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Is Access to Loan Adequate for Financing Capital Expenditure? A Household Level Analysis on Some Selected States of India

Manojit Bhattacharjee
Meenakshi Rajeev

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IS ACCESS TO LOAN ADEQUATE FOR FINANCING CAPITAL EXPENDITURE? A HOUSEHOLD-LEVEL ANALYSIS ON SOME SELECTED STATES OF INDIA

Manojit Bhattacharjee* and Meenakshi Rajeev**

Abstract

This paper attempts to identify the factors that determine access to credit for financing capital expenditures across selected developed, less developed and middle performing states in India. Using a double hurdle model, it shows that access to credit is generally governed by supply side constraints and that household demand is interest rate inelastic. It further shows that educational status of the household plays an important role in gaining access to credit and therefore, improving education could be considered as one of the policy prescriptions by which access to credit can be improved.

Key Words: *Access to credit, Interest Rate, Borrowing*

JEL Classification: *O12, O16, O17*

Introduction

One of the reasons for prevalence of low income among households in India is lack of ownership of income-generating assets, such as land or machinery. The problem has distinct dimensions for labourer and self-employed households, which mainly constitute the population.[1] For a labourer household, lack of income generating assets means a compulsion to engage in wage labour to eke out a living. This often reduces their bargaining power in casual labour market. On the other hand, for self-employed households, not owning income generating asset means incurring sizeable proportion of production expenditure in hiring capital goods[2]. It also causes outflow of funds from actual producer to owner of the assets causing inequality and often reducing the producer's motivation for production itself. Moreover, if cost of hiring is high, the producer may end up borrowing more which may lead to his perpetual indebtedness.

When hiring cost is high, one option for households is to borrow to purchase capital goods. However, the pertinent question here is, Does the Indian household *possess adequate accessibility to credit at reasonable terms and conditions for financing capital expenditures, and if not, what are the reasons for inaccessibility?* The answer to this question is not forthcoming from earlier studies as studies dealing with household's accessibility to credit in India (Kochar, 1997; Swain, 2002) had not linked accessibility to credit with purpose for which loan was availed. But, it is important to note that the degree of accessibility to credit may vary with purpose of the borrowing. This may happen due to the

* Assistant Professor, St. Joseph's College, Bangalore. Email: manojit850@gmail.com.

** Professor, CESP, Institute for Social and Economic Change, Bangalore – 560 072. Email: meenakshi@isec.ac.in

[1] In India, majority of households earn their livelihood from self-employment and labour activities. National Sample Survey (NSS) report on Employment and Unemployment (2009-10) indicates that per thousand households in rural areas, 427 are self-employed and 412 are labour households. In urban areas, 331 households belong to the self-employed category, 205 are casual labour households and 315 regular wage households.

[2] Capital expenditure denotes the addition or major repairs to, or replacement of income generating assets of the household.

following reasons: First, the degree of risk faced by a lender may vary with purpose of loan, which in turn may affect loan size. Secondly, in Indian formal credit market, there exist scales of financing norms, which regulates the size of loan based on the purpose of borrowing. In addition to supply side factors, household preferences and institutional factors may also decide the loan amount.

This paper thus looks for the factors, which affect access to credit for financing capital expenditures, using NSS data (59^{th} round) on debt and investment (All India Debt and Investment Survey). This dataset provides the latest macro level information on debt investment available as of today. To understand the problem of accessibility to credit for capital expenditure exclusively, the issue of accessibility to credit for working capital or current expenditures is also considered.

Since India is a vast country having interregional disparity and as credit market features, particularly that of informal market, are seen to vary across regions, three types of states are considered based on their level of development (low, middle and highly developed states). The classification has been done considering the incidence of poverty and per capita income in these states. The following states were selected: Punjab and Haryana as developed states, West Bengal and Karnataka as middle performing states and Chhattisgarh, Madhya Pradesh, and Bihar as less developed states. The 59^{th} Round *All India Debt and Investment Survey* provides information for 3975 households of Punjab, 2630 of Haryana, 2637 of Chhattisgarh, 6586 households of Madhya Pradesh, 6260 households of Karnataka and 11120 households of West Bengal. In this paper we show that accessibility to credit for both capital and current expenditures is generally governed by supply side factors and that household demand is interest rate inelastic. Thus the results of the paper have some implications for the interest rate subvention policy followed by Government in case of credit to agriculture.

