Informality and Micro Entrepreneurs in Developing Countries
—Empirical Findings from Delhi, India—

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Abstract

To deepen our understanding of the urban informal sector in developing countries, this study examines small and micro entrepreneurs in Delhi, India, using a primary dataset collected by the author. The survey questionnaire covered not only characteristics of the entrepreneurs and firms but also trust questions in the General Social Survey (GSS) style. Out of 506 sample entrepreneurs in manufacturing and service sectors, 46% were unregistered with the government. In addition to the questionnaire-based survey, experiments in behavioral economics were addressed to a half of the sample entrepreneurs, in order to elicit their social, time, and risk preferences. The quantitative analysis comparing registered (more formal) and unregistered (more informal) enterprises reveals the followings. Unregistered entrepreneurs were characterized by lower (higher) trust against family/relatives (administration/police) than registered entrepreneurs. Unregistered firms were smaller and headed by less educated entrepreneurs than registered ones but they performed better than registered ones in terms of profit rates. Their disadvantage in fixed capital investment is compensated by active innovation in process and marketing and better ability to cope with the police and administration. In the micro and small enterprises sector in Delhi, registered and unregistered firms coexist with different kinds of superiority.

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1. Introduction

The informal sector is an important research topic in development economics. As a sector where the majority of rural-to-urban migrants settled, the informal sector matters in the context of migration as well (Williamson 1988). According to a survey by La Porta and Shleifer (2014), there are three major views toward the informal sector in development economics. First, the informal sector is led by small businessmen with viable entrepreneurship so that it has a high potential to grow if the government refrains from protecting formal-sector firms. This view originates from the ILO's view towards the informal sector during the 1980s, which called for the support of the informal sector as a pro-poor component of a developing economy. The second view, which is opposite to the first, characterizes the informal sector as the parasite, dominated by low productive entrepreneurs, who survive because of their advantage that unlike formal-sector firms, informal-sector firms are subject to neither taxation nor labor and environmental regulations. Under this view, the government should extend taxation and regulations to the whole economy in order to reduce the unfair advantage enjoyed by informal-sector firms. The third view could lie between these two extreme views and takes a dual economy view, in which the informal sector is segregated from the formal sector. Under this view, the informal sector gradually dies out as poverty reduction proceeds.

Using mostly the evidence from World Bank Enterprise Surveys (WBES) across the globe, La Porta and Shleifer (2014) favor the third view. They show that the share of the informal sector in the economy is decreasing with economic growth among developing countries, informal-sector entrepreneurs are less educated and informal-sector firms are less productive and less dynamic than formal-sector counterparts, informal-sector firms are more isolated from modern financial services, and they do not formalize much even when the cost of registration/formalization is reduced. They conclude that the lowly-educated, low-ability entrepreneurs are the key factor distinguishing the informal sector from the formal sector. Based on this conclusion, they call for development policies to strengthen entrepreneurship in small and micro enterprises.

Nevertheless, our understanding is highly limited regarding what characterizes entrepreneurship in the informal sector and how to develop entrepreneurship. For example, does more education automatically improve entrepreneurs' ability in the informal sector? What kind of training is effective in nurturing the entrepreneurship?[1] As the first step towards answering these questions, this study characterizes the informal sector entrepreneurship in

[1]Recently, a number of empirical studies address these questions using randomized controlled trials (RCT), although they do not explicitly link their research motivation with the informal sector in developing countries. See for example, Karlan and Valdivia (2011), Gine and Mansuri (2014), etc.

India using a primary dataset collected by the author.

In India, where persistent absolute poverty and increasing regional inequality are becoming a serious concern, micro, small, and medium enterprises (MSMEs) are attracting attention because such enterprises are perceived as labor-intensive and labor-intensive industrial growth is effective in reducing poverty. However, scientific evidence is lacking regarding what characterizes entrepreneurship in India's MSMEs and how to develop MSME entrepreneurship. Most of quantitative studies use survey data covering either organized manufacturing or unorganized manufacturing firms. As exceptions, Kathuria et al. (2010, 2012) and Sato (2008) combine two types of data. But the comparability of two types of datasets is a problem. Some authors use a large-scale dataset focusing on unorganized firms, such as Iyer et al. (2013) using the Economic Census, and Deshpande and Sharma (2013) using the Fourth All India Census of MSMEs. These studies, however, do not examine the entrepreneurship in detail. Nikaido et al. (2015), Sasidharan and Raj (2014), and Sharma (2014) analyze unorganized firms based on research motivations somewhat similar to ours. Sharma (2014), using microdata from the World Bank Investment Climate Survey, shows that unorganized firms' productivity improves when it registers with the government. Using a larger dataset collected by the Government of India, Nikaido et al. (2015) identifies the improved credit access as the main route of the positive effect of registration under the MSME Development Act. None of these studies, however, cover service-sector firms, although such firms occupy a large share in the informal sector in India (Government of India 2014). Finally, there are several case studies that focus on a particular sector where informal-sector firms dominate, such as waste pickers (Hayami et al. 2006) and cycle rickshaws (Kurosaki et al. 2012). Such studies are insightful but lacking in the variation in the level of formality among firms.

This study attempts to fill in these research gaps. It characterizes entrepreneurship in micro and small enterprises in Delhi using the primal survey data covering both manufacturing- and service-sector firms and firms with different levels of formality. More concretely, a random-sampling survey of 506 micro and small enterprise businessmen was conducted in northeastern areas of Delhi, in November-December 2014, using a structured questionnaire. The questionnaire covered not only characteristics of the entrepreneurs and firms but also trust questions in the General Social Survey (GSS) style. Out of 506 sample entrepreneurs in manufacturing and service sectors, 46% were unregistered with the government (more informal firms) while 54% were registered (more formal firms). In addition to the questionnaire-based survey, experiments in behavioral economics were addressed to a half of the sample entrepreneurs in March-September 2015, in order to elicit their social, time,

and risk preferences.

In this paper, these data are analyzed to address two questions: (1) What characterizes more informal entrepreneurs/firms in comparison with more formal entrepreneurs/firms? (2) What is the impact of being more formal on firms' performance? Regarding the second question, however, the results shown in this paper are preliminary, without controlling for endogeneity of the registration decision. Nevertheless, due to the unique nature of the dataset, we hope the descriptive analysis provided in this paper sheds new light on the informality and development discussion reviewed by La Porta and Shleifer (2014).

The remainder of the paper is organized as follows. Section 2 describes the data used in this study. Section 3 explains the empirical strategy. Sections 4-5 provide the results of the empirical analysis, first for the characteristics of more informal entrepreneurs/firms and second for the firm performance. Section 6 concludes.

2. Data

Manufacturing firms in India are classified into "Organised Sector" firms and "Unorganised Sector" firms, depending on whether the firm is registered under the Factories Act, 1948. Under the fact, manufacturing firms employing ten or more workers (using power) or twenty or more workers (without using power) are required to register. Once registered under the Factories Act, firms are subject to labor and environment regulations. Manufacturing firms registered under the Factories Act are thus more formal than others.

