Financial Access - Measurement and Determinants: A Case Study of Unorganised Manufacturing Enterprises in India

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Abstract

This paper attempts to study financial access of unorganized manufacturing enterprises in India given their importance to the economy and the fact that finance has been the main constraint on their growth. We approach financial access from the macroeconomic growth perspective and hence focus on the availability of financial resources for the purpose of productive investment. Financial access is analysed at two distinct levels: 1) enterprises availing loan from the formal financial system; and 2) adequacy of loan from the formal financial sources in taking care of productive investment undertaken. The latter is measured as financial resource gap i.e. the proportion of productive investment *not* financed by the formal financial sources. Firm-level characteristics such as scale of operation, technology, performance, owned assets, ownership, education of owner, enterprise type, maintenance of accounts records and registration with government agencies, are considered as possible factors influencing financial access of enterprises. With the help of NSS unit level data and using Probit and Tobit, the results suggest that the unorganized manufacturing enterprises have limited financial access and large financial resource gap. Scale of operation, proportion of owned assets, enterprise type and ownership type, maintenance of accounts and registration with the government agencies found to have significant impact on the financial access of enterprises. Regarding financial resource gap, scale of operation, capital intensity, proportion of owned assets, education, maintenance of accounts and registration with government agencies turned out to be statistically significant factors.

Key Words: Financial Access, Financial Resource Gap, Manufacturing, Unorganised segment

JEL Classification: E44, E51, G20.

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Financial Access of Unorganised Indian Manufacturing Enterprises: Measurement and Determinants

Introduction

In India, financial sector reforms have been initiated since 1991 as an integral part of economic policy reforms aimed at imparting sustained commercial viability and competitiveness to the sector so as to serve effectively growing needs of the real economy. We expect that these reforms would have led to the development of the sector which further would have expanded financial access. In this background, this paper attempts to study financial access of micro and small enterprises in India given their importance to the economy and the fact that finance is one of the basic constraints of their growth.

Small manufacturing enterprises have assumed significance and attracted policy attention especially in developing nations given their contribution to economic growth, employment generation and, thus, to poverty reduction. In India, these enterprises constitute six per cent of GDP, 40 per cent of exports, and provide employment to around 42 million persons. At sector level, small enterprises account for 39 per cent of industrial production and 35 per cent of the total employment of industry and service sector together.[1] Small enterprises[2] in the unorganized segment[3] constitute 29 per cent of GDP originating from industry sector.[4]

For the small enterprises to grow and contribute to macroeconomic growth and employment generation on a sustainable basis, they need to have access to essential inputs such as finances. Availability of finance, however, has always been a problem for the small enterprises in the developing nations.[5] Majority of the small enterprises in India do not have financial access i.e., access to formal financial institutions. For instance, about 97 per cent of the non-farm unorganized enterprises were deprived of credit from the formal financial institutions.[6] Literature indicates that higher transaction costs and risks involved in small loans prevent lending agencies especially the formal financial institutions such as banks to advance loans to micro and small enterprises. Governments in majority of the developing countries devised various policies to enhance financial

[1] *Annual Report 2008-09* (pp.9, 12-3). Ministry of Micro, Small and Medium Enterprises, Government of India, New Delhi.
[2] We take enterprise as the ownership and decision making unit in the production of goods and services. We use the terms 'enterprise', 'firm', 'establishment' and 'unit' synonymously in the paper.
[3] Unorganised manufacturing segment usually refers to all those enterprises which are not registered under the Factories Act 1948. As such these are defined to have less than ten workers. Unorganized manufacturing sector covers the smaller of the small manufacturing units i.e. micro and small enterprises.
[4] NCEUS (2007)
[5] Zavatta (2008), p.1; OECD (2006).
[6] NCEUS (2007), p.18

access of small enterprises. For instance, India has been having numerous policy measures such as priority sector lending (PSL), Credit Guarantee Schemes (CGS) and refinance schemes to improve financial access of micro and small enterprises. Despite these policy efforts, small enterprises' access to formal financial system remained limited. In this background, it is important to understand the factors restricting the financial access of small enterprises. Towards this direction, this paper attempts to measure and examine the factors influencing the financial access with reference to the small manufacturing establishments in the unorganized segment in India.

Three salient features of the study are worth highlighting: 1) Financial access is studied from the macroeconomic growth perspective focusing on the availability of financial resources for the purpose of productive investments; 2) Financial access is analyzed at two distinct levels – a) enterprises availing loan from the formal financial sources and b) adequacy of the loan from the formal sources in relation to the productive investment undertaken. The latter is measured as financial resource gap i.e., proportion of investment that is not financed by the formal financial institutions; 3) Analysis of the study – measurement and determinants of financial access is done based on the NSS unit level data for the year 2005-06 (62nd Round) for the unorganized manufacturing enterprises. Econometric techniques of the Probit and Tobit models are used to analyze financial access. To the best of our knowledge, there have not been any serious attempts to measure financial access and examine the firm-level factors influencing it at least in the case of Indian small enterprises.

This paper is presented in five sections. Next section discusses the analytical considerations underlying the study, reviews the literature and specifies the possible factors influencing financial access with reference to unorganized manufacturing sector in India. Section 3 describes the data base, discusses the characteristics of the sample considered for the study and briefly touches upon the econometric estimation issues at the end. Section 4 analyses the empirical evidence for the factors influencing financial access and financial resource gap. The final section recapitulates the salient features and summary findings and makes policy recommendations.

2. Analytical Considerations

We approach the issue of financial access from macroeconomic growth perspective. In the literature, studies examined the issue of financial access (most commonly referred as 'financial inclusion') mainly from the microeconomic angle focusing on individuals/ households for welfare reasons. This is appropriate, in our view, for developed countries such as United Kingdom (UK), which has a well-developed financial system and only a tiny portion of its population is outside the formal financial system.[7] However, in developing countries such as India, significant percentage of not only individuals/ households but also production organizations is not served by the formal

[7]More than 90 per cent of the households use bank accounts to save and make payments in the most developed countries (CGAP 2009, p.11). Only seven per cent of household in UK lack financial access (FSA 2000, p.1).

financial system.[8] For these countries, financial access has important growth implications besides having welfare consequences.