The rest of the paper is organized as follows: The second section gives a brief account of pattern of household borrowing and investment across the selected states, as seen through pre-defined indicators. The third section sets out the methodology used. The econometric technique adopted in our study is explained in fourth section, while the fifth section is a description of variables selected for our analysis. The next section contains the results of our study. A concluding section is presented at the end.

Nature of Accessibility to Credit According to Purpose

The paper starts with an examination of the overall nature of data with regard to the objectives of the study. The incidence of borrowing and its volume across different purposes for each state is provided in Table 1 and Table 2. Incidence of borrowing is defined as the percentage share of households that have availed loans in a given year. As expenditure decisions are interrelated, apart from loans availed for capital and current expenses, other purposes have been considered as well.

Table 1: Incidence of Borrowing (IOB) in cash by Purpose of Loan in Different States Selected for Analysis (Rural)

Purpose of Loan	Chattisgarh	MP	Haryana	Punjab	Karnataka	WB	India
Capital Expenses for Farm Business	2.2*	3.9	2.6	3	1.5	2.1	2.2
Capital Expenses for Non Farm Business	0.5	0.3	1.1	1.1	0.9	1.1	0.8
Current Expenses Farm Business	7.1	6.9	6.3	10.9	6.4	3.9	4.7
Current Expenses Non Farm Business	0.3	0.2	0.7	1.2	0.6	0.9	0.7
Other Non Business Expenditures	**7.4**	**8.5**	**10.3**	**18.8**	**13.2**	**11.5**	**13.5**
IOB All Purposes	**15.4**	**18**	**18.8**	**31.8**	**21.8**	**18.4**	**15.3**

Source: Computed using All India debt and Investment Survey, 59th round NSS

Table 2: Incidence of Borrowing (IOB) in cash by Purpose of Loan in Different States Selected for Analysis (Urban)

Purpose of Loan	Chattisgarh	MP	Haryana	Punjab	Karnataka	WB	India
Capital Expenses for Farm Business	0.9	0.4	0.2	0.3	0.1	0.2	0.2
Capital Expenses for Non Farm Business	1	1.2	1	0.9	1.1	0.7	0.9
Current Expenses Farm Business	0.4	0.2	0.4	0.4	0.3	0.2	0.4
Current Expenses Non Farm Business	0.7	0.5	0.5	0.9	1.3	1.1	0.9
Other Non Business Expenditures	**5.3**	**6.8**	**13.6**	**6.8**	**14.2**	**11.6**	**13.2**
IOB All Purposes	**10.4**	**9**	**15.5**	**9**	**16.7**	**13.7**	**10**

Source: Computed using All India debt and Investment Survey, 59th round NSS

As can be seen from Tables 1 and 2, overall incidence of borrowing is low in every state, implying inaccessibility to credit to a large extent. Secondly, it can be seen that in rural and urban areas of every region (urban areas have much lower figures, implying much lower access), most of the borrowers have availed loans mainly for current and other non business expenses. For instance, in rural areas of Punjab, while 4.1 percent of households have availed loans for capital expenses, the percentage of credit for non business purposes is 18.8. In this context, it is worth noting that for current expenses and other non business expenses, a household could avail loan in kind also. Understandably, this is not feasible in regard to capital expenses. It is therefore important to find out why borrowings for meeting capital expenses are low, as seen through our analysis.