Service firms in India are also classified similarly, depending on whether the firm is registered under the Companies Act, 2013. Unlike the case of manufacturing firms, the registration is not required for those firms employing workers over a threshold. Thus the registration is basically voluntary.

Both manufacturing and service firms whose capital investment is below stipulated limits can register under the MSME Development Act, 2006. Once registered under the MSMED Act, firms are eligible for various incentives such as indirect tax exemption, ISO support, government credit, and government procurement. Incentive measures are more toward manufacturing than services. In addition to these direct benefits, firms registered under the MSMED Act can expect indirect gains in credit access from the private financial institutions. Many micro and small firms that are not registered under the Factories (or Companies) Act are registered under the MSMED Act

As is clear from the institutions described above, firms not registered under any of these acts are most informal. In this paper, we denote such firms as "unregistered firms" and compare them with "registered firms," which are registered under any of these acts. Due to the

data limitation, we cannot distinguish the impact of each act. In a relative sense, the registered firms are more formal than the unregistered firms.

The survey in northeastern areas of Delhi centered around Shahdara was conducted by the Centre of Economic and Social Research (CESR). CESR conducted similar surveys on waste pickers (Hayami et al. 2006) and cycle rickshaws (Kurosaki et al. 2007). Due to this advantage, CESR was able to access micro and small entrepreneurs who tend to be highly skeptical against outsiders.

As there is no official list on unregistered firms, we designed our sampling as below, in consultation with methodologies adopted by NSS's unorgnised sector surveys and WBES. First, we obtained *Shahdara Industrial Directory* prepared by the Jhilmil Industrial Area Association. Through the cooperation of the association's president, we randomly selected firms listed in the directory (2013 version) and conducted a questionnaire-based survey of 506 firms out of approximately 1,000 firms in November-December 2014. The directory contains firms located not only in the Jhilmil Industrial Area but also in surrounding areas. The sampled firms are spread over ten locations (clusters), with the Jhilmil Industrial Area as the largest cluster. The directory contains both manufacturing- and service-sector firms but not include self-employed business without fixed office/store/workshop or groceries or constructors or restaurants. In the sampling, those firms whose investment level is over the small enterprises under the 2006 MSMED Act were excluded.

The 506 sample analyzed in the paper thus represents micro and small enterprises in northeastern areas of Delhi in manufacturing and services, excluding self-employed business without fixed office/store/workshop and groceries and constructors and restaurants. The median number of employees among the 506 sample firms was four; about two thirds operated in manufacturing, and one third in services, both including various industries (see Section 4 for more details). Although the Jhilmil Industrial Area is characterized by copper and plastic industries, there are other industries as well, resulting in diverse industrial composition in our sample.

3. Empirical Strategy

To answer the question "What characterizes more informal entrepreneurs/firms in comparison with more formal entrepreneurs/firms?", we compare registered and unregistered firms (entrepreneurs) in two ways: bivariate comparison and multiple regression using the registration dummy as the dependent variable.

The motivation for the multiple regression is descriptive, interested in identifying partial correlation, controlling for other variables. Therefore, we estimate linear probability

models by OLS (probit or logit analysis is implemented as robustness check). As the number of observations is small but manufacturing- and service-sector firms are potentially different, we first allow slopes to differ between the two and impose restrictions of the same slope if the slope difference is statistically insignificant.

The bivariate and regression analyses will show characteristics of more informal firms/entrepreneurs in comparison with more formal ones. However, the (partial) correlation cannot be interpreted as causal because such correlation could be due to third variables that are omitted from the analyses.

To answer the question "What is the impact of being more formal on firms' performance?", we compare firm performance (productivity and profitability) between registered and unregistered firms in two ways: bivariate comparison and OLS multiple regression using the firm performance indicators as the dependent variable. In the multiple regression models, explanatory variables include the registration dummy and the list of variables employed in the first part of the analysis.

A major drawback of this analysis is the endogeneity of the registration dummy. For this reason, the OLS coefficient on the dummy variable cannot be interpreted as causal. The reverse causality of selection impact may dilute the coefficient, in addition to the effect through third and omitted variables. As a preliminary analysis, we do not attempt to control for the endogeneity problem[2] but attempt to interpret OLS coefficients carefully, paying due attention to the possibility of endogeneity bias. More concretely, we interact the dummy variables with the manufacturing/service dummies and other pre-determined variables. By investigating the patterns in coefficients on such cross terms, we hope to shed light on the relation between registration and firm performance. Rigorous identification of causal impact is left for further study. As before, we allow slopes of other explanatory variables to differ between the manufacturing and service sector but impose restrictions of the same slope if the slope difference is statistically insignificant.

4. Characteristics of Informal Entrepreneurs/Firms

4.1 Bivariate analysis

Table 1 compares characteristics of entrepreneurs running unregistered (more informal) and registered (more formal) firms. The average age of entrepreneurs is 42.5 among

[2]To identify the causal impact of registration on firm performance, Sharma (2014) applies the propensity score matching (PSM) method. However, as the sample size is not large in her dataset (n=1,549), the list of observable variables included in the PSM was limited, raising a concern that her results were potentially contaminated by endogeneity bias due to unobservables. On the other hand, Nikaido et al. (2015) do not control for the endogeneity of the registration status, the approach similar to ours.

registered firms while it is 37.5 among unregistered firms. The education level concentrates on less than 12 years among unregistered entrepreneurs, whereas it concentrates on 12 years or more among registered entrepreneurs. The majority of our sample entrepreneurs are male but there are ten female entrepreneurs, eight of which run unregistered firms. Our sample includes 31 Jain entrepreneurs and 64 Muslim entrepreneurs. There is a stark contrast between them in terms of registration rate: Jain firms are more likely to be registered while Muslim firms are less likely to be registered than other firms owned by Hindu entrepreneurs. There are 19 migrant entrepreneurs, most of whom are running unregistered firms. Therefore, younger, less-educated, female, Muslim, and migrant entrepreneurs tend to run unregistered firms, all of these bivariate correlations are statistically significant. Our result regarding education is similar to those found in developing countries in general (La Porta and Shleifer 2014).

<Insert Table 1>

As an attempt to capture entrepreneurship in more detail, GSS trust questions were addressed to survey respondents.[3] As shown in Table 1, there is no difference between registered and unregistered entrepreneurs regarding general trust. In contrast, specified trust questions reveal that registered entrepreneurs trust relatives/friends and neighbors more than unregistered entrepreneurs; unregistered entrepreneurs trust the police and law officers more than registered entrepreneurs.[4]

It is well known that corruption including bribes from the police, administration, and law officers affects business management in India (Carlin and Schaffer 2012). Under this background, the last contrast can be interpreted in two ways. First, from the viewpoint of selection, it is possible that entrepreneurs with high initial level of trust toward the police and law officers remain unregistered as they have less incentive to register to avoid harassment from them. Second, from the viewpoint of causal impact, it is possible that entrepreneurs who were registered began to experience harassment from the police and law officers so that they became less trusting toward them. The contrast regarding the trust toward relatives/friends and neighbors can be interpreted in a similar way.