We adopt macroeconomic growth approach for the purpose of analysis in the study due to policy emphasis on sustainable and rapid growth in India[9] and economic growth is considered a pre-requisite for welfare and the fact that economic growth has been the motivating force for financial sector reforms in India.[10] Sustainable rapid growth, however, requires significant acceleration in investments especially private investments[11], which further depends on the financial system and its ability to mobilize resources for productive investment purposes. Review of literature (theoretical and empirical) at large, confirms that the financial development plays a critical role in enhancing growth. The gist of theoretical arguments is that the basic determinants of economic growth, namely, physical capital accumulation, human capital formation and technological innovations – all need large amount of investment committed for long periods and thus crucially depend on the financial sector development. Majority of the empirical studies in the area show positive relation between financial development and economic growth implying that a well-developed financial system fosters higher economic growth.[12]

While financial sector development determines the aggregate supply of financial resources, financial access decides the actual flow of resources for productive investment purposes. Financial development and access acquire critical significance as internal finances are not adequate for maintenance and expansion of production organizations and formal sources of finance are superior to informal sources of finance through money lenders, friends and relatives. [13] Internal financing constraints are considered severe for micro and small enterprises[14] although large corporate firms too have finance problems. External finance is an essential complement to internal finance for production organizations irrespective of size, to manage production activities and/or to realize their growth potential.

Small enterprises attracted the attention of policy makers' world over as these are considered as the engine of economic development through their contribution to

[8]Less than 50 per cent of the population in many developing countries has bank accounts (*Beck et. al*. (2008, p.8). "In developing countries, SMEs particularly micro and small enterprises have great difficulty in obtaining the necessary financial resources to effectively scale up and grow their business." (Zavatta (2008), p.1).

[9]Planning Commission 2011.

[10]See *Budget Speech 1991* by Manmohan Singh that has set the stage for systemic economic policy reforms in India.

[11]For instance, 12th Five Year Plan states that we need around 33.5 per cent the rate of fixed capital formation over the plan period in order to achieve an average annual growth rate to be 9 per cent and two-thirds of this investment is expected to come from the private sector (Planning Commission 2011, pp.20 and 26).

[12] For a comprehensive review on the topic, one can refer to Demirguc –Kunt and Levine (2008) and Levine (2005).

[13]Main advantage of informal sources of finance over formal sources is timeliness, possibility of flexible repayment system, and avoidance of regulatory obligations such as taxes. The last one was brought out by Ayyagari *et al* (2008) and Mehnaz and Wimpey (2007). In the Indian context, given the high cost of finance in the informal financial system and the fact that majority of farm sector and small firms are in unorganized segment that mostly falls out of tax regulations, we are not sure whether this reason holds good.

[14]Carpenter and Petersen (2002) provide a good review of studies in the area – theoretical and empirical.

employment and income generation, and private sector development.[15] To provide employment on a sustainable basis and at higher wages, small enterprises need to be competitive and commercially viable. Firms that invest on technological upgradation, and physical and human capital become more competitive and contribute to economic growth and incomes.[16] Productive investment in turn requires access to financial resources. Even though small enterprises constitute a large share of employment and output in developing countries, they receive much less share of credit with majority often being denied any access to formal financial system.[17] A number of studies using firm-level survey data have shown that not only small enterprises perceive access to finance and the cost of credit to be greater obstacles to their growth but also these factors constrain small enterprises more than large enterprises.[18]

The reasons for lack of/ limited financial access of small enterprises that have been generally discussed in the literature are – high transaction costs and risks, and institutional failures. For instance, Tendulkar and Bhavani (1997) argue that the access of small firms to capital markets is limited because of greater behavioural as well as production risks and higher lending costs. They suggest that solution to this problem lies in reducing risk and lending costs to these units through policy intervention. Morris *et al* (2001), however, show that the problem of credit to small enterprises is more the result of institutional and organization failure. Malhotra *et al* (2007) argue that the SMEs are credit constrained mainly due to information asymmetries, high risk, lack of know-how on the part of banks and financial sector policy distortions. Beck *et al* (2004) find that firm-level characteristics such as size, age and ownership are limiting financial access of firms. OECD (2006) stresses that the overall legal, institutional and regulatory framework is the critical determinant of SME' access to finance. Added to it is that SMEs have, however, significant gaps in information and skills needed to access to external finance. Zavatta (2008) point out that asymmetric information, high risk and transaction costs, and lack of collateral are the main determinants of limited financial access of small enterprises.

Literature suffers from two significant limitations: 1) It covers at large, the organized part and hence better lot of small enterprises; and 2) the prime focus of the literature have been on the limited financial access and how it has been a key constraint on the growth of small firms. There has hardly been a serious attempt to measure financial access of small enterprises[19] and study the factors influencing firm's access to formal financial system especially from the firm-level data.[20] This paper makes an attempt to cover the specified gaps in the literature and analyse financial access and factors influencing it in the case of micro and small enterprises within the unorganized manufacturing sector that covers the bottom part of the manufacturing enterprises.

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[15] CGAP 2010, p.35; and Malhotra *et al* (2007), p.3.
[16] Bhavani (2006).
[17] OECD (2006).
[18] Beck and Demirguc-Kunt (2006); Beck, Demirguc-Kunt and Peria (2009); Hallward-Driemeier and Stone (2004), p.6; World Development Report 2005; Beck *et al* (2008), Hanorati & Mengiste (2007), Allen *et al* (2006), Bhavani (2006), Love & Peria (2005), Morris *et al* (2001), Chittenden *et al* (1996).
[19] Two studies – OECD (2006) and Zavatta (2008), tried to analyse what they call 'financing gap' in the case of SMEs but based on qualitative information collected from the relevant officials of different countries.
[20] Beck *et al* (2004) attempts to examine the determinants of financing obstacles based on firm-level data but not of small enterprises. This study covers different types of firms across countries.