There can be three possible reasons. A household would not require loan for capital expenses if it incurs the expenditure from own funds. However, as most of the respondents of this survey are

poor, such an explanation may not hold good. Secondly, it is possible that the households that have not availed loan for capital expenses had no demand for capital goods. This may happen due to two reasons: First, the household may not have the need for incurring capital expenditure as capital expenditure is not a routine spending that a household makes, or the household may be in possession of adequate capital assets, obviating fresh spending on such items. Secondly, the marginal return of capital goods is less than marginal cost (which also includes borrowing rate of interest) of purchasing it (Kochar, 1997). For instance, if interest rates on loans are high, a household would prefer to incur expenditure on hiring capital equipment than on acquiring new ones. Apart from the above factors, supply-side factors also could sway the household's credit decisions. For example, if the size of credit required for capital expenditure is higher than the amount that a household could avail, then seeking credit would not be worthwhile. Each one of these factors has been considered in the following analysis.

Demand side factors

Demand for capital goods depends on several factors such as proportion self-employed households in the sample. Requirement of credit for capital expenditure would be higher for self-employed households than for labour or salaried households. Demand for working capital loans also would be higher for self-employed households than salaried or labour households.

Table 3: Percentage of Self Employed Households

State	Rural	Urban
Punjab	48	44.4
Haryana	49.1	40.3
West Bengal	56.2	40.1
Karnataka	46	30.5
Chattisgarh	50.7	26.2
Madhya Pradesh	54.7	35.04

Source: All India Debt and Investment Survey, NSSO (59^{th} Round)

Table 3 gives the percentage distribution of self employed households in each state. It is observed that in each state under consideration, a large segment of households are self employed. It can also be seen from Table 3 that in rural areas of every state, over 40 percent of the households are self employed, whereas excepting in Chattisgarh, urban areas of all the states under consideration have at least 30 percent self employed households. Therefore, the proportion of households needing credit for capital expenditure is huge in both urban and rural areas of the sample states.

A second reason for lower incidence of borrowing for capital expenditure could be the availability of capital goods in the household. However, a look at the size of the machinery held by the household reveals that most of the household in each state possess less income generating machinery. For example, according to the unit record NSSO data for self employed households who are likely to own machineries in all regions under consideration, most households possess machinery assets worth Rs. 5000 and below (see Table 4). This implies that a large section of households hire capital goods,

rather than purchasing them. Further Figure 1, prepared using Situation Assessment Survey of Farmer's data (SAS, NSSO, 59th round), graphically presents the breakup of business expenditure incurred by an average farmer household[3]. As can be seen from Figure 1, farmer households incur more than 10 percent of their expenditure on hiring capital assets. Thus this Figure shows that expenditure incurred for maintenance of machines is meagre, where as expenses for hiring machines is constitute a non trivial share of total expenditure. We note that a parallel exercise for the non-farm households could not be presented due to lack of reliable data.

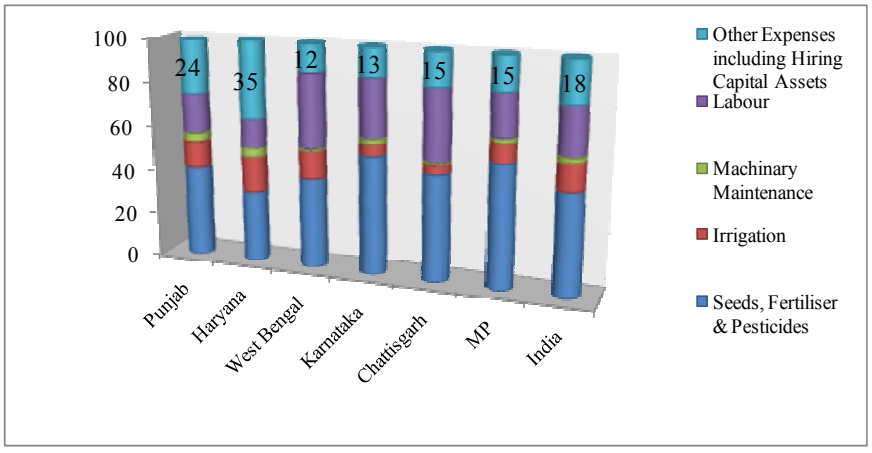
Table 4: Distribution of Self Employed Households in Terms of Size of the Farm and Non-farm Machinery Asset Owned.

