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Impacts of Financial Access of Urban Informal Enterprises: Evidence from Assam of Northeast India

PRASENJIT BUJAR BARUAH*

Despite the presence of the informal sector in developing countries around the globe as a source of livelihood for a disproportionately large number of households, a myriad of problems often held back the enterprises in the sector. Among these problems, meagre access to financial services is the most disabling, as access to other enabling conditions often hinges on access to finance. This paper examines, drawing inputs from a sample survey, the issues related to the financial accessibility of the urban informal enterprises in Assam. Furthermore, the paper looks at the economic contributions of these enterprises in terms of gross value added, using a customized financial access index and logistic and linear regressions. Analysis shows that enterprises with registration have better access to financial services. The economic contribution of the sample enterprises is not significantly related to the extent of their access to financial services.

Keywords: Financial Access Index, Unorganised Sector Enterprise, Gross Value Added, Financial Inclusion

JEL Classification: G14, G24, L25, L26

I. INTRODUCTION

When Harris and Todaro (1970) came up with the idea of the informal sector as a component of the urban economy in transition, this sector was thought to be a temporary phenomenon in the development dynamics of the transition of a predominantly rural underdeveloped economy to a developed modern urban economy. Nevertheless, today the sector is more popularly recognised as the urban unorganised sector and is no more accepted as a transitory component of a developing economy (Mukherjee, 2009). This sector now acts as a major source of employment and livelihoods and makes a sizable contribution to the gross domestic product of any developing country. The sector, however, is

*Rajiv Gandhi University, Rono Hills, Doimukh, Arunachal Pradesh, India.

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heterogeneous and beset with several problems like lack of entrepreneurial capacity, training and technical skills, and access to technology, capital, and credit. Many studies have confirmed that the lack of financial access is the primary restricting factor for the entrepreneurs in the sector (NCEUS, 2007), as access to technology, raw materials and skills are also conditioned by their access to credit.

In view of the above, the present paper tries to examine the extent and determinants of financial access of the urban informal enterprises in Assam and analyses the impact of financial access of these informal enterprises on their economic contribution through the gross value added. As customised unit-level data were unavailable for assessing the same, the study conducts a field survey. The field survey is carried out in Assam, a state in the Northeastern region of India, where the informal sector is one of the prominent sectors generating employment and income and therefore contributing to the state's economy in a major way as compared to the industrially developed states of India (Baruah & Bezbaruah, 2020).

The paper is structured as follows. After the introduction in section I, section II provides a literature review. Section III discusses the data source and methodology, and section IV presents the results and discussion. Section V concludes the paper with policy implications.

II. REVIEW OF LITERATURE

2.1 Definition of the Informal Enterprises

The informal sector is heterogeneous; it is often difficult for researchers and policymakers to come up with specific definitions for the informal sector or informal enterprises. The definition of the enterprises across the sector is, therefore, based on the specific aspects of the sector the researchers are interested in studying (Mukherjee, 2009). The studies carried out by the International Labour Organisation (ILO) and by others generally use the term informal sector to indicate those activities that lie outside the purview of the organised sector and are termed the unorganised sector. The 15th International Conference of Labour Statisticians (ICLS) came up for the first time with a precise definition of informal enterprises (Bhalla, 2009). The conference defined informal enterprises as all those private unincorporated non-agricultural enterprises that are owned by individuals or households and not separate legal entities independent of their owners. Consequently, any complete accounts of those enterprises are not available, which would have given a separate identity to these enterprises by way of having a separate account independent of their other activities.

In India, National Sample Survey Office (NSSO) is the principal data source on informal enterprises. NSSO has used the two, terms informal and unorganised enterprises, in different senses. According to NSSO, unorganised enterprises are all those private enterprises which are not registered under the Factories Act, 1948 and Bidi and Cigar Workers (Condition of Employment) Act, 1966 (NSSO, 2008). The NSSO survey defines all private unincorporated proprietary and partnership enterprises as informal enterprises (NSSO, 2001). Accordingly, the informal sector enterprises have become a subset of unorganised sector enterprises. The National Commission for Enterprises in the Unorganised Sector (NCEUS) defines unorganised enterprises as unincorporated private enterprises which are owned by individuals or households and are operated on a proprietary or partnership basis with less than ten workers (Bhalla, 2009). This definition has used the two terms informal enterprises and unorganised enterprises interchangeably. The present paper follows this definition.

2.2. Financial Access of the Informal Enterprises

Financial access or inclusion is one of the widely discussed issues in literature. Financial access is often deemed as the means to fulfil the objectives of poverty alleviation and economic well-being. The World Bank (2008) considers financial access as the availability of financial services to all without any barriers. Ozili (2018) defines financial inclusion as the provision of financial services to all members of society, particularly the poor and the previously excluded ones. In the Indian context, the Committee on Financial Inclusion defines financial inclusion as *“the process of ensuring access to financial services, and timely and adequate credit needed by vulnerable groups such as weaker sections and low-income groups at an affordable cost”* (Government of India, 2008). Thus perceived, each of these definitions gives importance to access to financial services for all.