Financial access or financial inclusion is nothing but making financial services (such as savings, credit, payments and insurance) available to all those who would like to have without any barriers – price and non-price. Financial access implies the possibility of use of financial services as and when needed by economic agents. Access is a broader concept and includes people/ organizations using financial services and involuntarily excluded.[21] Since we approach the concept from macroeconomic growth point of view, here we take financial access mainly in terms of accessibility to one of the financial services i.e., flow of financial resources (credit + others such as equity capital) from the formal financial system for productive investment purpose. We confine to actual use of formal financial system by production organizations. Actual use of formal financial resources in relation to need serves as the best possible indicator of financial access and improvement in the use of formal financial system can be taken as improvements in the financial access. We consider 'need' in terms of actual investments undertaken, which also serves as an indicator of absorptive capacity of production organizations. We consider the use of formal financial institutions at two levels: one, enterprises obtaining financial resources such as credit from the formal financial institutions for the purpose of investment; two, adequacy of financial resources from the formal financial sources in taking care of the investment requirements of enterprises. The latter is measured in terms of financial resource gap (FRG) defined as –

FRG = [1 – {finances availed from formal financial system/ productive investment}]

The financial resource gap ranges between zero and one, which indicate full financial *inclusion* and *exclusion* respectively. *Ex ante* potential investment would be more relevant for the analysis of financial access. However, for the reasons of data availability, we have confined to *ex post* investment undertaken. We take it that actual investments are always less than the potential investment i.e. investment required to realize growth potential, given that small enterprises in India are resource constrained. This means the use of formal financial resources for the actual investment may be over estimate but not underestimate of financial access.

As regards the factors influencing financial access, we consider those characteristics of enterprises given the data, that can reduce risk in lending by revealing the relevant information about the enterprise and thus enhances its access to formal financial sources. These are: scale of operation, technology, performance, owned assets, education of owners, maintenance of accounts records, registration with the government agencies, and enterprise and ownership types.

Sales turnover is one of the commonly used variables to represent scale of operation. It provides an idea about the relative market position of the enterprise Larger the scale more known will be the enterprise in the market that reduces the problem of asymmetric information and behavioral as well as production risks

Technology and performance – highly related parameters of production, improve competitiveness and reduce production risk and thus enable enterprises to have better financial access. Here, we measure technology in terms of capital – labour ratio. Performance is captured through wage share given the labour intensity of production operations in the unorganized sector. Wage share gives the wage rate relative to labour

[21] World Bank (2008), pp.27&29.

productivity and thus serve as an indicator of efficiency in the use of labour.[22] Higher wage share indicates wage rate is higher relative to labour productivity implying less competitiveness of the enterprise.

Fixed assets serve implicitly or explicitly as collateral and thus help in reducing risk in lending and improve financial access of the enterprise. Books of Accounts being the source of financial information for lenders, firms that maintain records do have more chances of getting loan from formal sources. Registration with any government agency such as District Industries Centre (as small enterprise) and Khadi and Village Industries Commission (KVIC) provides an identity to the enterprise and instills confidence in the minds of borrowers as well as gives them another source of information (i.e. government agency) and thus enhances financial access of the enterprises.

Education of owner works through many channels to improve financial access of enterprises. It enables owners to get to know about formal lending institutions and their products/ programmes, to communicate effectively with the officials and also to reduce production risks.

As regards the ownership, common forms in the case of small enterprises are: proprietorship, partnership and companies incorporated under the Companies Act. Two distinguishing features of these forms relate to the liability of owners in the case of bankruptcy and legal life of the business entity. Both single proprietorship and partnership are characterized by *unlimited liability* but *limited life*. In contrast, limited companies have *unlimited life* and its shareholders have *limited liability*. One shareholder's death or, selling away of the shares does not affect the legal existence of the company. For these reasons, limited companies in comparison with the other two forms are in a better position to avail external financing from formal financial sources.

Three types of enterprises are considered in the study given the data base: own-account manufacturing enterprises (OAME), non-directory manufacturing establishments (NDME) and directory manufacturing establishments (DME). The three categories are distinguished in terms of number of hired workers. While OAMEs are owner managed without any hired labour, NDMEs are defined to have hired workers up to six and DMEs to have 6-10 workers. These groups reflect scale differences on a different dimension. DMEs being large are expected to have better access to formal financial system.

We specify the financial access equation and financial resource gap equation in terms of firm-level characteristics discussed above.

FA = f (scale, OA, Dedu, Daccount, Dent1, Dent2, Downer1, Downer2, Dreg) …….(1)

where

FA = Financial Access = 1 for enterprises that have loan from formal financial sources
= 0 otherwise;

Scale = Sales turnover in INR; As larger scale of enterprises are expected to have better financial access, sign of the coefficient will be positive.

[22] Share of wages in production can be written as the ratio of wage rate to labour productivity.

OA = Proportion of owned assets in total fixed assets; Higher the proportion of owned assets better will be the access and thus sign of the coefficient will be positive.

Dedu = owner' education dummy = 1 for illiterates and literates with schooling (upto higher secondary); otherwise = 0;
Above Schooling (diploma holders, graduates & above) forms the reference category for the education of owner; We expect the education dummy to have negative coefficient.

Daccount = Dummy for accounts records = 1 for enterprises that do not maintain records, = 0 otherwise;
Enterprises that maintain accounts records form the reference group and accounts dummy is expected to have negative sign.

Dent1 = Enterprise dummy 1 = 1 for OAME, otherwise = 0;
Dent2 = Enterprise dummy 2 = 1 for NDME, otherwise = 0;
DMEs form the reference category for enterprise type. OAME and NDMEs being smaller, their chances of availing loan from the formal financial system is less. So, the dummies representing these types of enterprises are expected to have negative signs.