Asset Size (Rupees)	Rural			Urban		
	Developed	Middle Performing	Less Developed	Developed	Middle Performing	Less Developed
0	5.5	6.8	2.7	21.6	30.7	34.1
0-5000	46.8*	76.2	68.5	40.8	47.5	40.6
5000-10000	7.0	8.0	8.8	11.1	5.6	5.9
Above 10000	40.7	9.0	20.0	26.5	16.2	19.4
Total	**100.0**	**100**	**100**	**100.0**	**100.0**	**100.0**

Note: * In developed region 46.8 percentage of households have asset size between Rs. (0-5000)

Source: Prepared using All India Debt and Investment Survey data, NSSO (59th Round)

Figure 1: Break up (%) of Average Expenses for Cultivation per Farmer Household During the Agricultural year July 2002 to June 2003



Note: Other Expenses excludes rental value of owned land and cost of family labour

Source: Prepared using Situation Assessment Survey data, NSSO 59th round.

[3] A farmer household is one that has carried out farming for last 365 days preceding the date of survey.

The discussion above showing large expenses by households in hiring of assets indicates that the lower uptake of credit by farmer-households for capital expenditure is possibly not due to demand constraint; rather it could be due to supply side factors i.e., non-availability of credit.

Besides analyzing incidence of borrowing, this paper also looks into the break-up of aggregate outstanding loan amount, purpose-wise. This would present an image of the share of loan that is used in the economy for financing capital expenditure. Table 5 gives the break-up of the *aggregate outstanding loans*, state-wise, according to the purpose for which the loan was availed. The table shows that in each of the states under consideration, particularly in rural areas, over 30 percent of outstanding loans were availed for financing capital expenditures. This could be because loans required for capital expenditure are generally larger. The volume of outstanding loans taken for capital expenditure in urban areas might be relatively low due to presence of less number of self employed households there, as compared to rural areas (see table 3).

Table 5: Percentage Distribution of Outstanding Loan According to Purpose and Amount as of 30.06.02

State	Rural				Urban			
	Capital	Current	House hold	Total	Capital	Current	House hold	Total
Punjab	47.35	11.23	41.42	100	27.81	4.38	67.8	100
Haryana	44.18	20.06	35.76	100	32.96	2.94	64.1	100
West Bengal	30.36	19.97	49.67	100	18.03	3.96	78.02	100
Karnataka	41.93	22.42	35.65	100	20.98	6.18	72.84	100
Madhya Pradesh	53.49	19.16	27.35	100	10.76	3.53	85.7	100
Chattisgarh	66.66	10.54	22.8	100	18.55	4.6	76.85	100

Source: All India Debt and Investment Survey, NSSO (59th Round)

From the discussions in this section, it can be seen that loans required for making capital expenditure are generally larger in size, and very few households could avail such large size loans. In regard to current expenditures, it is seen that accessibility to credit is not higher than for capital purpose, particularly in rural areas where more households are self-employed. Regression analysis is used herein to study the major reasons for credit inaccessibility.

Methodology for Measuring Extent of Accessibility

There are two approaches to study the determinants of accessibility to credit. In the first approach (see Japelli, 1990), households are segregated into two groups, i.e., households that can borrow and household that cannot. Based on such subdivision, a binary variable is formed, which is then regressed on a set of explanatory variables in order to find out the determinants of accessibility. However, from this approach, the issue of *extent* of accessibility to credit cannot be addressed; hence a second approach (see Diagne et al., 2000) is used to ascertain how much a household could borrow. The

extent to which a household could borrow is known as credit limit of the household and this is obtained directly from the household.

In the present context, both the factors that determine participation in the credit market plus and the extent of borrowing are analysed. It is assumed that the extent of borrowing differs according to the purpose of loan; therefore separate analyses have been carried out for loans taken for purchase of capital and expenditure incurred for current purposes. The size of the loan availed is taken as proxy for the extent of accessibility in order to ascertain how the size of loan vary across households with different characteristics.