Further, financial inclusion is a broader concept that includes those who have access to financial services as well as those who are voluntarily excluded (Bhavani & Bhanumurthy 2012). Financial inclusion indicates financial services available both from institutional and non-institutional sources. But it is often difficult to differentiate between individuals or enterprises that have been voluntarily or non-voluntarily excluded from financial services. Moreover, due to the exploitative characteristics of the non-institutional sources, one segment of the existing literature has considered financial inclusion as the actual availability and adequacy of credit from institutional sources (Allen, Demircuc-Kunt, Klapper, & Peria, 2016; Bhavani & Bhanumurthy 2012). Presently, micro-finance has emerged as an

alternative source of credit for the weaker sections of society. Loans provided under a micro-finance programme are more flexible compared to bank loans, and interest rates on such loans are affordable compared to those charged by money lenders. Therefore, one segment of literature (Goyal, 2013) to address the issue of financial inclusion, considers access to financial services from formal and semi-formal sources such as micro-finance institutions or self-help groups.

Although the varied literature on the subject tries to establish a positive link between financial inclusion and economic growth, the evidence on such a correlation between financial inclusion and economic growth is less conclusive. Park and Mercado (2015) report that access to financial services reduces poverty and income inequality by way of protecting enterprises and households from unexpected shocks. However, it is also observed that misuse of credit often deteriorates the condition of borrowers than how they were before taking the loan (Smith, Richards, Shelton & Malespin, 2015), as incapacity to repay the loans leads to default and indebtedness (Ozili, 2020a). In recent years, different governments across the globe have taken to various policies for the financial inclusion of the economically weaker sections of society (Baruah, 2020; Markose, Arun & Ozili, 2020; Ozili, 2020b;). Allen et al. (2016) find that such policies have contributed to the financial inclusion of the previously excluded ones.

Financial services typically include savings, credit, and insurance services. The credit components have found more space in the available literature compared to the other components. However, the first step towards financial access is to have a bank account, because the accessibility to credit from banks depends upon it. Sometimes, insurance service is also linked to the bank account. Further, the ability to save in the banks enables entrepreneurs to make cashless payments.

Access to financial services is one of the crucial determinants of the growth and performance of any enterprise (Blattman, Green, Jamison, Lehmann & Annan, 2016). Small businesses face capital constraints (Gibson & Flaherty, 2016). A review of the literature shows that informal enterprises rarely obtain any credit from formal financial institutions (FFIs) (Farazi, 2014). It also reduces investments due to the failure of the investors to borrow at a reasonable interest rate (Kim, 2016). Virtually, the financial needs of the informal enterprises are met through personal savings supplemented by loans from informal sources (Banerjee & Duflo, 2011; Kebede, 2018). Therefore, reinvestment of profit becomes a common source of fulfilling the working capital requirements of these informal enterprises (Morewagae, Seemule, & Rempel, 1995). Also, compared to small-scale organised

sector enterprises, enterprises in the informal sector have a lower percentage of loans from banks (Farazi, 2014). This problem is more serious for women entrepreneurs (Agarwal & Dhakal, 2010).

Informal enterprises are often reluctant to apply for bank loans owing to the complex application procedures, high rate of interest, and high collateral requirements (Farazi, 2014). These enterprises often end up paying an even higher interest rate for fulfilling their credit requirements from non-institutional sources. However, exclusion from formal financial services, including bank credit, is not universal among all informal enterprises. Bhavani and Bhanumurthy (2012) report that turnover of the enterprise, ownership of assets, maintenance of business records and registering with government agencies have a favourable impact on access to credit from institutional sources. Farazi (2014) further observes that the possession of landed property, educational attainment and social networking also have a positive impact on the financial inclusion of these enterprises. Morewagae et al. (1995) have rightly suggested that informal enterprises should learn about the importance of savings and be informed about the different loan packages offered by credit institutions.

Sometimes people voluntarily exclude themselves from the FFIs. They do not have interest in the FFIs due to poverty, lack of awareness, financial illiteracy, and the cost needed to be incurred to open a bank account by way of paperwork and documentation (Martinez, Hidalgo & Tuesta, 2013; Ozili, 2018). Baruah and Bezbaruah (2020) found that although financial institutions were present in a locality, informal entrepreneurs hesitated to approach these institutions for a bank loan as they had the perception that applying for a bank loan was a cumbersome process. Ozili (2020c) states that financial literacy may be helpful in this direction in providing financial access to those excluded.

III. DATA SOURCE AND METHODOLOGY

3.1 Sampling Design

Location Selection: The primary data for the study were collected by conducting a field survey in two districts of Assam, viz. Guwahati and Dibrugarh, during June-December 2017. Both the districts, which are urban, were selected purposively based on their area and population size.

Activity Selection: We selected four categories of enterprises from informal manufacturing and four categories from services sector enterprises based on the available NSS data on the relative importance of the different categories of urban

informal enterprises in Assam (NSSO, 2012) and discussions with informed sources. The activities selected in the manufacturing sector include wooden furniture making, textile and apparel manufacturing, food products manufacturing, and fabricated metal products manufacturing. The activities selected in the services sector include retail trading, repairing of motor vehicles, land transport activity and restaurants. It is to be mentioned here that the activities mentioned above have a relatively higher share in the total number of urban informal enterprises in Assam.

Cluster Selection: In the first stage, we identified 25 clusters from Guwahati and eight from Dibrugarh based on location. Then, we selected 15 clusters from Guwahati and four from Dibrugarh randomly for the study.