Now we move to the correlation between firm characteristics and registration status. As shown in Table 2, the registration status and location among 10 survey clusters are

[3] As five-point Lickert-scale trust questions, which are standard in GSS, did not work in the pre-test, we employed three-point Lickert-scale questions (“most people can be trusted”, “some can be trusted but others cannot be trusted,” and “most people cannot be trusted”) with an option for “no opinion” as well.

[4] In Table 1, we aggregated the responses into an indication taking the value +1 (most people can be trusted), 0 (some; no opinion), and -1 (most people cannot be trusted). Other aggregations led to similar results, such as the exclusion of “no opinion” from the aggregation or the treatment of all categories as such, applied with chi-square test.

significantly correlated (1% level of significance). In two clusters of Jhilmil and Friends Colony, where industrial estates form the core of the cluster, the registration rate is high. All other eight remaining clusters are without such industrial estates. Different location implies different access to infrastructure and local markets. In some cases, businessmen in a locality could apply for MSME promotion measures collectively. To control for these factors as a whole, location fixed effects are included in multiple regression analyses below.

<Insert Table 2>

The registration status and industry classification are also significantly correlated at the 1% level, as shown in Table 3. The registration rate among manufacturing-sector firms is approximately 60%, whereas that among service-sector firms is approximately 40%. The difference is likely to reflect the fact that most of promotion policies under the MEMED Act target toward manufacturing industries. Within the manufacturing sector, the registration rate is higher among auto parts, plastic goods, electric wires, and electronics. Within the service sector, the registration rate is higher among publishing services. Different industry is associated with different technology and markets. To control for these factors jointly, industry fixed effects are also included in multiple regression analyses below. In other words, in the multiple regression, we examine which of firm/entrepreneur characteristics remains significantly correlated even after controlling for differences attributable to location and industry.

<Insert Table 3>

Other firm characteristics are compared between registered and unregistered firms (Table 4). Regarding the ownership structure, single proprietorship dominates in both categories. This reflects the micro and small nature of our sample firms. The exception in the form of private limited company is observed among registered firms only. Out of 506 sample firms, 18 had ISO, all of which belong to registered firms. Registered firms are approximately four years older than unregistered firms. As a measure of employment, we define the size of labor force as the sum of the entrepreneur, unpaid family members, and employees. The average labor force size was 10.7 persons among registered firms, significantly larger than 4.5 persons among unregistered firms. In our sample, there are 16 unregistered firms with 10 or more employees (11 and 5 respectively in the manufacturing and service sector). It appears that by separating workshops on paper or through other measures, these manufacturing firms avoid registration under the Factories Act. Registered firms' labor force contained more females, less unpaid family members, and more technical specialists than unregistered firms' labor force.

Our finding that informality is associated with self-employment orientation is similar to those found in developing countries in general (La Porta and Shleifer 2014).

<Insert Table 4>

In terms of capital investment as well, registered firms are larger than unregistered firms. The average size was Rs. 1.68 million and Rs. 0.64 million,[5] respectively. If we compare them with the thresholds in the MSMED Act (manufacturing: Rs. 2.5 million and Rs. 50 million; services: Rs. 1 million and Rs. 20 million), our average figures fall on the "micro" category. There are a few firms categorized as "small" under this definition[6] but no firm categorized as "medium", reflecting our sampling strategy. There is similar disparity if we look at the initial capital investment. The growth rate in capital is analyzed in the next section as an indicator of firm performance.

In our survey, we asked how the initial investment was financed using ten financial measures. In Table 4, we aggregate the results into three dummy variables. Approximately 20% of our firms depended only on their own savings. The access to government or bank credit was limited. The majority of firms relied on informal credit such as friends/relatives, moneylenders, and Chit funds. The difference between registered and unregistered firms was not statistically significant. As the credit access is likely to be improved after registration, the absence of the correlation does not contradict the expected impact of registration.

4.2 Regression results

Does the bivariate correlation shown in Tables 1-4 remain the same even after controlling for other variables? To examine this issue, OLS multiple regression analysis is applied to the same data including selected variables from Tables 1-4 simultaneously as explanatory variables. In the first specification, only those variables that are exogenous to firm behavior are included, while in the second specification some variables that could be endogenous to firm behavior are added. As we cannot reject the null hypothesis that all slopes (except for industry and location fixed effects) are equal between the manufacturing and service sector, we report the results pooling the two sectors and imposing the restrictions of the same slopes. The results are reported in Table 5. The results in Table 5 were robust to other

[5] The exchange rate at the time of the survey was US$ 1 = Rs. 62 (Government of India 2015).

[6] If we mechanically compare the capital investment in Table 4 with the MSMED Act thresholds, there are 35 manufacturing-sector firms and 44 service-sector firms that are classified as "small". However, our capital investment measure includes land and buildings while the MEMED Act thresholds do not. If we exclude the value of land and buildings from our capital measure, the number of our sample firms classified as "small" would become smaller. However, due to missing information on details of capital investment in our dataset, we cannot employ the alternative capital measure.

specifications.[7]

<Insert Table 5>

Most of explanatory variables remain to have the same sign as suggested from Tables 1-4. However, many of them become statistically insignificant in the multiple regression. For example, the entrepreneur's age and migrant dummy become insignificant. The reason for the insignificance for the migrant dummy is that the Muslim share is high among migrants and the partial correlation between the Muslim dummy and registration status absorbs most of the correlation between the migrant dummy and registration status. On the other hand, the tendency for Jains, university graduates, and those with less trust to the police to register more remains to be significant.

Many of the variables in Table 4 significantly associated with registration status now have insignificant coefficients in Table 5. This implies that most of the bivariate correlation observed in Table 4 was attributable to the correlation between location/industry fixed effects and registration status. On the other hand, industry fixed effect cannot explain everything. As shown in last rows in Table 5, the registration rate among manufacturing-sector firms is estimated to be higher by 7 percentage points than the rate among service-sector firms (the difference is statistically significant at the 5 to 10 % level). Remember that without controlling for other variables, the registration rate among manufacturing-sector firms was higher by 20 percentage points than the rate among service-sector firms in Table 3. Table 5 thus shows that approximately 60% of the manufacturing/service disparity reported in Table 3 was actually attributable to other variables included in Table 5.