Econometric Specification

The econometric model used to identify the determinants of accessibility is a double hurdle model, as formulated by Cragg (1971). The model assumes that two separate hurdles must be passed before availing credit. The first hurdle includes a participation equation, which decides whether a household would avail loan for a particular purpose or not. Both demand and supply side factors may influence participation in the credit market. The second hurdle deals with the extent of accessibility. The double hurdle model is different from Tobit model, in which the coefficients of the explanatory variables in the participation and extent of accessibility regression show the same sign. While such results might sometime be true, it is not rational to expect this a priori. Double-hurdled model allows the use of different mechanisms for finding out the participation and extent of accessibility. Previous studies had mainly made use of Akaiki information criteria (AIC) to choose between Tobit and double hurdle models, where the model with lesser value of AIC is generally considered better. Our model too has a smaller AIC and therefore, in terms of statistical criterion also this selection is justified.

The econometric details of the double hurdle model are considered hereunder. This model assumes that the actual dependent variable is latent and it holds a linear relation with the explanatory variables. The equations between the latent variable and explanatory variables for the first and second hurdles are

$$p_i^* = z_i'\alpha + \varepsilon_i \quad \text{..... (1) (Participation equation/ First hurdle)}$$

$$y_i^{**} = x_i'\beta + u_i \quad \text{..... (2) (Extent of Accessibility/ Second hurdle)}$$

The error terms, i.e. ε_i and u_i are assumed to be independently distributed with bivariate normal distribution. The matrix x and z includes variables that influence participation and actual level of credit respectively.

Since p* and y** are not observable, therefore a relationship between the actual variables and the latent variable is presumed. This is provided in equation 3 and 4. The first hurdle is estimated using a probit model and therefore it is represented as

$$\left.\begin{array}{ll} p_i = 1, if & p_i^* > 0 \\ p_i = 0, if & p_i^* \leqq 0 \end{array}\right\} \quad \text{..... (3)}$$

The second hurdle is written as

$$y_i^* = (\max(y)_i^{**}, 0) \quad \text{..... (4)}$$

The observed variable, y_i is thus

$$y_i = y_i^* * p_i \quad \text{..... (5)}$$

The log likelihood function for the model is as follows

$$logL = \sum_{o} 1n\left[1 - \Phi(z_i'\alpha)\Phi\left(\frac{x_i'\beta}{\sigma}\right)\right] + \sum_{+}\left[\Phi(z_i'\alpha).\frac{1}{\sigma}.\phi\left(\frac{y_i - x_i'\beta}{\sigma}\right)\right] \quad \text{... ... ... (6)}$$

Problem of Normality

It is important to note that the dependent variable under consideration shows a strong positive skew. Logarithmic transformation is not possible as the dependent variable assumes a large number of zeros. This problem is solved by use of *Box-Cox transformation* of the dependent variable, which is defined by

$$y_i^T = \frac{y_i^{\lambda} - 1}{\lambda} \quad \text{..... (7)}$$

In equation 7, y_i^T is the transformed variable and λ is the parameter that helps in transforming the distribution of the variable to a normal distribution. Box-Cox includes linear transformation (λ =1) and logarithmic transformation ($\lambda \rightarrow 0$) as special cases. One can expect the parameter λ to lie somewhere between these points. When this transformation is applied to the dependent variable, a Box Cox double hurdle model is derived. The Box Cox double hurdle model is defined as follows:

First Hurdle

$$\left.\begin{array}{ll} p_i = 1, if & p_i^* > 0 \\ p_i = 0, if & p_i^* \leqq 0 \end{array}\right\} \quad \text{..... (8)}$$

Second Hurdle:

$$y_i^{*T} = \left[(y)_i^{**T}, -\frac{1}{\lambda}\right] \quad \text{..... (9)}$$

The observed variable, y_i^T is defined as

$$\left.\begin{array}{l} y_i^T = y_i^{*T}\ if\ p_i = 1 \\ y_i^T = -\frac{1}{\lambda}\ if\ p_i = 0 \end{array}\right\} \quad \text{..... (10)}$$

It should be noted that in the transformed case, the lower limit changes to $= -\frac{1}{\lambda}$, rather than 0, as in the previous situation.