Ultimate Sample Unit Selection: Although random sampling is considered the best sampling method for the selection of units, for the present study, we have not considered it due to the non-availability of data as a large segment of the informal enterprises in the two districts are not registered units. Therefore, no record was available on the total number of urban informal enterprises in the two districts. Hence, the sample enterprises were selected from the clusters using accidental sampling. Utmost care is taken to minimise the limitations of non-random sampling.

3.2 Outline of the Analytical Framework

The framework we used in the study to address the outlined objectives has three basic components: (i) an index is designed to measure the depth of financial access of the sample enterprises, (ii) a regression model is drawn to identify the factors determining the depth of financial access of the sample enterprises, and (iii) another regression model is constructed to examine the impact of financial access on the economic contribution of the informal enterprises. The components mentioned above are discussed in detail in the relevant sections.

IV. RESULTS AND DISCUSSION

4.1 A Profile of the Sample Enterprises

The sample consists of 156 enterprises. The number of units selected from different sub-sectors is proportionate to their share in the total number of urban informal enterprises in Assam. A profile of the sample enterprises is given in Table I. The sample includes 46 manufacturing enterprises and 110 service sector enterprises, which constitute both own account enterprises (OAE) and established enterprises. OAE does not appoint any regularly hired worker, whereas the

establishment enterprises appoint at least one hired worker regularly. Approximately 72.4 per cent of the sample enterprises are OAEs, and the rest are establishment enterprises.

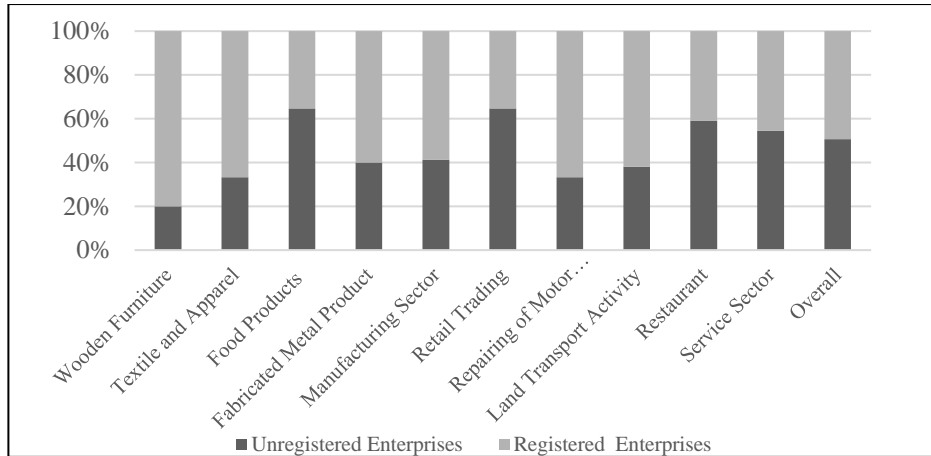
TABLE I
**PROFILE OF THE SAMPLE ENTERPRISES ACROSS
 DIFFERENT SUB-SECTORS**

Different Sub-Sectors	Number of Enterprises	Number of Labour Employed per Enterprise	Monthly Turnover per Enterprise
Wooden Furniture	10 (6.41%)	2.3	50,000
Textile and Apparel	15 (9.62%)	1.8	27,733
Food Products	17 (10.89%)	1.7	71,000
Fabricated Metal Product	5 (3.21%)	3.2	158,000
Manufacturing Sector	46 (29.49%)	2.04	62,348
Retail Trading	51 (32.69%)	1.43	60,490
Repairing of Motor Vehicles	15 (9.62%)	2.4	98,800
Land Transport Activity	21 (13.46%)	1.05	16,476
Restaurants	22 (14.10%)	2.14	56,136
Services Sector	110 (70.51%)	1.63	56,300
Overall	156 (100.0%)	1.75	58,083

Source: Calculated by the author from Field Survey Data (June- December 2017).

One of the characteristics of informal enterprises is non-registration with any specific government agency. However, an informal enterprise may register with one or the other government agency. For example, all the enterprises in urban areas need to register themselves with the municipal authority of that city or town. Furthermore, the motorised vehicles of the land transport activity are to be registered with the district transport offices (DTO). Figure 1 shows that around 50 per cent of the sample enterprises are registered with some government agency, most with the municipal authority of that area. A relatively large percentage of the service sector enterprises are registered with some government agency compared to the manufacturing sector.

