10 percentage points for small firms.

<sup>24</sup> In their study, they do not find a significant difference in growth between male- and female-owned firms.



In line with our expectations, firms that 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. In a recent study, Sharma (2014) finds that registration leads to a 32% gain in sales per employee and a 56% gain in value added per employee for firms in the small-scale sector. We observe that subcontracting does not act as an enabling factor in firm growth. As expected, we find that firms receiving assistance are likely to encounter faster growth. Assistance is more important in the case of growing firms as is evident from the magnitude of the coefficient. *Acmaint*, which 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, as expected, among the group of firms experiencing growth, maintenance of financial accounts has a positive and significant effect. This result is in line with the finding of Acar (1993) who shows that sound accounting practices are an important factor associated with firm growth.

We also look at the role of age in determining the status of the firm. We carry out the same specification with an additional variable on firm status (Table 5). Our results clearly show that *age(Lnage)* has a differential impact on both classes of firm. In the case of growing firms, the negative and significant sign of the variable confirms the expectation that older firms exhibit a weak growth rate. In the case of declining firms, *age(Lnage)* 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).

## B. *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 growing firms are likely to register. This implies that the causality may run in the reverse direction from firm expansion to registration.<sup>25</sup> To

<sup>25</sup> The Durbin-Hu-Hausman test indicates the strong presence of the endogeneity of the variable representing registration status (REGIS). We also employ another procedure to test for the presence of endogeneity. 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 an additional variable (*outside HH*) which acts as instrument. In the second stage we estimate 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 6  
Tests for Validity of Instruments, Linear IV Model

Variables (Instruments)	Firms located outside the household premises and with fixed premises and with permanent structure
Under identification test:	
Kleibergen-Paaprk <i>LM</i> statistic	$\chi^2(1) = 1.3e + 04$
Weak identification test:	
Cragg-Donald Wald <i>F</i> statistic	1.4e + 04
	Stock-Yogo (2005) Weak IV 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
Overidentification test for the instrument:	
Sargan statistic	0.000 (equation exactly identified)

address the problem of endogeneity of registration status, we estimate equation (1) using the Instrumental Variable (IV) method as a robustness check. We use the IV model in which registration status is instrumented. In 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 are 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 of earning additional income with little effort. This instrumental variable meets the exclusion criteria since it will not have a direct effect on firm 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 Table 6). This is important since weak instruments can lead to severely biased estimates. We test whether our instrument (*outside HH*) identifies the equations using the Anderson under-identification test. We employ the Cragg-Donald test to determine whether the instrument suffers from the weak instrument problem. Both tests unequivocally establish that our instrument identifies the second-stage equation and 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.

Table 7 presents 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 7  
Determinants of Firm Status: IV Estimates

Variables	First Stage: Dependent Variable = <i>REGIS</i>	Second Stage: Dependent Variable = <i>STATUS</i>	
		Pr( <i>STATUS</i> = declining)	Pr( <i>STATUS</i> = growing)
Size:			
<i>NDME</i>	0.1728*** (0.0020)	0.0688*** (0.0237)	0.3525*** (0.0222)
<i>DME</i>	0.3064*** (0.0027)	0.0545 (0.0359)	0.5536*** (0.0324)
Ownership:			
<i>Proprietary</i>	-0.1010*** (0.0038)	-0.1570*** (0.0335)	-0.1261*** (0.0286)
<i>Female</i>	-0.0320*** (0.0020)	-0.3039*** (0.0193)	-0.0016 (0.0172)
Geographical factors:			
<i>Location</i>	0.0621*** (0.0016)	0.1012*** (0.0144)	0.0004 (0.0135)
<i>Distance</i>	0.00001*** (4.18e-06)	-0.0001*** (0.00004)	0.0001 (0.00003)
Other firm characteristics:			
<i>Linkage</i>	-0.0233*** (0.0019)	0.0428*** (0.0164)	-0.0367** (0.0159)
<i>Assistance</i>	0.1082*** (0.0026)	0.1753*** (0.0245)	0.2795*** (0.0212)
<i>Acemaint</i>	0.2298*** (0.0030)	-0.1025*** (0.0324)	0.1031*** (0.0273)
<i>OutsideHH</i>	0.2083*** (0.0018)	—	—
<i>RregisHat</i>	—	-0.0127 (0.0714)	0.6755*** (0.0672)
Constant	0.1119*** (0.0244)	-1.6363*** (0.2098)	-2.4156*** (0.2319)
<i>R</i> <sup>2</sup> / Pseudo <i>R</i> <sup>2</sup>	0.4142	0.0472	0.0472
Log likelihood	—	-191,342.11	-191,342.11
No. of observations	213,012	213,012	213,012

Note: Standard errors are given in parentheses.