5. Firm Performance and Informality

5.1 Bivariate analysis

Table 6 compares firm performance of unregistered (more informal) and registered (more formal) firms from three angles. The first angle is the qualitative information on innovation. There is no missing information in these measures. Tendency of responses from registered firms observed in our dataset is consistent with similar information recorded in WBES 2013. As the strength of our dataset against WBES, we compare two types of firms and find (1) innovation has been adopted regardless of registration status, and (2) unregistered firms have adopted product innovation less but process or marketing innovation more than

[7] For example, we attempted Probit or Logit instead of OLS; different definitions of education, location, and industries; different subsets used for regression (for example, to exclude firms with zero employees). Details are available from the author on request.

registered firms. Finding (2) suggests that unregistered firms are handicapped regarding product innovation as it requires a large investment in equipment or production lines. Process innovation defined here includes any attempt that contributed to an increase in production with no change in the products/services produced and the workforce number. This type of broadly-defined process innovation can be easily adopted by unregistered firms, thereby overcoming their handicap in product innovation. A reason for registered firms not to emphasize marketing innovation could be the guaranteed market of public procurement under the MSME promotion policies.

<Insert Table 6>

The second angle to measure firm performance is the annual growth rate of capital since firms' establishment. There are some data concerns such as missing information, arbitrariness in valuing land and buildings, and underreporting. However, as data on the capital growth rate among unregistered firms are highly limited, we include the variable in the table. The average growth rate among registered firms was 2.5%, whereas that among unregistered firms was 1.2%, indicating higher growth of registered firms. However, as the variance is large, the difference between registered and unregistered firms was not statistically significant.

As the third angle to measure firm performance, we calculated four measures related with sales and current profits. As a measure of production size, value-added could be better than sales but due to the frequent non-availability of intermediate input costs, we report the total sales measure. In Table 6, we give summary statistics of the four measures only for those firms whose current profit was positive. This is because eight firms that reported negative profits (four each in registered and unregistered categories) appear to be outliers due to transient factors or measurement error. Both sales and current profits were larger among registered firms than unregistered firms with the statistical significance at the 1% level. On the other hand, both profit/sales ratio and ROAs were lower among registered firms than unregistered firms. In case of ROAs, the difference was not statistically significant due to huge heterogeneity within each category of registration status. In contrast, the difference in profit/sales ratio was statistically significant and economically large—the average profit/sales ratio among registered firms was 28.8%, whereas the average ratio among unregistered firms was as high as 48.7%.

5.2 Regression results

The bivariate comparison shown in Table 6 thus shows that unregistered firms appear to overcome their handicap through adopting more process and marketing innovations,

resulting in higher profit rates, although they still remain less profitable in terms of the total profit amount. Does this observation remain when entrepreneur/firm characteristics are controlled? The analysis in the previous section suggests that location or industry fixed factors could underlie the difference between registered and unregistered firms. To examine this issue, OLS multiple regression analysis is applied to the same data. The dependent variables are those reported in Table 6. Explanatory variables include the registration dummy and those variables used in Table 5. As the registration dummy is endogenous, the coefficient on it could reflect both the causal impact of registration on firm performance and the selection effect.

<Insert Table 7>

Table 7 reports the results when the entrepreneur/firm characteristic variables are limited as in specification (1) in Table 5. We first allowed the slopes of these variables to differ between manufacturing-sector and service-sector firms. We then dropped those interaction terms involving the service sector dummy if the difference was not statistically significant at the 5% level to improve the degree of freedom from our small-size dataset. Regarding the interaction term of registration and the service sector dummy, we keep it regardless of its statistical significance, as we are interested in differentiated impacts of registration between the manufacturing and service sector. The coefficient on the interaction term is a sort of difference-in-difference (DID), suggesting the additional impact of registration if the firm is in the service sector in comparison with a firm in the manufacturing sector.

In Table 7, (1)-(3), we report results regarding innovation in three areas out of five, which showed significant difference between registered and unregistered firms in the bivariate comparison in Table 6. Important findings include the followings. (i) The tendency for unregistered firms to focus on process innovation remains statistically significant among manufacturing-sector firms but it is cancelled by the service-sector interaction term, suggesting that the tendency is not statistically significant among service-sector firms. (ii) The tendency for registered firms to focus on product innovation also remains statistically significant, but again the tendency is attenuated among service-sector firms. In other words, the contrast in innovation observed in Table 6 was mostly due to the difference in the manufacturing sector. However, the statistical significance level was low and marginal in the innovation measures. Furthermore, as shown in Table 7, (4)-(8), all measures of the capital growth rate, sales, and current profits were not significantly different between registered and unregistered firms once other entrepreneur/firm characteristics are controlled.

The overall insignificance of registration status on firm performance suggests that entrepreneur/firm characteristics absorb the most of bivariate correlation between registration

status and firm performances. Statistically-significant relations in Table 7 include: (iii) Muslim or migrant entrepreneurs tend to adopt less of process innovation, (iv) lowly-educated entrepreneurs tend to adopt less of marketing innovation and suffer from low capital growth rate, (v) firms that used own saving only at the time of establishment tend to adopt less of process innovation but adopt more of product innovation, (vi) firms that used bank or government credit at the time of establishment tend to have higher sales, current profits, and profit/sales ratios (but the tendency was attenuated among service-sector firms). Relation (iii) and (iv) are as expected from the viewpoint of entrepreneur's ability and access to new technology. Relation (v) could capture the possibility that firms using only own saving at the time of establishment were richer in family wealth so that they were advantaged in product innovation. Although not statistically significant (*p*-value was 0.148), the capital growth rate was higher among such firms, giving support to this interpretation. Relation (vi) suggests that firms with better access to formal credit from the beginning remain to be advantaged in the manufacturing sector, which requires larger investment than service-sector firms.

Not many of coefficients on entrepreneur/firm characteristics reported in Table 7 are statistically significant. This implies that the most important correlates of the difference in firm performance between registered and unregistered firms are location and industry fixed effects.

These findings in Table 7 were confirmed when five more additional variables on entrepreneur/firm characteristics were added. Therefore, we report only coefficients on these additional variables (and their interaction terms if significant) in Table 8.

<Insert Table 8>

Now the list of statistically-significant relations is expanded to include: (vii) entrepreneurs with higher trust to relatives/friends tend to adopt less of process innovation but adopt more of product innovation, (viii) firms with larger labor force tend to have higher sales and profits but lower profit/sales ratios, (ix) firms with technical specialists tend to have lower profits, and (x) firms with larger capital tend to have higher sales and profits but lower profit/sales ratios (though the relation was significant only among manufacturing-sector firms). It is interesting to note that the impact of registration on process and product innovation remains the same even with the addition of the trust indicators. The process of innovation is affected by both registration status and entrepreneurs' trust behavior. Relation (viii) and (x) could be interpreted as the standard firm size effect. Relation (ix) may suggest that employing technical specialists could be expensive in terms of profitability among micro and small enterprises.

To deepen our understanding between registration status and firm performance, we

extend the model in Table 7 into a different direction in Table 9. We now include interaction terms of the registration status and the firms' initial funding patterns. As already noted, the dummy variable for using own saving only at the time of establishment could reflect two possibilities: firms with serious credit constraint had to rely on ow savings only; firms established by wealthier founder did not need to rely on credit.[8] By including the interaction terms, we can investigate these two possibilities in the context of the impact of registration on firm performance.