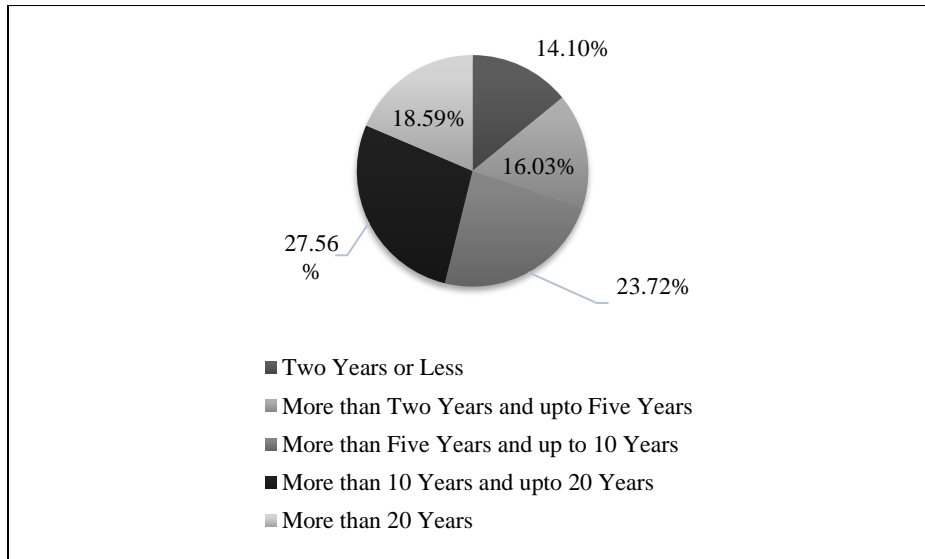
FIGURE 1: Registration Status of the Sample Enterprises



Source: Calculated by the author from Field Survey Data (June-December, 2017)

The age of the enterprises is one of the characteristics that affect the financial access of informal sector enterprises. Enterprises which have completed at least one year have been included in the sample. Figure 2 shows that approximately 14.01 per cent of the sample enterprises are less than two years old, while 18.59 per cent of the enterprises are more than 20 years old.

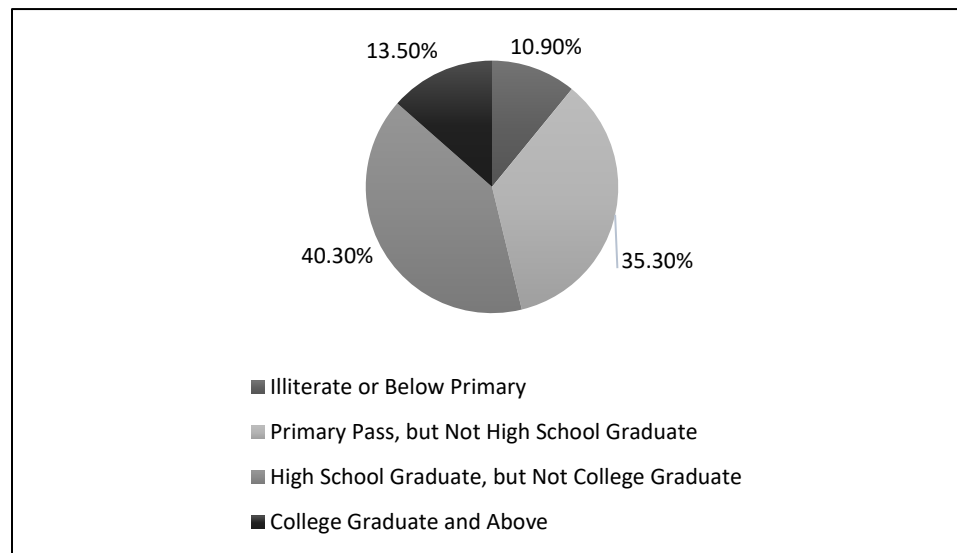
FIGURE 2: Percentage Distribution of the Enterprises according to their Age



Source: Calculated by the author from Field Survey Data (June-December 2017).

The existing literature states that the level of education of the entrepreneurs is positively related to their financial access. The level of education of the sample entrepreneurs can be explained with the help of Figure 3. Approximately 10.9 per cent of the sample entrepreneurs are illiterate or have attained education below primary level, and around 13.5 per cent are graduates or have higher degrees. Along with education, training is also vital for increasing the productivity of any enterprise. Only 7.1 per cent of the sample entrepreneurs have had access to formal training, while around 27 per cent of the entrepreneurs have acquired their skills informally. The majority of the entrepreneurs have developed their skills through apprenticeship. Further, most (76.9 per cent) of the enterprises have reported that they are suffering from capital shortage or lack of access to an adequate amount of credit.

FIGURE 3: Percentage Distribution of the Entrepreneurs according to their Level of Education



Source: Calculated by the author from Field Survey Data (June- December 2017)

4.2 Financial Access of the Sample Enterprises

The financial access of the sample urban informal enterprises is analysed by incorporating four basic components of financial access—savings, credit, insurance, and payments—made through the banks. People save through saving accounts, current accounts, recurring deposit accounts, and fixed deposit accounts. Approximately 97.4 per cent of the sample enterprises have savings accounts, and only 10.3 per cent have current accounts, which are not satisfactory. Moreover,

around 5.8 per cent of the sample enterprises have recurring deposits, and 6.4 per cent have fixed deposit accounts. Another dimension of financial inclusion is insurance coverage. Informal enterprises by definition cannot be separated from their entrepreneurs. Accordingly, there are two dimensions of insurance coverage, i.e., the life insurance coverage of the entrepreneur and the business insurance coverage of the enterprise. More than 51.3 per cent of the sample entrepreneurs have life insurance coverage, while 21.2 per cent have business insurance coverage. Approximately 17.3 per cent of the sample enterprises make payments of their business partly through banks, while the rest do not carry out any transactions through banks.