The log-likelihood function of the Box Cox double hurdle model is given below

$$logL = \sum_{o} 1n\left[1 - \Phi(z_i'\alpha)\Phi\left(\frac{x_i'\beta + \frac{1}{\lambda}}{\sigma}\right)\right] + \sum_{+}\left[\Phi(z_i'\alpha).y_i^{\lambda-1}\frac{1}{\sigma}.\phi\left(\frac{y_i^T - x_i'\beta}{\sigma}\right)\right] \quad \text{... ... ... (11)}$$

Violation of the independence assumption

One of the assumptions on which the double hurdle model is based is the independence of error term between the first and the second hurdles, and to verify the presence of independence, the following two-step procedure is carried out. In the first step, a probit regression is estimated, and using this model, the residual term is estimated. In the second stage, this estimated residual term is considered as an explanatory variable in the equation representing the second hurdle. If the coefficient of the residual term is significant, it would indicate the presence of dependence between the first and second hurdle equation, leading to biased estimates. The assumption of independence may not hold if the error term of the first equation consists another component (apart from the random component), which is correlated with the error term of the second equation. In other words, it can be assumed that the problem of dependence arises due to the omission of an important variable. In such an event, one needs to address the problem; one way is to adopt the methods generally used in econometrics for solving endogeneity problems in binary response models with continuous endogenous explanatory variables (see Rivers and Vuong, 1988; Wooldridge, 2002). This is explained below in details.

In the present analysis we have found presence of dependence only for loans availed for capital expenses.

Endogeneity Problem and Heteroscedasticity

In any cross sectional regression analysis, two types of problems are generally encountered: heteroscedasticity and endogeneity. While the problem of heteroscedasticity is solved by the using box cox transformation of the dependent variable along with an analysis of outlier, Durbin-Wu–Hausman Test is carried out to explore possible endogeneity between outstanding loan and the dependent variable. However, in the present analysis no such problem has been observed.

Variables Selected for the Analysis

Dependent Variable

The participation equation is a probit model in which the dependent variable assumes the value unity, if the loan size is positive while zero value is assigned otherwise. In the case of the second stage regression, the dependent variable is the total amount of loan availed by a household for both capital and current expenditures during the period July 2002 to June 2003. It is important to note that apart from loans availed during July 2002 to June 2003, NSSO also provides information about loans which were previously availed (before 30.06.02) but had remained outstanding as of 30.06.02. However we have not considered outstanding loans, because keeping it as a dependent variable might have resulted in deriving a determinant of non repayment, rather than accessibility.

Explanatory Variables

A household avails loan if two events occur jointly, i.e., it has a demand for and also accessibility to credit (supply side factor). The individual variables, which affect the demand and supply of credit, are mentioned below.

Demand side factors:

Education: Households that have had better education are expected to make higher investment since they would have had better information about different areas where investment could be done. In our analysis, education is captured by means of a dummy variable. If the educational status of any member of the household is above secondary level, a value 1 is assigned; and zero value is assigned otherwise.

Asset: Demand for loan, to a large extent, gets influenced by asset-base of the household. Households in possession of more assets are likely to incur less expenditure on hiring assets, and this would reduce their demand for current loans. Also, these households would have less demand for capital loans as already own capital assets.

Occupation: Occupation of the household also influences the demand for loan. For instance, self employed household are more likely to demand loan for undertaking income generating activities (capital and current) compared to other households.

Rate of Interest: Rate of interest is the price of credit. Therefore higher rate of interest is likely to reduce the demand for loan for all purposes.

Supply Side Factors:

Economic Status of the household: Households having more assets or higher monthly per capita consumption expenditure are likely to have better economic status and hence higher accessibility to credit. Therefore they can avail larger size loans.

Outstanding Loan: If a household already has some loan outstanding, it will be able to avail less loan from the market. Therefore it would affect their decision on financing any particular expenditure.