<Insert Table 9>

The results of this extension are summarized in Table 9.[9] The statistically significant relations include the following: (xi) if a firm that used bank/government credit at the time of establishment is registered, the product innovation probability goes up, (xii) if a firm that used own savings only at the time of establishment is registered, the capital growth rate goes down, (xiii) sales rise for a manufacturing-sector firm that used formal credit initially and is registered currently (such relation does not exist for service-sector firms), (xiv) current profits rise for a service-sector firm that did not use formal credit initially but is registered currently (such relation does not exist for manufacturing-sector firms), and (xv) profit rates go down for registered firms with formal credit access initially. Our interpretation of relation (xi) and (xiii) is that better initial access to formal credit and registration status are functioning in a complementary way when a firm adopts a product innovation that requires large investment in equipment, resulting in an increase in sales. Relation (xii) suggests that out of firms that used own savings only, those with larger family wealth do not register themselves but enjoy higher growth rate even without registration due to their superior family wealth. Relation (xiv) suggests that registration under the MSMED Act improve the credit access of small and micro service-sector firms without formal credit access initially. This could be through indirect route from private-sector financial institutions (reputation impact of registration). On the other hand, relation (xv) suggests that the benefit of registration is not large for firms with better formal

[8] As an indirect support of this, additional regression model with the initial investment as the dependent variable and the same explanatory variables as in Table 5 was estimated. The results show a small and insignificant coefficient on the dummy variable of own savings only at the time of establishment. If the credit constraint story applies, the coefficient should be negative. If the family wealth story applies, the coefficient should be positive. The insignificant coefficient appears to suggest that the two stories cancelled out each other.

[9] We first tried five interaction terms (*D* is the abbreviation for a dummy variable): *D*_registration**D*_service, *D*_registration**D*_ownsaving, *D*_registration**D*_bankcredit, *D*_registration**D*_ownsaving**D*_service, and *D*_registration**D*_bankcredit**D*_service. To maintain the degree of freedom, the last two interaction terms involving three dummy variables were kept in the model only when the coefficient was statistically significant at the 5% level.

credit access from the very beginning.

The results reported in Tables 7-9 were robust to other alterations.[10] Due to the space limit, we do not report details. One notable finding was that the results were robust even when we excluded 96 manufacturing-sector firms that had ten or more employees. The 96 excluded firms may have different motivation to register, as they are under the legal requirement to register under the Factories Act. All other firms register themselves mostly seeking for the benefits under MSMED Act. Nevertheless, the re-estimation with a smaller sample did not affect the results qualitatively. Overall, our results thus suggest that firm-level benefits attributable to registration were positive on average but not very strongly so.

6. Conclusion

As a case study of the urban informal sector in developing countries, this paper examined small and micro entrepreneurs in Delhi, India, using a primary dataset collected by the author. A unique feature of the dataset is that it covers both manufacturing- and service-sector firms and firms with different levels of formality. Service-sector firms are not analyzed much in the existing literature. Out of 506 sample entrepreneurs in manufacturing and service sectors, 46% were unregistered with the government. The descriptive analysis comparing registered (less informal) and unregistered (more informal) enterprises reveals the followings. Unregistered entrepreneurs were characterized by lower (higher) trust against family/relatives (administration/police) than registered entrepreneurs. Unregistered firms were smaller and headed by less educated entrepreneurs than registered ones, but performed better than registered ones in terms of profit rates.

These findings suggest that firm-level benefits attributable to registration were positive on average but not very strongly so. In the research context summarized by La Porta and Shleifer (2014), an important conjecture derived from ours is that the credit access at the time of firm establishment affects current registration status, continues to affect firm performance, and changes the impact of registration on firm performance. More informal firms are disadvantaged in fixed capital investment but the disadvantage can be compensated by active innovation in process and marketing and better ability to cope with the police and administration. If this conjecture is correct, we can conclude that in the micro and small enterprises sector in Delhi, registered and unregistered firms coexist with different kinds of superiority. This is in some sense a re-confirmation of the favor given by La Porta and Shleifer (2014) to the dual economy view. However, our results also show that two types of firms are

[10] See footnote 20.

not indeed different substantially, as shown in regression results where many of the differences between registered and unregistered firms disappeared once observable characteristics were controlled. Furthermore, those chose to remain unregistered could include high ability entrepreneurs, throwing a doubt on the view that informal entrepreneurs' ability is lower than formal entrepreneurs' ability.

These are conjectures as the analysis in this paper is descriptive. As a remaining task, the endogeneity of registration needs to be controlled. Dynamics of registration process is also an interesting area of further research. The trust behavior needs to be investigated in more detail. For this purpose, we plan to expand the analysis incorporating the data on behavioral economics experiments conducted on our sample entrepreneurs, regarding their social, risk, time, and leadership preferences.

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Table 1. Entrepreneurs' Characteristics and Registration Status

	Total (n=506)	Registered firms (n=275)	Unregistered firms (n=231)	Statistical significance of the difference due to registration status[1] (p-value)
Average age	40.23	42.49	37.55	4.95
(Std.Dev. of age)	(9.10)	(8.98)	(8.51)	(0.000)
Distribution of education				
Less than 10th grade	19	9	10	154.23
10th grade	84	15	69	(0.000)
12th grade (incl. technical diploma)	196	73	123	
University graduate	203	176	27	
Master's degree	4	2	2	
Sex				
Male	496	273	223	4.85
Female	10	2	8	(0.028)
Religion				
Hindu and others[2]	411	240	171	55.47
Jain	31	26	5	(0.000)
Muslim	64	9	55	
Migrant status				
Migrant	19	3	16	11.83
Born in Delhi	487	272	215	(0.000)
Average of trust indicators[3]				
General	0.374	0.404	0.338	0.066
(Std.Dev)	(0.488)	(0.499)	(0.474)	(0.129)
Relatives and friends	0.787	0.942	0.602	0.340
(Std.Dev)	(0.410)	(0.235)	(0.491)	(0.000)
Neighbors	0.796	0.880	0.697	0.183
(Std.Dev)	(0.418)	(0.326)	(0.488)	(0.000)
Business buyers/sellers	0.850	0.865	0.831	0.034
(Std.Dev)	(0.369)	(0.352)	(0.387)	(0.302)
Municipal Corporation	0.488	0.462	0.519	-0.058
(Std.Dev)	(0.553)	(0.555)	(0.550)	(0.243)
Govt officials for services (water, electricity, et	0.320	0.305	0.338	-0.032
(Std.Dev)	(0.527)	(0.521)	(0.534)	(0.495)
Police	0.275	0.215	0.346	-0.132
(Std.Dev)	(0.528)	(0.514)	(0.537)	(0.005)
Law officers	0.354	0.316	0.398	-0.082
(Std.Dev)	(0.495)	(0.496)	(0.491)	(0.063)

Notes: 1. For a continuous variable, the difference is shown; for the distribution of a variable, chi-square statistics is shown. The p-value allows for unequal variance.