Downer1 = Ownership dummy 1 = 1 for proprietary units, Otherwise = 0;
Downer2 = Ownership dummy 2 = 1 for partnership firms, Otherwise = 0;
Limited companies form the reference category for ownership. Given the characteristics of proprietary and partnership firms such as smaller size, their chances of getting loan from formal financial institutions are limited and thus the two ownership dummies are expected to have negative sign.

Dreg = Registration dummy = 1 for enterprises are not registered with any government agency or, under any Act; Otherwise = 0;

Enterprises that are registered with any one of the government agencies form the reference category; Probability of availing of loan from the formal financial system for the enterprises that are not registered with any government agency is less. Registration dummy is thus expected to have negative sign.

FRG1=f(scale, WS, CLR, OA, Dedu, Daccount, Dent1, Dent2, Downer1, Downer2, Dreg) …… (2)

FRG1 is measured as defined earlier in the section for the units that availed loan from formal financial sources. It is expected to vary between zero and one. For the units that have not obtained any loan from formal financial institutions, we have taken FRG to be one. In this equation, we add two more variables to the set of variables included in the first equation. These are:
WS = Share of wage payments in sales, which is taken as efficiency indicator;

CLR = Technology variable measured as ratio of fixed assets to labour. The remaining variables are as specified in the equation (1). It is expected that wage share to have negative coefficient and CLR to have a positive coefficient.

3. Data Base, Sample Characteristics and Econometric Issues

We analyse the issue of financial access of the unorganized manufacturing enterprises to formal financial system using unit level data of NSS 62nd Round with reference to the year 2005-06. This provides qualitative as well as quantitative information about the unorganized manufacturing enterprises. Qualitative information includes among others, ownership and type of enterprise, education of owner, and status of enterprise in terms of registration with government agencies and maintenance of accounts records. Quantitative data cover among other variables, sales turnover, wage payments, fixed assets – owned and hired, working capital and outstanding loan. Loans are given credit agency-wise, which are further classified into institutional and non-institutional sources. Institutional sources of credit include government,[23] cooperative society/bank, commercial banks including regional rural banks, insurance, provident fund, financial corporations, etc. Since all these institutional sources form part of the formal financial system, we refer these as formal sources of finance in the study. Non-institutional sources of loan include money lender, relatives and friends etc. Most of these sources are a kind of informal arrangements as their main job is not supplying finance. Lending may be the prime occupation of money lender but we presume they are not registered providers of finances. We refer all these non-institutional sources as 'informal' sources of finance.[24]

We have measured financial access, as mentioned earlier, in terms of - a) enterprises availing loan from the formal financial system; and b) financial resource gap i.e. the proportion of investment that is *not* financed by formal financial system. This has been done for different groups of firms based on ownership and type of enterprise. In addition, we have measured firm-level characteristics such as fixed assets – labour ratio, share of wage payments in sales, proportion of owned assets in total fixed assets. The sample characteristics are presented in *Tables 1* to *7* and discussed in the subsequent paragraphs.

We have presented sample characteristics by the type of enterprise and ownership – the two important dimensions of unorganized enterprises. As regards the enterprise type, OAME being managed by owners without any hired workers are smaller compared to the other two groups. These enterprises constitute significant part (66%) of the sample. NDME that operate with the help of hired labour up to six workers, comprise 22 per cent of the sample. DMEs that are having 6-10 workers and hence larger of the three groups, account for about 12 per cent of the sample. Regarding ownership groups, proprietary concerns are smaller in size in comparison with the other categories and constitute around 94 per cent of the sample. Around five per cent of the sample enterprises are partnership firms. Limited companies are in negligible numbers (0.56%).[25]

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[23] Central and state governments provide loans under various schemes such as Swarna Jayanti Grameen Swarojgar Yojana (SJGSY).

[24] Main limitation of data is that the values of fixed assets and loan are stock variables but working capital is a flow variable. Notwithstanding, we have added fixed assets to working capital to obtain productive investment. We have also measured the ratio of loan to productive investment in order to arrive at financial resource gap as there is no alternative data available.

[25] Sample size and its composition keep changing in the process of analysis due to data cleaning. For instance, editing of data subject to conditions such as positive values of sales and investment,

A preliminary analysis based on the unit level data show that DMEs are larger compared to other two enterprise categories in terms of size (average sales), technological superiority as well as in proportions of owned fixed assets *(see Table 1*) but spend only 13 per cent of their sales on wages. On the other hand, OAMEs on an average are much smaller, less capital intensive, own only a quarter of fixed assets and spend over a quarter of sales turnover on wage payment.[26] NDMEs lie in between the other two types. Within the ownership categories, it is the limited companies that have larger sales, capital intensity and owned fixed assets while at the same time have the lowest wage share *(see Table 2*). This is followed by cooperative societies, partnership firms of members of same household. Proprietary concerns being smaller and less capital intensive, and with a smaller proportion of assets and higher wage share stand on the other extreme.

These divergences can also be found in the attributes of these enterprises. *Table 3* shows that a majority of DMEs (93%) owned by people who have had schooling and above. In contrast, around 23 per cent of OAMEs and 12 per cent of NDMEs are owned by either illiterates or literates with education below primary level. This trend is same in maintenance of account records. Around 82 per cent of DMEs and 76 per cent of NDMEs are located outside the house with a permanent structure on fixed premises whereas 56 per cent of OAMEs are located in the household premises. Two-thirds of DMEs and two-fifths of NDMEs are registered with one or the other government agency whereas only 15 per cent of OAMEs are registered with any government agency.

Table 4 reveals that the owners of 81 per cent of limited companies and nearly 50 per cent of owners of partnership firms have education beyond schooling whereas 11-13 per cent of owners of proprietary concerns are either illiterates or having education below primary level. Almost all limited companies (98%), 87 per cent of cooperatives and around 66 per cent of partnership firms maintain accounts records while three-fourths of the proprietary concerns do not have any records of accounts. Almost all of limited companies and cooperatives, 81 per cent of partnership firms are registered with one of the government agencies. But 53 per cent of proprietary concerns run by men and 62 per cent of proprietary concerns run by women are not registered with any government agency.