Occupation of the household: Occupation of the household, a demand side variable, may influence a household's accessibility to credit. For instance, self employed households are likely to have more access to credit, when they avail loans due to the existence of interlinkages between markets, where they participate.

Education of the Household: An educated household have higher probability of possessing information about the different type of loans provided by government under different schemes in developing countries. Thus they are likely to have more supply.

Debt Asset Ratio: A lending agency would provide credit only to those whom they perceive as less risky. It is difficult to measure risk, but a lending agency would normally face less risk from a household that has a low debt asset ratio.

Regional Variables:

Economic development of a region is represented in terms of average MPCE of a district. Again, to capture the differences that exist across different locations/regions, region specific dummies have been considered. Interactive variables have also been formed to bring out the variations in impact of

explanatory variables with regions. For instance, to look into the impact of assets across regions, interacting variables between region specific dummy and asset are formed.

Table 6 lists the variables used along with notations, means and also standard deviations. It is observed that average value of asset is lower in less developed regions than in developed and middle performing regions. It is also observed that 38 percent of households have member/s having secondary education and 47 percent of households are self employed.

Table 6: List of Variables: Notations and Summary Statistics

Variable	Notation	Mean	Standard Deviation
Interest rate	Rate	17.3	19.18
Incidence of borrowing	IOB	22.9	6.5
Less Developed (Less Developed Region = 1, others =0)	Less Developed	0.277	0.447
Developed (Developed Region = 1, others =0)	Developed	0.198	0.39
Education (Secondary = 1, others =0)	Education	0.38	0.4858
Debt asset ratio	Debt /Asset	0.097	1.30
Outstanding loans on 30.06.02	Debt	13354.9	85150.7
Self Employed Households (Self Employed Households =1, Others =0)	Self Employed	0.472	0.49
Asset * middle performing region	Asset Mid	131806.2	430208.9
Asset * developed region	Asset dev	155659.4	985937
Asset * less performing region	Asset less	81070.24	382491.5
Average monthly percapita consumption expenditure of a district	Avg MPCE	656.4	571.3

Source: All India Debt and Investment Survey, NSSO (59^{th} Round)

Results

The results are displayed hereunder: Table 7 contains results for capital purposes, while table 8 contains results for current purposes.

Firstly, it needs to be observed that the rate of interest for both capital and current expenditures, which indeed is the price of availing credit, does not influence the decision to avail loan as well as the extent of the household's loan eligibility. This means that a household's demand for credit is interest inelastic. Secondly, regression results for both capital (table 7) and current expenditures (table 8) show that in all the three regions, accessibility (measured both in terms of participation in the credit market and extent of borrowing) is higher for households possessing more assets. This indicates that lenders provide credit generally to credit worthy households. Thus, supply side constraints seem to play a major role in accessibility to credit.

Thirdly, as expected, it is observed that households having secondary and above level of education as also households that are self-employed have more access to credit for both capital and current expenditures. Thus, information is important as far as access to credit is concerned.

Fourthly, it is seen that households having outstanding loans are the ones who have higher accessibility to credit for capital expenditures. Also, such households are found to be better borrowers, apparently because lenders find them relatively risk-free. Therefore, these households are not constrained in terms of size of loan.

In addition to the foregoing findings, it is observed that in terms of participation in the credit market, less developed regions lag behind both middle performing and developed regions. However, in terms of extent of accessibility, it is households of less developed regions that are likely to avail larger size loans, which could be due to both demand as well as supply side factors. In less developed regions, since number of participants is likely to be lower, loan availability per participant (applicant) would be higher, and so would be the size of credit availed by each participant. Secondly, there is also the likelihood of demand for loans being less for households in middle performing regions than in less developed regions for obvious reasons. Further, it is observed that rural households get more loans than their urban counterparts. It might be due to two reasons: First in rural areas, money lenders have better information about borrowers, and therefore lend readily to such known borrowers. Secondly, in rural areas scheme based loans provided by government are also more (see Bhattacharjee and Rajeev, 2010; 2011).