2. "Hindu and others" include 406 Hindus and 3 unidentified.

3. Each of the trust indicator takes the value +1 (most people can be trusted), 0 (some; no opinion), -1 (most people cannot be trusted).

Source: Compiled by the author using the survey data in 2014-15, described in the text (same for the following tables.

Table 2. Firm Location and Registration Status

	Total (n =506)	Registered firms (n =275)	Unregistered firms (n =231)	% of unregistered firms
Friends Colony	115	101	14	12.2
Gokalpur	16	1	15	93.8
Jhilmil	121	113	8	6.6
Johripur	15	1	14	93.3
Karawal Nagar	35	0	35	100.0
Mandoli & Saboli	58	4	54	93.1
Maujpur	17	1	16	94.1
Nandnagri	36	6	30	83.3
Seelampur	30	3	27	90.0
Vishwash Nagar	63	45	18	28.6

Note: The independence of location and registration status is rejected with chi-square of 317.13 (p -value = 0.000).

Table 3. Industries and Registration Status

	Total (n =506)	Registered firms (n =275)	Unregistered firms (n =231)	% of unregistered firms
Manufacturing sector				
Auto parts	12	11	1	8.3
Electrical wires	73	63	10	13.7
Electronics	6	5	1	16.7
Food products	23	3	20	87.0
Garments	68	10	58	85.3
Metal and steel	36	21	15	41.7
Plastic goods	62	58	4	6.5
Wood products	15	8	7	46.7
Other manufacturing	48	31	17	35.4
(Manufacturing, sub-total)	(343)	(210)	(133)	(38.8)
Service sector				
Auto/cycle repair	36	8	28	77.8
Electric/electronics repair & service	24	7	17	70.8
Garments stitching/embroidery/tailor	13	3	10	76.9
Publishing service	40	24	16	40.0
Metal/steel related service	11	5	6	54.5
Other service	42	20	22	52.4
(Service, sub-total)	(166)	(67)	(99)	(59.6)

Notes: The grand total of this table is 509 as three firms engaged both in manufacturing and service. We re-classified these three firms as the manufacturing sector and then tested the independence of the two distributions using the 506 firms. The test results in chi-square of 166.41 (p -value =0.000).

Table 4. Firms' Characteristics and Registration Status

	Total (n =506)	Registered firms (n =275)	Unregistered firms (n =231)	Statistical significance of the difference due to registration status[1] (p -value)
Ownership				
Single proprietorship	492	264	228	6.86
Joint prop. with family members	6	3	3	(0.076)
Joint prop. with non-family	3	3	0	
Private limited company	5	5	0	
Firm age, average	12.37	14.31	10.06	4.25
(Std.Dev.)	(7.78)	(7.05)	(8.00)	(0.000)
Labor force[2]				
Total, average	7.87	10.71	4.49	6.22
(Std.Dev.)	(7.49)	(7.87)	(5.31)	(0.000)
Share of employees in the labor force	0.678	0.841	0.484	0.356
(Std.Dev.)	(0.319)	(0.164)	(0.349)	(0.000)
Share of females in the labor force	0.027	0.041	0.010	0.030
(Std.Dev.)	(0.073)	(0.083)	(0.055)	(0.000)
Share of unpaid family members in the labor force	0.067	0.014	0.129	-0.115
(Std.Dev.)	(0.175)	(0.089)	(0.225)	(0.000)
Existence of technical specialists[3] in the labor force				
Yes	64	59	5	42.28
No	442	216	226	(0.000)
Distribution of the number of employees				
0	74	7	67	117.94
1-9	304	156	148	(0.000)
10-19	94	82	12	
20 or more	34	30	4	
Investment[4]				
Initial investment funding sources				
Own saving only	104	57	47	4.39
Informal borrowing and own saving	222	110	112	(0.112)
Borrowed from banks and/or government	180	108	72	
Current investment value[5](Rs. Million)	1.211	1.684	0.638	1.046
(Std.Dev.)	(2.047)	(2.119)	(1.802)	(0.000)

Notes: 1. For a continuous variable, the difference is shown; for the distribution of a variable, chi-square statistics is shown. The p -value allows for unequal variance.

2. The labor force is defined as the entrepreneur him/her-self, employees, and unpaid family members. Therefore, its minimum is 1.

3. A technical specialist is defined as a person having "Certificate", "Diploma", or "Degree" in the engineering relevant to the business.

4. Investment includes land, building, machinery, and equipment.

5. As there are one registered and five unregistered firms with missing information, the sample size Is 500.

Table 5. Entrepreneur/Firm Characteristics and Registration Status (OLS results)

Explanatory variables	Dependent variable = Registration dummy			
	(1)		(2)	
Entrepreneur characteristics				
Age (minus 40 years)	-0.0001	(0.0023)	-0.0001	(0.0023)
Female dummy	-0.1345 *	(0.0631)	-0.1385	(0.0938)
Jain dummy	0.0840 **	(0.0289)	0.0827 **	(0.0345)
Muslim dummy	-0.1447 **	(0.0469)	-0.1361 **	(0.0446)
Migrant dummy	-0.0547	(0.0423)	-0.0672	(0.0424)
Education less than 10th grade	0.0377	(0.0916)	0.0357	(0.0910)
Education at 10th grade	-0.0831	(0.0617)	-0.0913	(0.0628)
Education at the degree level or more	0.0998 **	(0.0390)	0.0840 *	(0.0403)
Trust indicator: relatives and friends			0.0676	(0.0872)
Trust indicator: Police			-0.0612 **	(0.0267)
Firm characteristics				
Location cluster fixed effects	Yes ***		Yes ***	
Industry fixed effects	Yes ***		Yes **	
Firm age (minus 12 years)	0.0014	(0.0009)	0.0005	(0.0011)
Dummy for own saving only initially	-0.0225	(0.0563)	-0.0210	(0.0604)
Dummy for bank/govt credit initially	0.0243	(0.0537)	0.0407	(0.0375)
Labor force (minus 7)			-0.0018	(0.0044)
Dummy for technical specialists			0.0196	(0.0328)
Current investment (minus Rs. 1 million)			0.0118 *	(0.0058)
Intercept[#]	0.6774 ***	(0.0496)	0.6260 ***	(0.0901)
R^2	0.668		0.672	
F-stat for zero slope	8.95 ***		43.29 **	
F-stat for model (1)			2.50	
Average industry fixed effects in the manufacturing sector	0.6646		0.6072	
Average industry fixed effects in the service sector	0.5953		0.5363	
F-test for no difference between manufacturing and service	4.89 *		5.33 **	

Notes: The number of observations is 506 for (1) and 500 for (2) (6 observations dropped due to missing investment information). See Tables 1-4 for definition and summary statistics of empirical variables. Cluster robust standard errors are reported in parentheses using location as the cluster. * p <0.1, ** p<0.05, *** p<0.01.