As discussed earlier, use of formal financial system is expected to be highly correlated to the attribute of these firms. Preliminary analysis shows that only seven per cent of OAMEs have reported to have any external loan and of these, only 33 per cent availed loan from formal financial sources (*see Table 5*). NDMEs show better position compared to OAMEs. DMEs, being larger in size compared to the other two categories,

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and wage share lying between zero and one, resulted in the elimination of large number enterprises from the analysis. This is how one finds different number of observations at different stages of analysis. We finally got only 5716 observations for econometric estimations. OAMEs being too small to provide accurate information could not satisfy many conditions and got eliminated in large numbers. This final sample has large number of DMEs followed by NDMEs. So is the case with the ownership groups where a large number of proprietary firms got eliminated in the process of data cleaning. Limited companies, however, still constitute small percentage of the sample but numbered around 400. So we have decided to include these enterprises as a separate group in the Tobit and Probit models.

[26] In OAMEs, owner is the self-employed worker and whatever he earns is taken in the form of wage payment.

reveal better financial access with 52 per cent of the surveyed units reported to have availed loan and 75 per cent of the enterprises that availed loan obtained it from the formal financial system. Under the ownership category, it is the limited companies, which has better attributes that have substantial loans from the formal financial system (*see Table 6).*

About 86 per cent of limited companies surveyed had external loan, out of which about 91 per cent availed from the formal financial system. On the other extreme it is the proprietary concerns (operated by both men and women) that have reported the lowest.

Further, we have estimated two measures of financial resource gap for the sample units for the specified enterprise and ownership groups (*see Table 7*). Financial resource gap 1 (FRG1) adds only owned fixed assets to working capital to arrive at productive investment. Financial resource gap 2 (FRG2) includes hired assets along with owned assets and working capital in the productive investment. Financial resource gap (FRG1) is 70 per cent for the entire sample implying that only 30 per cent of productive investment of unorganized manufacturing enterprises is financed by formal financial sources. If we consider hired assets, then the gap increases by four percentage points. Among the enterprises types, although they are not very much different, DMEs reveal larger financial resource gap, compared to other enterprises, with formal financial system taking care of only a quarter of their investment requirements.

As regards the ownership groups, limited companies are showing larger financial resource gap. Only 21 per cent of their investments are financed by the formal financial system. Financial resource gap for partnership firms lies in the range of 71-75 per cent and for proprietary concerns in the range of 67-68 per cent. Cooperative societies stand last with financial resource gap of 63 per cent. If enterprises consider owning currently hired assets, resource gap becomes larger for all categories but much more for OAMEs and proprietary concerns as these enterprises have more of hired assets.

Empirical results presented in *Tables 6* and *7* together reveal that larger and technologically superior groups such as DMEs and limited companies have better financial access in terms of getting loan from the formal financial system. However, these groups are in worse position than smaller enterprises that availed loan from formal sources in terms of getting adequate finances that is reflected in the financial resource gap. Inadequacy of loan amounts is a well established fact in the case of small scale enterprises. It essentially implies that some kind of credit rationing is in operation.

Since financial access is a binary variable, we estimate this equation using the Probit Model. We have used the Tobit or Censored Regression Model to estimate the equation (2) as the dependent variable (FRG) lies between zero and one. Both Probit and Tobit models are estimated by the Maximum Likelihood method using the Stata version 10. Since we are dealing with cross section data, we correct for the presence of heteroscadasticity in the data. For the purpose, we have used different combinations of independent variables in the variance equation. Finally, variance equation as a function of sales eliminates heteroscadasticity problem. *Table 8* presents the estimates of the Probit model after correcting for heteroscadasticity. Estimated parameters (β) of both Probit and Tobit models are not marginal coefficients. The marginal coefficient for a given explanatory variable, x_j , in the case of Probit model are written as[27]

[27] Greene (1993:639).

$\partial E(Y/x_j)/ \partial x_j = Ø(\beta' X)\ \beta$ (3)

where Y = dependent variable; X = set of explanatory variables; x_j j = 1…..9 refers to individual explanatory variables, and Ø(..) is the standard normal density.

The marginal coefficient as regards to Tobit model is written as[28]

$\partial E(Y/x_j)/ \partial x_j = \beta\Phi(\beta' X/\sigma)$ (4)

where Φ (…) is the standard normal cumulative density.

From (3) and (4) it is clear that the marginal coefficients are proportional to parameter estimates (β). We present and discuss marginal coefficients in the next section.

4. Factors Influencing Financial Access and Financial Resource Gap

As discussed in *Section 2*, we consider scale of operation, proportion of owned assets, education of owners, maintenance of accounts, enterprise type, ownership and registration with any government agency as the factors influencing financial access of small manufacturing enterprises to formal financial sources such as banks. Accordingly, a Probit model has been specified. The estimated marginal coefficients and coefficients of the Probit Model corrected for heteroscadasticity are presented in *Table 8*.

The results indicate that the coefficients of scale, proportion of owned assets, accounts records, enterprise type, ownership groups and registration with any government agency turned out to be statistically significant. But for scale all others are showing a positive magnitude and expected sign. Education dummy, although positive, is not statistically significant indicating that owners' education may not be an important determinant influencing financial access.

Scale of operation represented by sales showing negative sign with almost zero coefficient. This could perhaps be that sales may not be adequately capturing the impact of scale of operation as discussed in Section 2 given the higher market volatilities and inaccurate recording of sales in the case of unorganized small enterprises. Small coefficients could be due to very small magnitudes of sales for these enterprises.