TABLE II
PERCENTAGE OF SAMPLE ENTERPRISES HAVING ACCESS TO
CREDIT FROM DIFFERENT SOURCES

Sources of Credit	Percentage of Enterprises
Formal Financial Institutions	31.4
Semi-formal Financial Institutions	15.4
Friends and Relatives	3.8
Indigenous Money Lenders	1.9
No Loan Taken	53.6

Source: Calculated from Field Survey Data (June- December 2017).

Note: The column total exceeds 100 per cent, as some of the entrepreneurs avail credit from more than one source.

Here, it would be beneficial to have an idea about the sample enterprises' (entrepreneurs') access to credit. An entrepreneur may borrow from formal, semi-formal as well as informal sources. The formal financial institutions (FFI) include banks and other lending institutions; the semi-formal financial institutions (SFFI) include self-help groups, micro-finance institutions, etc., while the informal sources include indigenous money lenders, traders, friends and relatives. The unique characteristic of borrowing from friends and relatives is that the loan is interest-free. The percentage of the sample enterprises according to their access to credit from different sources is given in Table II. Approximately 47.4 per cent of the sample enterprises have had access to credit irrespective of sources, while only 31.4 per cent have taken loans from FFIs.

4.3 Depth of Financial Access of the Sample Enterprises

4.3.1 Financial Access Index (FAI)

Existing literature states that the level of financial inclusion may range from bare inclusion to super inclusion (Goyal, 2013). The adequacy of different financial services could be understood with some measure of the depth of financial

services. An index of financial access is formulated incorporating the four dimensions of financial access—savings, credit, insurance, and payment—to get an idea of the depth of financial inclusion of the sample enterprises. In one of their previous studies, Baruah & Bezbaruah (2020) constructed a similar index giving equal weights to all four components. Due to the small-scale nature of the enterprises, savings and credit are expected to have more weight than insurance and payment components. The present paper has constructed a weighted index of financial inclusion. Initially, four indices had been constructed for the four dimensions, which were then incorporated into the construction of the financial access index.

In the case of savings, we assigned a score of 2 if an entrepreneur has a current account, and a score of 1 if the entrepreneur does not have a current account but a savings account. An entrepreneur without any account is assigned a score of 0. A higher score is only assigned if an entrepreneur has both savings and current accounts. The actual saving score of the entrepreneur is divided by the maximum saving score, i.e., 2, to calculate the saving index. Thus, the Saving Index (SI) is

$$SI = \text{Saving Score}/2 \quad \text{where } 0 \leq SI \leq 1$$

In the case of credit, we assigned a score of 4 if an entrepreneur has access to credit from FFI and a score of 3 if an entrepreneur has access to credit from SSFI. If an entrepreneur has borrowed from friends and relatives, the enterprise is assigned a score of 2, and the entrepreneur who has access to credit from money lenders is assigned a score of 1. Finally, the entrepreneur who has not borrowed from any sources is assigned a score of 0. A higher score is assigned only if an entrepreneur has borrowed from more than one source. Then, by dividing the actual credit score of an entrepreneur by the maximum possible credit score, the credit index (CI) is estimated; i.e.,

$$CI = \text{Credit Score}/4 \quad \text{where } 0 \leq CI \leq 1$$

In the case of insurance, if an entrepreneur has business insurance coverage, he is assigned a score of 2. If the entrepreneur does not have business insurance but has life insurance coverage, he is assigned a score of 1. Finally, an entrepreneur with no insurance coverage is assigned a score of 0. However, an entrepreneur with access to both business insurance and life insurance is assigned a higher score. Lastly, to derive the insurance index (II), the actual insurance score of the entrepreneur is divided by the highest insurance score of 2; i.e.,

$$II = \text{Insurance Score}/2 \quad \text{where } 0 \leq II \leq 1$$

In the case of payment, we assigned a score of 2 to entrepreneurs who make all business transactions through the banks; 1, to those who make transactions partially through banks, and 0 to those who do not make any payment through the banks. Finally, the actual payment score of an entrepreneur is divided by the maximum payment score to derive the payment index (PI).

$$PI = \text{Payment Score} / 2; \quad \text{where } 0 \leq PI \leq 1$$

Assigning Weights to the Different Aspects of Financial Access

The present study assigns weights to four components of financial access based on a survey carried out on 20 entrepreneurs. These 20 entrepreneurs were asked to state their views on the relative importance of the four components of financial access. The component of financial access that was reported to be the most important one was given a score of 4, and components that ranked second and third according to their importance were given a score of 3 and 2, respectively. The least important component was given a score of 1. An equal number of entrepreneurs (nine each) gave the highest score to savings and credit. The remaining two entrepreneurs reported insurance to be the most important aspect of financial access. Out of the 20 entrepreneurs, 15 reported that payments made through the banks were the least important component of financial access for them. Subsequently, the scores given to each component were summed up. Finally, the total score of each component was divided by the grand total (sum of the total scores of the four components) to derive the weightage of that component. Accordingly, savings, credit, insurance, and payment made through the banks received weightage of 0.35, 0.30, 0.21, and 0.14, respectively.