The intercept is the expected value of registration ratio for the reference category. The reference category is a firm managed by a 40-years old, male, Hindu, non-migrant entrepreneur with 12 years of education; the firm belongs to Vishwash Nagar, operates in "other manufacturing", established in 2003, using own saving and informal credit at the time of establishment, with no technical person, with in its labor force of 7 persons, and capital investment of Rs. 1 million. Coefficients on location and industry fixed effects are dropped but available on request from the author. The industry fixed effects are based on the note to Table 3.

Table 6. Firm Performance and Registration Status

	Total	Registered firms	Unregistered firms	Statistical significance of the diff.[1] (*p*-value)
Innovation adopted since the establishment[2]	(n=506)	(n=275)	(n=231)	
Any innovation, average of the dummy variable	0.808	0.829	0.784	0.046 (0.199)
Process innovation, average of the dummy variable	0.395	0.331	0.472	-0.141 (0.001)
Product innovation, average of the dummy variable	0.540	0.673	0.381	0.292 (0.000)
Marketing innovation, average of the dummy variable	0.385	0.262	0.532	-0.271 (0.000)
Training of workers, average of the dummy variable	0.524	0.491	0.563	-0.072 (0.107)
Annual growth rate of investment[3]	(n=500)	(n=274)	(n=226)	
Average	0.019	0.025	0.012	0.0133
(Std.Dev.)	(0.089)	(0.068)	(0.108)	(0.109)
Current profit in the last month[4]	(*n* =505)	(*n* =275)	(*n* =230)	
Ratio of firms with positive current profit	0.984	0.985	0.983	0.003 (0.801)
Profit indicators among firms with positive current profi	(*n* =497)	(*n* =271)	(*n* =226)	
Sales (Rs. million)	0.542	0.809	0.221	0.587
(Std.Dev.)	(0.700)	(0.773)	(0.418)	(0.000)
Current profit (Rs. million)	0.176	0.236	0.103	0.133
(Std.Dev.)	(0.442)	(0.514)	(0.321)	(0.001)
Profit/Sales Ratio[5]	0.378	0.288	0.487	-0.199
(Std.Dev.)	(0.226)	(0.168)	(0.239)	(0.000)
Returns on Assets [ROA][6]	0.214	0.101	0.352	-0.251
(Std.Dev.)	(1.586)	(0.595)	(2.266)	(0.111)

注：1. Statistical significance is based on *t*-tests allowing for unequal variance.

2. We asked innovations in 18 areas. If at least one of them was employed, then "Any innovation" was conducted.

3. The annual growth rate was calculated as (ln(current investment)-ln(initial investment))/firm age - 0.065, where 0.065 is the average WPI inflation rate in India in the last decade (taken from Government of India 2015).

4. Current profit is defined as Sales - (intermediate input costs + fuel costs + labor costs + repair expenditure + transport expenditure + license fee + indirect tax + rental fee + contract expenditure + administration cost + other expenditure).

5. Profit/Sales Ratio is defined as the current profit divided by sales.

6. ROA is defined as the current profit defined by the current investment in Table 4. Due to missing information on the current investment, n = 270 (registered) and n=221 (unregistered).

Table 7. Firm Performance, Entrepreneur/Firm Characteristics, and Registration Status (OLS results 1)

	Dependent variable =							
	(1) Dummy for process innovation	(2) Dummy for product innovation	(3) Dummy for marketing innovation	(4) Annual growth rate in capital	(5) Sales (Rs. million) for firms with positive	(6) Current profits (Rs. million) for firms	(7) Profit/ sales ratio for firms with positive profits	(8) ROA for firms with positive profits
Registration dummy	-0.1797 *	0.2382 **	-0.1013	-0.0008	-0.0030	-0.1580	-0.0399	0.1327
	(0.0828)	(0.0808)	(0.0955)	(0.0164)	(0.1267)	(0.1125)	(0.0493)	(0.2292)
Registration dummy * Service dummy	0.0909 *	-0.1079	0.1018	-0.0210	-0.0106	0.1010	-0.0036	-0.0329
	(0.0433)	(0.0648)	(0.0643)	(0.0223)	(0.0667)	(0.0588)	(0.0379)	(0.1949)
Entrepreneur characteristics								
Age (minus 40 years)	-0.0018	0.0032	-0.0004	-0.0008	0.0046 *	-0.0006	-0.0023 **	0.0119
	(0.0037)	(0.0025)	(0.0018)	(0.0005)	(0.0025)	(0.0013)	(0.0009)	(0.0100)
Female dummy	-0.2341	-0.0592	-0.2194 **	0.0553 *	-0.0179	-0.0672	-0.0974	0.1829
	(0.1513)	(0.0996)	(0.0815)	(0.0281)	(0.0996)	(0.0716)	(0.0594)	(0.2744)
Jain dummy	-0.0723	0.0470	0.0305	-0.0122	0.1538 *	0.0882	0.0044	-0.0947
	(0.0762)	(0.0669)	(0.0355)	(0.0111)	(0.0748)	(0.0887)	(0.0243)	(0.0531)
Muslim dummy	-0.2036 **	0.1524	0.0551	-0.0023	0.0143	-0.0154	-0.0267	0.7935
	(0.0836)	(0.1127)	(0.0792)	(0.0100)	(0.0488)	(0.0213)	(0.0307)	(0.6695)
Migrant dummy	-0.1620 **	0.0480	-0.0859	0.0459	-0.0180	-0.0110	0.0981 *	1.5641
	(0.0610)	(0.1900)	(0.2188)	(0.0451)	(0.0720)	(0.0347)	(0.0506)	(1.2003)
Education less than 10th grade	-0.0951	-0.0542	-0.2112 **	-0.0358 **	-0.1462	-0.0913	0.0250	-0.6593
	(0.1156)	(0.1068)	(0.0933)	(0.0151)	(0.1442)	(0.0993)	(0.0364)	(0.6484)
Education at 10th grade	0.0090	-0.1961 ***	-0.0590	-0.0017	0.0259	-0.0295	-0.0112	0.2211
	(0.0604)	(0.0605)	(0.0745)	(0.0089)	(0.0443)	(0.0406)	(0.0190)	(0.2484)
Education, 10th * Service dummy		0.2483 ***						
		(0.0740)						
Education at degree or more	-0.0559	0.0599 *	-0.0062	0.0016	0.1340 ***	-0.0164	-0.0384 **	0.0740
	(0.0938)	(0.0292)	(0.0648)	(0.0048)	(0.0224)	(0.0390)	(0.0160)	(0.0943)
Firm characteristics								
Location cluster fixed effects	Yes ***	Yes ***	Yes ***	Yes ***	Yes ***	Yes ***	Yes ***	Yes ***
Industry fixed effects	Yes ***	Yes ***	Yes ***	Yes ***	Yes ***	Yes ***	Yes ***	Yes
Firm age (minus 12 years)	-0.0038	0.0063 *	-0.0009	-0.0008	0.0042	0.0008	-0.0005	0.0123
	(0.0035)	(0.0034)	(0.0033)	(0.0008)	(0.0046)	(0.0020)	(0.0011)	(0.0224)
Firm age * Service dummy							-0.0070 ***	
							(0.0020)	
Dummy for own saving only initially	-0.0961 **	0.1150 **	0.0372	0.0256	0.0658	-0.0039	-0.0239	-0.0848
	(0.0410)	(0.0400)	(0.0538)	(0.0162)	(0.0459)	(0.0265)	(0.0266)	(0.0891)
Dummy for bank/govt credit initially	-0.0607	-0.0640	0.1131	0.0086	0.4032 **	0.2578 **	0.0849 ***	0.0387
	(0.0567)	(0.0429)	(0.0686)	(0.0100)	(0.1339)	(0.1072)	(0.0232)	(0.1174)
Bank/govt credit * Service dummy					-0.1729 **	-0.1808 **	-0.0563 *	
					(0.0747)	(0.0352)	(0.0302)	
Intercept[#]	0.5163 ***	0.4107 ***	0.3621 ***	0.0331 **	0.3540 ***	0.1736	0.2601 ***	-0.1726
	(0.0752)	(0.0611)	(0.1069)	(0.0112)	(0.0899)	(0.1036)	(0.0421)	(0.3599)
R^2	0.124	0.296	0.279	0.158	0.350	0.174	0.498	0.114
F-stat for zero slope	56.98 ***	24.39 ***	25.23 ***	4.16 **	15.20 ***	37.16 ***	32.73 ***	2.69 *
Number of observations	506	506	506	500	497	497	497	491