The marginal coefficient of the proportion of owned assets in total assets, being statistically significant and positive in magnitude, indicates that it is one of the important factors influencing financial access of manufacturing enterprises positively. The owned assets serve as collateral and thus enhance the possibility of getting loan from formal sources. Accounts records, by revealing the financial position of enterprise, instill confidence in the minds of credit agencies and thus increase the chances of obtaining

[28] Greene (1993:695).

loan from formal financial sources. The financial access of enterprises that do not maintain accounts records is relatively limited. The negative value of the coefficient of accounts dummy implies the same. Registration with one of the government agencies or, under any Act gives an identity proof for enterprises. It also provides another source of information for credit agency and thus improves firms' chances of getting loan from formal financial system. The negative value of registration dummy indicates that if enterprises are not registered with any one of the government agencies their financial access will be limited. Enterprise type especially OAMEs and NDMEs found to have significant and negative impact on the financial. Similar is the case with ownership groups, namely, proprietary and partnership firms as can be seen in the negative values of the specified dummies. Formal financial institutions may hesitate to lend to these enterprises and ownership groups as these are relatively small and more vulnerable.

Based on the analytical reasoning presented in Section 2, we take scale, wage share, capital intensity, owned assets, education of owner, type and ownership of enterprise, maintenance of accounts records and registration of enterprise with any of the government agencies, to determine financial resource gap of enterprise. The impact of these variables on the financial resource gap is estimated using the Tobit Model The estimated coefficients and marginal effects of the Tobit model are presented in *Table 9*.

Estimated coefficients of Tobit model reveal that the specified explanatory variables (excepting wage share, OAME and ownership dummies) are having statistically significant influence over financial resource gap. The signs of the coefficient of scale and ownership dummies are not in the expected direction.

The scale coefficient turns out to be statistically significant with a positive sign although zero magnitude, which could be because of very small values of sales turnover of the sample. Larger volume of sales requires larger amounts of working capital that might not have been adequately taken care by the formal financial sources thus widening financial resource gap. Negative coefficient of proportion of owned assets implies declining financial resource gap with the rise in owned assets. Similarly, negative coefficient of capital-labour ratio implies the smaller financial resource gap for the firms with higher capital intensity.

The positive sign of owners' education dummy representing illiterates and educated up to higher secondary school essentially showing that the financial gap will be larger for these groups. This means that probability of higher gap is negatively related with levels of education as higher education is helping the owners to avail more finances from the formal financial system. While the level of education is not significant in providing financial access to unorganized enterprises, it is helping them to reduce the financial resource gap once they have access.

The positive and statistically significant coefficient of accounts dummy indicates the larger financial resource gap for the enterprises which do not maintain accounts books. Similarly, the coefficient of registration dummy implies wider financial resource gap for the enterprises which are not registered with any government agency. Maintenance of accounts books and registration of enterprises with any government agency by boosting confidence of lending agencies, enable enterprises to get more finances from the formal financial institutions and thus have smaller financial resource gap. It may also be noted from coefficients of enterprise type variables, that financial gap reduces when one moves from OAME to NDME and to DME.

5. Conclusions

The study focuses on the analysis of financial access of manufacturing enterprises in the unorganized segment. In specific, the paper attempts to measure financial access and examines the factors influencing it. We approach financial access from the macroeconomic growth perspective and thus focus on the availability of financial resources for the purpose of productive investment. The paper captures financial access at two levels: one, enterprises availing loan from the formal financial system; two, adequacy of loan from formal sources. The latter is measured through financial resource gap i.e., the proportion of productive investment that is *not* financed by formal financial sources. Next, we try to explain financial access – availing loan as well as adequacy of loan from the formal sources of finances, in terms of firm-level characteristics. Our analysis is based on NSS unit level data for the unorganized manufacturing enterprises for the year 2005-06. Based on the analytical reasoning, we consider scale of operation, capital intensity, wage share, owned assets, enterprise type, ownership category, education of owner, maintenance of accounts books, and registration with the government agencies, to be the possible factors that determine financial access of enterprises to the formal financial system. These characteristics of firms are expected to reduce risk in lending either by serving as collateral or by revealing the required information, instill confidence in the minds of lending agencies.

Factors determining financial access in terms of availing loan from the formal sources are examined through financial access equation that is estimated using the Probit model.. In the equation, financial access is taken as one for all those units that obtained loan from the formal financial institutions and zero for others. Determinants of financial access in terms of adequacy of loan from the formal financial system are investigated through financial resource gap equation that is estimated by the Tobit model. For all those enterprises that availed loan from formal sources, financial resource gap is measured as specified earlier. Financial resource gap is taken to be one for all those units that have not availed any loan from the formal financial institutions.

Empirical results show that the proportion of owned assets, enterprise and ownership type, maintenance of account books and registration with the government agencies to be the important determinants of financial access of small enterprises. The same factors excepting ownership type are enabling enterprises to have adequate amounts of loan in addition to improve their financial access.

Lending to unorganized enterprises is associated with higher production and behavioral risk. Lack of expertise in the required areas such as technology is one of the main reasons for production risk. Behavioral risk originates from the lack of reliable information. Collecting and processing information is costly for large number of small entities. Documentation and processing of loan application etc. for large number of small borrowers incur high transaction costs. Hence, solution for the problem of limited financial access of small enterprises would be in reducing risk and transaction costs.

Table 1: Sample Means of Specified Variables: Enterprise Type

Variable	OAME	NDME	DME
Sales (INR)			
Mean (CV)	120747	202483	9595940
	(18.65)	(9.07)	(3.75)
No. Observations	986	7464	7019
Wage Share[1]			
Mean (CV)	0.26	0.16	0.13
	(0.84)	(0.88)	(0.95)
No. Observations	986	7464	7019
Capital Intensity[2] (INR)			
Mean (CV)	32699.69	64992.94	135025.10
	(1.87)	(2.49)	(1.84)
No. Observations	983	7405	6997
Proportion of owned assets[3]			
Mean (CV)	0.24	0.21	0.44
	(1.26)	(1.06)	(0.75)
No. Observations	245	3306	2466

Source: NSS 62nd Round Unit Level Data for the Year 2005-06.
Notes: 1. Share of wage payments in sales turnover; 2. Total fixed assets – workers ratio; 3. Proportion of owned fixed assets in total fixed assets. Total fixed assets is the sum of owned and hired fixed assets; 4. CV = Coefficient of variation.