\*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.10$ .

### C. *Second-Stage Results*

In Table 8, we report the determinants of barriers to growth as perceived by the sample firms. For estimation purposes, we assign a value of 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 specifications, we include region, industry, and time dummies to control the effect of interstate and inter-industry differences.

Our results show that medium and large firms in the informal sector are less likely to face the problem of capital shortage than 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 are an obstacle to the growth of large firms, delay in re-payments is likely to affect medium-sized firms. Proprietary firms are constrained by lack of access to finance, power supply, and non-availability of labor. Our results show that male-headed firms are more likely to encounter these obstacles compared to female-owned firms. The major barrier to growth for urban firms seems to be the shortage of working capital, inadequate power supply, and the adverse affect of competition from large firms.<sup>26</sup>

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. Similar to our findings, Sharma (2014) reports that registration led to significant gains in terms of sales and value added per employee for Indian micro-enterprises based on World Bank enterprise survey data. The growth of subcontracting firms is hindered by the presence of obstacles like inadequate power supply, raw materials, and labor. Further, in accordance with the existing literature mentioned previously (Sahu 2010), subcontracting firms face difficulty in terms of delayed payments. As expected, subcontracting firms are less likely to face competition from large firms and experience marketing problems. These firms' growth seems to be hindered by inadequate infrastructure. Given the relatively less emphasis on 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 points to a substantially small quantum of assistance, which makes it difficult for the firm to move from its existing scale of activities towards a threshold from where a takeoff might be possible. Further, our results also reveal that firms that maintain accounts face less difficulty in obtaining working capital from external sources.

<sup>26</sup> In our data, we observe that the percentage of firms reporting competition as an obstacle increased 2001–5.

TABLE 8  
Barriers to Growth (Probit Regressions): All Firms

Variables	2001-11				2001-6			
	CAPSHOR	POWER	NMAT	NLABOR	NRECFIN	COMPTN	MAKING	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)
Acnami	-0.2013*** (0.0128)	0.0303*** (0.0128)	0.0735*** (0.0159)	0.1062*** (0.0192)	-0.1055*** (0.0194)	-0.0901*** (0.0158)	0.0478*** (0.0153)	-0.0470 (0.0295)
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
Pseudo R <sup>2</sup>	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)
No. of observations	213,012	213,012	213,012	213,012	213,012	181,933	181,933	181,933

Note: Standard errors are given in parentheses.  
\*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.10$ .

## V. CONCLUDING REMARKS

The main aim of the present study was to analyze the barriers to growth of informal-sector firms in the context of a developing economy, India. Even though considerable research 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 examined the growth barriers faced by firms in the informal sector in India. The empirical analysis examined the factors determining the status of firms and the barriers to growth. In the first stage we probed the factors influencing firm status. We found that likelihood of survival is higher in the case of proprietary and large firms. Our results reveal that female-owned enterprises are less likely to decline. The probability of decline is larger for firms located in urban areas and those 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 their determinants. Regarding growth barriers, the results of the present research show that small firms and proprietary firms in the informal manufacturing sector are more likely to encounter capital shortage while large firms are constrained by nonavailability of raw materials. The study finds that male-headed firms are more likely to encounter these obstacles as compared to female-owned firms. An interesting observation emerging from the empirical analysis is the inadequate power supply acting as a severe growth obstacle for all categories of firms. Further, we did not find evidence that subcontracting arrangements act as a growth catalyst for informal-sector enterprises. The present findings provide policymakers with vital clues with regard to the growth obstacles encountered by informal sector enterprises. In particular, suitable measures should be adopted to increase the availability of power supply. Further, our results point to the need to improve the effectiveness of financial institutions to meet the needs of small firms.

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