Notes: See Tables 1-4, 6, and the text for definition and summary statistics of empirical variables. Cluster robust standard errors are reported in parentheses using location as the cluster. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

The intercept shows the expected value of the dependent variable for the reference category. The reference category is unregistered firm with characteristics shown in the note to Table 5.

Table 8. Firm Performance and Registration Status with Additional Explanatory Variables (OLS results 2)

	Dependent variable =							
	(1) Dummy for process innovation	(2) Dummy for product innovation	(3) Dummy for marketing innovation	(4) Annual growth rate in capital	(5) Sales (Rs. million) for firms with positive	(6) Current profits (Rs. million) for firms	(7) Profit/ sales ratio for firms with positive profits	(8) ROA for firms with positive profits
Registration dummy	-0.1497 *	0.2192 **	-0.0852	-0.0044	-0.0441	-0.1051 *	-0.0289	0.2392
	(0.0715)	(0.0821)	(0.0641)	(0.0186)	(0.0755)	(0.0568)	(0.0427)	(0.2649)
Registration dummy * Service dummy	0.0665	-0.1166	0.0766	-0.0198	-0.0019	0.0043	0.0001	-0.1015
	(0.0520)	(0.0695)	(0.0904)	(0.0222)	(0.0553)	(0.0635)	(0.0432)	(0.2454)
Entrepreneur characteristics (added variables)								
Trust indicator: relatives and friends	-0.1625 **	0.2088 **	-0.0509	0.0276	-0.0990	-0.0600	-0.0844	0.1839
	(0.0674)	(0.0767)	(0.1243)	(0.0329)	(0.0983)	(0.0942)	(0.0731)	(0.5472)
Trust indicator: Police	0.0289	0.0346	0.0566	0.0005	0.0709	0.0720	0.0393	0.3256 *
	(0.0201)	(0.0363)	(0.0464)	(0.0075)	(0.0992)	(0.0990)	(0.0273)	(0.1696)
Firm characteristics (added variables)								
Labor force (minus 7)	-0.0054 *	0.0048	0.0033	0.0001	0.0242 ***	-0.0011	-0.0059 ***	-0.0047
	(0.0029)	(0.0027)	(0.0037)	(0.0004)	(0.0074)	(0.0018)	(0.0011)	(0.0037)
Labor force * Service dummy					0.0178 ***	0.0217 ***		
					(0.0031)	(0.0035)		
Dummy for technical specialists	-0.0380	0.0139	-0.1350	0.0026	-0.0811	-0.1327 **	-0.0174	-0.1613
	(0.0345)	(0.0763)	(0.1130)	(0.0107)	(0.0461)	(0.0520)	(0.0285)	(0.1079)
Current investment (minus Rs. 1 million)	-0.0128	0.0220 *	0.0131	0.0027	0.1389 **	0.0179 ***	-0.0035	-0.0626
	(0.0153)	(0.0114)	(0.0118)	(0.0034)	(0.0438)	(0.0039)	(0.0033)	(0.0450)
Current inv * Service dummy							-0.0220 **	
							(0.0083)	
N	500	500	500	500	491	491	491	491

Notes: The explanatory variables include all variables listed in Table 7. Their coefficient estimates are not reported to save space but available on request from the author. Cluster robust standard errors are reported as in Table 7 with * p <0.1, ** p <0.05, *** p <0.01.

Table 9. Firm Performance, Initial Credit Access, and Registration Status (OLS results 3)

	Dependent variable =							
	(1) Dummy for process innovation	(2) Dummy for product innovation	(3) Dummy for marketing innovation	(4) Annual growth rate in capital	(5) Sales (Rs. million) for firms with positive	(6) Current profits (Rs. million) for firms	(7) Profit/ sales ratio for firms with positive profits	(8) ROA for firms with positive profits
Registration dummy	-0.1585 **	0.1691 **	-0.1512	0.0203 *	-0.1420	-0.1936	-0.0252	-0.0053
	(0.0654)	(0.0680)	(0.1208)	(0.0103)	(0.1674)	(0.1216)	(0.0361)	(0.1738)
Registration dummy * Service dummy	0.0998 **	-0.1197 *	0.1002	-0.0201	0.1157	0.1764 **	0.0011	-0.0560
	(0.0436)	(0.0652)	(0.0646)	(0.0214)	(0.0794)	(0.0589)	(0.0342)	(0.2048)
Registration dummy * Dummy for own sav	0.0821	0.0635	0.1341	-0.0578 *	0.1037	-0.0357	0.0281	0.1541
	(0.0745)	(0.1185)	(0.0816)	(0.0244)	(0.1136)	(0.0519)	(0.0633)	(0.1966)
Regist.dummy * Dummy for bank/govt cre	-0.1322	0.1884 *	0.0683	-0.0285	0.3756 ***	0.1367	-0.0684 *	0.3564
	(0.1071)	(0.1027)	(0.0941)	(0.0225)	(0.1024)	(0.0871)	(0.0313)	(0.2523)
Regist.dummy * Dummy for bank/govt credit * Service					-0.3601 **	-0.2071 *		
					(0.1384)	(0.1039)		
N	506	506	506	500	497	497	497	491

Notes: The explanatory variables include all variables listed in Table 7. Their coefficient estimates are not reported to save space but available on request from the author. Cluster robust standard errors are reported as in Table 7 with * p <0.1, ** p <0.05, *** p <0.01.