Table 2: Sample Means of the Specified Variables: Ownership Categories

Ownership	Sales (INR)		Wage Share[1]		Capital Intensity[2] (INR)		Owned Assets[3]	
	Mean (CV)[6]	Obs.[7]	Mean (CV)	Obs.	Mean (CV)	Obs	Mean (CV)	Obs
Proprietary – Male	1656954 (5.46)	11439	0.16 (0.90)	11439	74210.22 (2.16)	11371	0.26 (1.02)	4643
Proprietary – Female	2121709 (4.25)	1091	0.22 (0.79)	1091	78784.15 (2.50)	1089	0.38 (0.87)	241
Partnership – same Hh.[4]	12800000 (2.65)	1466	0.11 (1.21)	1466	160202.20 (1.65)	1460	0.45 (0.74)	482
Partnership–different Hh[5]	8531271 (2.10)	946	0.13 (0.95)	946	138173.90 (1.50)	941	0.40 (0.80)	391
Cooperative Society	6772035 (3.23)	61	0.21 (0.93)	61	171580.80 (2.40)	58	0.46 (0.75)	21
Limited Company	49100000 (2.35)	403	0.08 (1.15)	403	353182.60 (1.55)	403	0.61 (0.51)	217

Source: NSS 62nd Round Unit Level Data for the Year 2005-06.
Notes: 1. Share of wage payments in sales turnover; 2. Total fixed assets – workers ratio; 3. Proportion of owned fixed assets in total fixed assets. Total fixed assets is the sum of owned and hired fixed assets; 4. Partnership with the same household members; 5. Partnership where some of the partners are from different household; 6. CV= coefficient of variation; 7. Number of enterprises for which mean values are calculated.

Table 3: Attributes of Sample Firms– Enterprise Categories (% of firms in the sample**)**

Attributes	OAME[1]	NDME[2]	DME[3]	Total
Education				
Illiterate	12.98	5.64	3.43	5.45
Literate: Below Primary	9.60	6.05	3.53	5.50
Schooling (Primary to High Secondary)	73.34	76.45	55.4	69.54
Above Schooling	4.08	11.84	37.62	19.52
Accounts Records				
No records of A/cs	88.88	85.99	43.03	71.94
A/c book maintained	11.13	14.01	56.97	28.01
Location				
w/i Hh. Premises[4]	55.93	20.12	11.21	19.63
O/s Hh, fixed premises w/ permanent structure[5]	38.24	75.52	82.16	75.15
O/s Hh, fixed premises w/ temporary structure[6]	3.21	2.07	2.41	2.26
O/s Hh, fixed premises w/ no structure[7]	1.19	0.70	3.90	1.79
Mobile markets	0.10	0.43	0.08	0.29
W/o fixed premises[8]	1.34	1.16	0.24	0.86
Registration with any Govt. agency or, under any Act				
Registered	15.25	41.28	75.16	50.69
Not registered	84.75	58.71	24.83	49.31

Source: NSS 62nd Round Unit Level Data for the year 2005-06;

Notes: 1. OAME = Own–Account manufacturing enterprise; 2. NDME = Non-Directory manufacturing establishments; 3. DME = Directory manufacturing establishments; 4. Enterprise located with in the household premises; 5. Enterprises located outside the household but in a fixed premise and a permanent structure; 6. Enterprises located outside the household but in a fixed premise and a temporary structure; 7. Enterprises located outside the household but in a fixed premise with no structure; 8. Enterprises located outside the household without fixed premises.

Table 4: Attributes of Sample Firms – Ownership Categories(% of firms in the sample)

Attributes	Prop-M[1]	Prop-F[2]	Part-Hh[3]	Part-Outside Hh[4]	C0-0p.Soc.[5]	Ltd.Co[6]	Total
Education							
Illiterate	5.71	8.41	1.52	1.72	-	-	5.45
Literate: Below Primary	5.89	5.89	2.62	2.03	14.29	-	5.50
Schooling (Primary to High Secondary)	72.58	69.24	48.04	47.70	57.14	19.23	69.55
Above Schooling	15.82	16.46	47.82	48.55	28.57	80.77	19.51
Accounts Records							
No records of A/cs	78.70	74.82	32.57	34.45	12.99	2.42	71.99
A/c book maintained	21.30	25.18	67.43	65.55	87.00	97.59	28.10
Location							
w/i Hh. Premises[7]	19.14	45.72	11.07	5.12	3.85	2.41	19.65
O/s Hh, fixed premises w/ permanent structure[8]	74.91	51.72	86.89	91.54	96.15	97.37	75.14
O/s Hh, fixed premises w/ temporary structure[9]	2.52	1.74	0.84	1.71	-	-	2.27
O/s Hh, fixed premises w/ no structure[10]	2.04	0.69	0.99	1.21	-	-	1.79
Mobile markets	0.36	0.05	-	-	-	-	0.29
W/o fixed premises[11]	1.03	0.09	0.21	0.39	-	0.22	0.87
Registration w/ any Govt. agency or, under any Act.							
Registered	46.52	37.93	81.43	81.21	97.40	98.90	50.70
Not registered	53.48	62.07	18.57	18.79	2.60	1.10	49.30

Source: NSS 62nd Round Unit Level Data for the year 2005-06;

Notes: 1. Prop-M = Proprietor – Male; 2. Prop-F = Proprietor – Female; 3. Part–Hh = Partners from the same household; 4. Part-outside Hh = Partners from different households; 5. C0-0p.Soc = Cooperative Society; 6. Ltd.co = Limited Companies; 7. Enterprise located within the household premises; 8. Enterprises located outside the household but in a fixed premise and a permanent structure; 9. Enterprises located outside the household but in a fixed premise and a temporary structure; 10. Enterprises located outside the household but in a fixed premise with no structure; 11. Enterprises located outside the household without fixed premises.