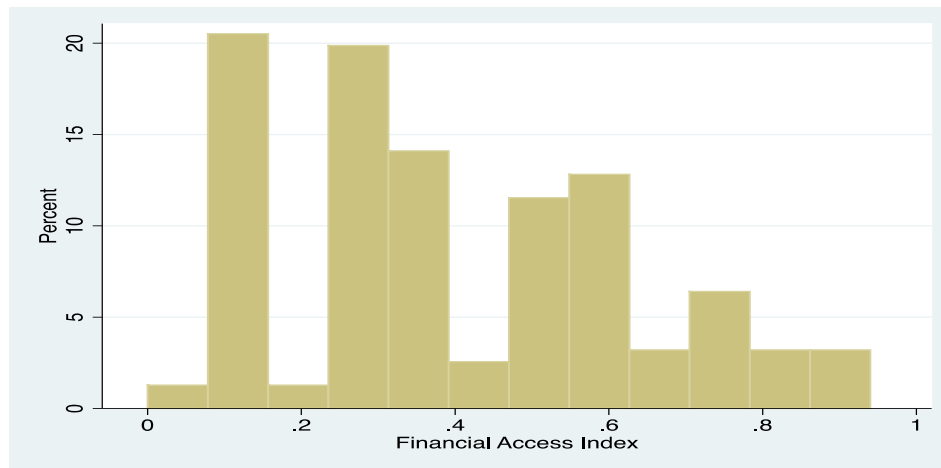
Finally, the Financial Access Index (FAI) is estimated as a weighted average of the above-mentioned four indices. Thus,

$$FAI = (SI \cdot SW + CI \cdot CW + II \cdot IW + PI \cdot PW) \quad \text{where, } 0 \leq FAI \leq 1$$

SW = Saving Weight, CW = Credit Weight, IW = Insurance Weight, and
PW = Payment Weight

The distribution of the enterprises according to their level of financial access is given in Figure 4. It can be seen that financial access is not a major problem in the study area. Only two of the sample entrepreneurs do not have access to financial services (or FAI = 0). However, the depth of financial access is not satisfactory. The majority of the enterprises' access to finance is less than 0.50.

FIGURE 4: **Distribution of the Sample Enterprises according to Depth of Financial Access**



Source: Calculated from the field survey data (June-December 2017).

4.3.2 Determinants of the Depth of Financial Access of the Sample Enterprises

An econometric model is estimated for the potential determinants of the depth of financial access of the sample enterprises. The variables involved in the regression analysis for identifying the factors influencing the extent of financial access are discussed below.

The dependent variable for the analysis is the Financial Access Index (FAI) of the sample units as defined above. The explanatory variables include the turnover of the enterprise, registration of the enterprise, age of the enterprise, and level of education of the entrepreneur. Research shows turnover, registration, and education positively impact the financial access of the enterprise (Bhavani & Bhanumurthy, 2012; Farazi, 2014). The age of the enterprise is included as an explanatory variable, as it is conceived that the older the enterprise is in terms of its establishment, the easier it is for it to access formal financial services. The surveyed enterprise owners have been grouped into three categories: the lowest category, comprising those entrepreneurs who have not completed their secondary level of education; the second category, comprising those entrepreneurs who have completed secondary education but have not graduated from colleges and universities; and the highest category, comprising of the entrepreneurs who have graduated from colleges and universities. To represent the three categories, two dummies, E1 and E2, have been used with the lowest category being the base- E1=1 for the second category and 0 for otherwise and E2=1 for the highest

category and 0 for otherwise. Furthermore, a location dummy and seven sector dummies have been included for the two locations and eight sub-sectors, respectively. Among the different sub-sectors, retail trading is considered the base category. The definitions of the explanatory variables and the expected sign of their coefficients are given in Table III.

TABLE III
DEFINITION OF THE EXPLANATORY VARIABLES ALONG
WITH THEIR EXPECTED SIGN

Sl. No.	Variable	Definition	Exp. Sign
1	Turnover (MT)	Turnover measured in monthly revenue of that enterprise (in Rupee '000)	+
2	Registration (REG)	=1, if the enterprise is registered with some government agency, otherwise 0	+
3	Age of the enterprise (AGE)	Number of years of the enterprise	+
4	Education1 (E1)	=1, if the entrepreneur is a high school graduate, but not a college graduate, otherwise 0	+
5	Education2 (E2)	=1, if the entrepreneur is a college graduate and above, otherwise 0	+
6	Location (LD)	=1, if the enterprise is in Guwahati, otherwise 0	+/-
7	Wooden Furniture (S1)	=1, if the enterprise is into manufacturing of wooden furniture, otherwise 0	+/-
8	Textile and apparel (S2)	=1, if the enterprise is into manufacturing of textile and wearing apparel sector, otherwise 0	+/-
9	Food Product (S3)	=1, if the enterprise is into manufacturing of food products, otherwise 0	+/-
10	Fabricated Metal Product (S4)	=1, if the enterprise is into manufacturing of fabricated metal products, otherwise 0	+/-
11	Repairing of M.V. (S5)	=1, if the enterprise is into repairing motor vehicles, otherwise 0	+/-
12	Land Transport (S6)	=1, if the enterprise is into land transport activity, otherwise 0	+/-
13	Restaurant (S7)	=1, if the enterprise is in the restaurant business, otherwise 0	+/-

Considering the FAI as the dependent variable and the above-mentioned explanatory variables as independent variables, the formulation of the model is done as follows:

$$FAI = f (MT, REG, AGE, E1, E2, LD., S1, S2, S3, S4, S5, S6, S7) \quad (1)$$

Functional Specification of the Model: Here, the dependent variable is the FAI and theoretically its value ranges between 0 and 1. For such dependent variable, logistic regression is appropriate, where,

$$FAI_i = \frac{1}{1 + e^{-Z_i}} \quad (2)$$

where

$$Z_i = \beta_0 + \beta_1 MT_i + \beta_2 REG_i + \beta_3 AGE_i + \beta_4 E1_i + \beta_5 E2_i + \beta_6 S1_i + \beta_7 S2_i + \beta_8 S3_i + \beta_9 S4_i + \beta_{10} S5_i + \beta_{11} S6_i + \beta_{12} S7_i + \beta_{13} LD_i + U_i$$

where, U_i is the disturbance term assumed to be normally distributed.