Table 7: Regression Result for Accessibility to Loans for Capital Expenditures

Box Cox Double Hurdle Model		
Number of observations	33173	
Wald chi Square(12)	465.29	
Log Likelihood	-7198.741	
Tier 1		
Explanatory Variables	**Coefficient**	**P>Z**
Less Developed	-0.0010591***	0.01
Debt /Asset	-0.0539382	0.45
Developed	-0.1255204	0.138
Rate	0.0020386	0.433
Avg MPCE	-0.0000132	0.672
Asset mid	6.00E-08**	0.011
Asset less	8.13E-08***	0.001
Asset dev	7.95E-09	0.64
Outstanding Loan	9.78E-07**	0.02
Education	0.0603684**	0.057
Self Employed	0.4754427***	0.000
Rural	0.2611363***	0.000
Constant	-2.129284***	0.000
Tier 2		
Explanatory Variables	**Coefficient**	**P > Z**
Less Developed	0.0142974***	0.000
Debt /Asset	-0.1786109	0.202
Developed	3.763732***	0.000
Rate	0.0032345	0.812
Avg MPCE	0.0005502**	0.011
Asset mid	-9.06E-08	0.733
Asset less	8.87E-07***	0.000
Asset dev	1.62E-07**	0.047
Outstanding Loan	6.30E-06***	0.000
Education	1.139398***	0.000
Self Employed	0.9154293***	0.000
Rural	-0.1680698	0.437
Residual	-12.80319**	0.022
Constant	8.696152***	0.000
Sigma	1.982798***	0.000

Table 8: Regression Result for Accessibility to Loans for Current Expenditures

Double Hurdle		
Number of observations	33173	
Wald chi Square(28)	11331.34	
Log pseudo likelihood	-9921.24	
Tier 1		
Explanatory Variables	**Coefficient**	**P>t**
Less Developed	-0.0675153**	0.02
Debt /Asset	-7.517303	0.32
Developed	-6.704235	0.256
Rate	0.1475721	0.422
Avg. MPCE	0.0000329	0.983
Asset mid	1.75E-06	0.439
Asset less	5.69E-06***	0.001
Asset dev	-3.08E-07	0.811
Outstanding Loan	4.88E-05***	0.006
Education	5.211904***	0.015
Self Employed	34.35913***	0.000
Rural	18.50425***	0.000
Constant	-173.5376***	0.000
Sigma	71.49452***	0.000
Tier 2		
Explanatory Variables	**Coefficient**	**P>Z**
Less Developed	0.0135357***	0.000
Debt /Asset	0.6664034*	0.106
Developed	4.722075***	0.000
Rate	-0.0011524	0.882
Avg MPCE	0.000128	0.144
Asset mid	1.51E-06***	0.000
Asset less	1.21E-06***	0.000
Asset dev	1.02E-07**	0.042
Outstanding Loan	3.08E-06***	0.000
Education	0.5209898***	0.000
Self Employed	0.5174689***	0.000
Rural	-0.6632275***	0.000
Costant	8.342113***	0.000
Sigma	1.73414***	0.000

Concluding Observations

The present analysis shows that accessibility to credit for both capital and current expenditures is generally governed by supply side constraints, and that household demand is interest rate inelastic. Secondly it is seen that though there is demand for capital goods, accessibility to credit for capital expenditures is much lower than that for other purposes. Therefore, it is safe to presume that such households incur more expenditure on hiring capital goods. It is observed that educational status of the household plays an important role in improving access to credit; therefore, education could be considered as one of the policy prescriptions by which access to credit can be improved.

Due to non-availability of information, the paper suffers from certain limitation. In this paper, loan size has been used as a proxy for extent of borrowing. However, the possibility of a household having the ability to avail a larger loan than it had availed cannot be ruled out.

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Dr V K R V Rao Road, Nagarabhavi P.O., Bangalore - 560 072, India
Phone: 0091-80-23215468, 23215519, 23215592; Fax: 0091-80-23217008
E-mail: lekha@isec.ac.in; Web: www.isec.ac.in