Table 5: Use of Formal Financial System by Unorganised Manufacturing Enterprises: Enterprise Type

Enterprises	Total	OAME[1]	NDME[2]	DME[3]
No. of Enterprises Surveyed (%)	82882	55030	18060	9792
	(100)	(100)	(100)	(100)
Enterprises w/ no loan, + investment[4] (%)	84.18	92.34	79.25	47.45
Enterprises having loan[5] (%)	15.47	7.26	20.49	52.40
Enterprises having loan from:	100	100	100	100
- formal + informal sources[6] (%)	17.50	3.43	8.97	34.61
- only formal sources[6] (%)	37.01	29.29	40.99	40.14
- only informal sources[6] (%)	45.49	67.28	50.04	25.64

Source: NSS 62nd Round Unit Level Data for the Year 2005-06;

Notes: 1. OAME = Own-Account manufacturing enterprises; 2. NDME = Non-Directory manufacturing establishments; 3. DME = Directory manufacturing establishments; 4. Percentage of enterprises having positive investment but availed no loan in the total number of enterprises surveyed; 5. Percentage of enterprises having positive investment and positive loan in the total number of enterprises surveyed; 6. Percentages are in the total number of households having loan; 7. all these rows may not tally exactly as good number of enterprises got eliminated the process of data cleaning such as those enterprises that did not show investment or, specify the source of loan or, missing values.

Table 6: Use of Formal Financial System by Unorganised Manufacturing Enterprises: Ownership Groups

Enterprises	Prop-M[1]	Prop.F[2]	Part1[3]	Part2[4]	Co.op[5]	Ltd.Co[6]	Other
No. of Enterprises Surveyed (%)	58890	19138	2623	1519	89	465	111
	100	100	100	100	100	100	100
Enterprises w/ no loan, + investment[7] (%)	84.02	93.60	53.22	50.23	47.19	13.98	61.26
Enterprises having loan[8] (%)	15.67	5.88	46.66	49.70	52.81	86.02	38.74
Enterprises having loan from:	100	100	100	100	100	100	100
- formal + informal sources[9] (%)	12.39	12.08	39.13	33.25	14.89	53.75	30.23
- only formal sources[9] (%)	36.92	36.94	34.64	38.41	80.85	37.25	46.51
- only informal sources[9] (%)	50.69	50.98	26.23	28.34	4.26	9.00	23.26

Source: NSS 62nd Round Unit Level Data for the Year 2005-06.

Notes: 1. Proprietorship with male proprietor; 2. Proprietorship with female proprietor; 3. Partnership with partners from the same household; 4. Partnership – not all partners from the same household; 5. Cooperative society; 6. Limited company – outside public sector; 7. Percentage of enterprises having positive investment but availed no loan in the total number of enterprises surveyed; 8. Percentage of enterprises having positive investment and positive loan in the total number of enterprises surveyed; 9. Percentages are in the total number of households having loan; 10. All these rows may not exactly tally as good number of enterprises got eliminated in the process of data cleaning such as those enterprises that did not show investment or, specify the source of loan or, missing values

Table 7: Financial Resource Gap for Unorganised Manufacturing Enterprises

Category	Financial Resource Gap1	Financial Resource Gap2
Total	70	74
Enterprise Type		
OAME	66	73
NDME	65	72
DME	74	76
Ownership Categories		
Proprietary – Male	68	74
Proprietary - Female	67	72
Partnership- same household	75	77
Partnership- different household	71	75
Cooperative Society	63	65
Limited Company	79	80
Others	72	68

Source: NSS 62nd Round Unit Level Data for the Year 2005-06.
Notes: 1. Financial Resource Gap is defined as the percentage of productive investment that is not financed by the formal financial system; 2. Financial Resource Gap1 include owned fixed assets and working capital in the productive investment; 3. Financial Resource Gap2 include owned + hired fixed assets and working capital in the productive investment.

Table 8: Probit Estimates of Financial Access Equation

Dependent Variable : FA, No. Observations: 5716, Log Likelihood = -3324.298; Wald Chi2 (9): 278.78; Prob> Chi2: 0.000; LR test of Lnσ2 = 0; Chi2 (1) = 0.41; Prob> Chi2 = 0.5219

Explanatory Variables	*Coefficient*	*Marginal effects*	*Z-values*	*p>z*
Constant	0.3133		1.05	0.294
Sales	-0.0000	-.0000	-1.37	0.169
OA	0.2704	0.0935	3.99	0.000
Dedu	0.0401	0.0138	0.90	0.367
Daccount	-0.2263	-0.0797	-4.80	0.000
Dent1	-0.4080	-0.1238	-4.04	0.000
Dent2	-0.2674	-0.0933	-6.16	0.000
Downer1	-0.5897	-0.1758	-2.01	0.044
Downer2	-0.5867	-0.2210	-1.95	0.052
Dreg	-0.1777	-0.0608	-4.28	0.000

Source: NSS 62nd Round unit level data for the year 2005-06
Notes: For the definition of the variables see the text.

Table 9: Tobit Estimates of Financial Resource Gap Equation

Dependent Variable : FRG1, No. Observations: 5716, Log Likelihood = 2919.5503; Wald Chi2 (11): 364.45; Prob> Chi2: 0.000;				
Explanatory Variables	***Coefficient***	***Marginal effects***	***Z-values***	***p>z***
Constant	0.9273		20.85	0.000
Sales	0.0000	0.0000	3.45	0.001
Wage share	0.0021	0.0021	0.15	0.882
Capital intensity	-0.0000	-0.0000	-3.84	0.000
OA	-0.0609	-0.0609	-8.07	0.000
Dedu	0.0220	0.022	4.45	0.000
Daccount	0.0195	0.0195	3.74	0.000
Dent1	0.0037	0.0037	0.37	0.714
Dent2	0.0105	0.0105	2.20	0.028
Downer1	-0.0025	-0.0025	-0.06	0.956
Downer2	-0.0018	-0.0018	-0.04	0.968
Dreg	0.0173	0.1733	4.00	0.000

Source: NSS 62nd Round unit level data for the year 2005-06
Notes: For the definition of the variables see the text.

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