Equation (2) can be written as

$$FAI_i = \frac{e^Z}{1 + e^Z} \quad (3)$$

$$\text{or, } 1 - FAI_i = \frac{1}{1 + e^Z} \quad (4)$$

$$\text{or, } \frac{FAI_i}{1 - FAI_i} = e^Z \quad (5)$$

Now using logarithm, equation (5) may be transformed into a linear equation, i.e.,

$$\text{Ln} \left(\frac{FAI_i}{1 - FAI_i} \right) = \text{Ln } e^Z$$

$$\text{or } \text{Ln} \left(\frac{FAI_i}{1 - FAI_i} \right) = Z_i \quad (6)$$

or,

$$\text{Ln} \left(\frac{FAI_i}{1 - FAI_i} \right) = \beta_0 + \beta_1 MT_i + \beta_2 REG_i + \beta_3 AGE_i + \beta_4 E1_i + \beta_5 E2_i + \beta_6 S1_i + \beta_7 S2_i + \beta_8 S3_i + \beta_9 S4_i + \beta_{10} S5_i + \beta_{11} S6_i + \beta_{12} S7_i + \beta_{13} LD_i + U_i \quad (7)$$

Equation (7) can be solved using linear regression after computing $\text{Ln} \left(\frac{FAI_i}{1 - FAI_i} \right)$ from the original FAI_i values. Although the original dependent variable FAI is not normally distributed (refer to Figure 4), the Jarque-Bera test confirms that the transformed variable $\text{Ln} \left(\frac{FAI_i}{1 - FAI_i} \right)$ is normally distributed. The Breusch-Pagan test confirms the presence of heteroscedasticity in the data set. To overcome this problem, robust standard errors of the coefficients have been estimated. Furthermore, the presence of multicollinearity is also tested by computing the variance of the inflation factor. It is found that the model is free from multicollinearity.

TABLE IV
REGRESSION RESULTS FOR THE DETERMINANTS OF FINANCIAL ACCESS

Explanatory Variables	Coefficients	Robust Std. Er.
Turnover (in Rs.'000)	0.0005	0.0011
Registration (REG)	0.9735***	0.2757
Age of the Enterprise (AGE)	0.0096	0.0123
Education1 (E1)	0.0987	0.2487
Education2 (E2)	0.3395	0.3233
Location (LD.)	-0.6826***	0.2124
Wooden Furniture (S1)	-1.7721*	1.0702
Textile & Apparels (S2)	-0.4391	0.2891
Food Products & Beverages (S3)	-0.0357	0.2290
Fabricated Metal Products (S4)	0.7123**	0.3441
Trade & Repairing of M.V. (S5)	-0.4688	0.3899
Land Transport Activity (S6)	-0.1154	0.2984
Food service activity (S7)	-0.5552	0.5594
Constant	-0.6410	0.2625
R Square (R ²)		0.2513
F (13,142)		4.94***

Note: *** indicates a 1% level of significance, ** indicates 5% level of significance, and * indicates a 10% level of significance.

The results of the regression model given in Table IV show that registration of the enterprises is positively significant at a 1 per cent level, which implies that enterprises registered with some government agency have better access to financial services. Registration is the precondition to getting access to certain types of financial services. For example, a particular enterprise needs to register with the District Industrial Centres to get subsidised credit from the Department of Industries and Commerce. Similarly, registration is also important to access business insurance and current accounts. The location dummy is found to be negatively significant at a 1 per cent level showing that the enterprises in Dibrugarh have better access to financial services than those in Guwahati. Enterprises in the fabricated metal products sector have better access to financial services than those in retail trading (base category). The remaining variables do not have any impact on the financial access of the enterprises.

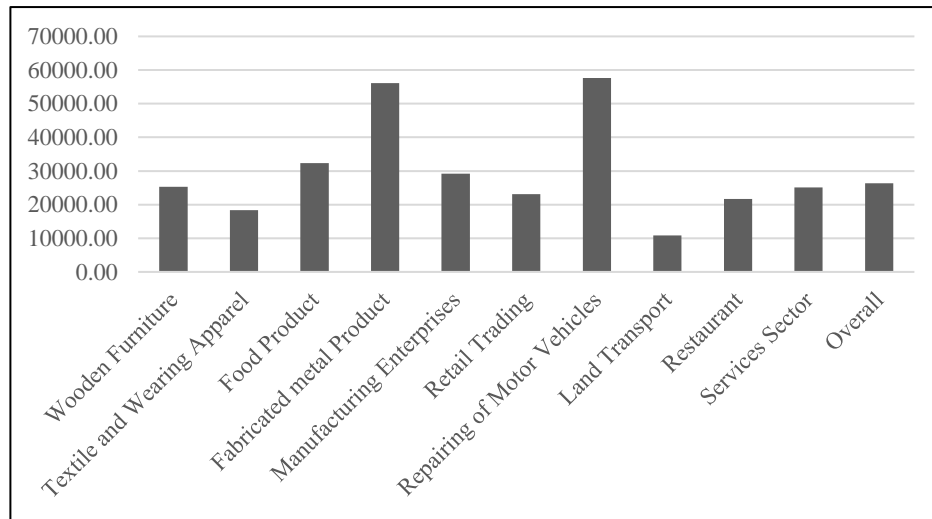
4.4 Impact of Financial Access of the Sample Enterprises on GVA

The GVA by an enterprise is an indicator of the economic contribution of the enterprise. It is calculated as the difference between total revenue and the intermediate cost.

$$\text{GVA} = \text{Total Revenue} - \text{Intermediate Cost}$$

The total revenue has two components, i.e., total sales revenue and inventory changes. Intermediate costs include the cost of raw materials, cost of electricity consumed, travel allowances, debenture allowances, telephone bills, etc. Figure 5 shows that the average monthly GVA per sample enterprise is Rs. 26,323. The average monthly GVA in manufacturing enterprises is greater than in the service sector enterprises.

FIGURE 5: Average Monthly Gross Value Added per Sample Enterprise
(in Rupees)



Source: Calculated by the author from Field Survey Data (June-December 2017).

However, informal sector enterprises range from petty traders with limited investments to small-scale industries with significantly higher investments. Enterprises with higher investments have a probability of having a higher GVA. In other words, the GVA of these enterprises is not strictly comparable. Therefore, in the present study, the GVA of the sample enterprises are scaled by the values of their fixed asset to make the GVA comparable across the sample observations. In this section, a regression model has been estimated for the factors determining the GVA with respect to the fixed asset ratio of the sample enterprises. Here, GVA scaled by the value of the fixed asset (Y) is the dependent variable.

Explanatory Variables

FAI, as discussed above, is the prime explanatory variable. The other three explanatory variables are the turnover of the enterprise, the age of the enterprise, and the level of education of the entrepreneurs. A large enterprise with a higher

turnover is expected to contribute more to the economy. The sample enterprises have been classified under three ordered categories for the level of education. Two dummies have been used (as discussed in section 4.3.3) to represent the three categories. The age of the enterprise is included as an explanatory variable because it is held that an enterprise established for a number of years now is in an advantageous position to perform better than a newly established one. Seven dummies are included for the eight sub-sectors, considering retail trading as the base category. In addition, one location dummy is included for two locations. The definition of the explanatory variables, along with the expected sign of their coefficients, is given in Table V.

TABLE V
DEFINITION OF THE EXPLANATORY VARIABLES ALONG WITH THE
EXPECTED SIGN OF THEIR COEFFICIENTS

Sl. No.	Variable	Definition	Exp. Sign
1	Turnover (MT)	Measured by monthly revenue of an enterprise (in Rs.*000)	+
2	Financial Access Index (FAI)	Measured by the value of financial access index	+
3	Age of the enterprise (AGE)	Number of years of the enterprise	+
4	Education1 (E1)	=1, if the entrepreneur is a high school graduate, but not a college graduate, otherwise 0	+
5	Education2 (E2)	=1, if the entrepreneur is a college graduate or above, otherwise 0	+
6	Location (LD.)	=1, if the enterprise is located in Guwahati, otherwise 0	+/-
7	Wooden Furniture (S1)	=1, if the enterprise is into manufacturing of wooden furniture, otherwise 0	+/-
8	Textile and wearing apparel (S2)	=1, If the enterprise is into manufacturing of textile and wearing apparel sector, otherwise 0	+/-
9	Food Product (S3)	=1, if the enterprise is into manufacturing of food products, otherwise 0	+/-
10	Fabricated Metal Product (S4)	=1, if the enterprise is into manufacturing of fabricated metal products, otherwise 0	+/-
11	Repairing of M.V. (S5)	=1, if the enterprise is into repairing of motor vehicle, otherwise 0	+/-
12	Land Transport (S6)	=1, if the enterprise is inland transport activity, otherwise 0	+/-
13	Restaurant (S7)	=1, if the enterprise is in the restaurant business, otherwise 0	+/-

Functional Specification of the Model: Given that GVA scaled by the value of the fixed asset (Y) is the dependent variable and the above-mentioned explanatory variables as independent variables, the model is formulated as follows:

$$Y = f(\text{FAI, MT, AGE, E1, E2, LD., S1, S2, S3, S4, S5, S6, S7}) \quad (8)$$

Theoretically, the dependent variable Y may take any positive or negative values; so linear regression is admissible here. The model may be written as:

$$Y_{1i} = \beta_0 + \beta_1 (MT_i) + \beta_2 (FAI_i) + \beta_3 (E1_i) + \beta_4 (E2_i) + \beta_5 (AGE_i) + \beta_6 (LD_i) + \beta_7 (S1_i) + \beta_8 (S2_i) + \beta_9 (S3_i) + \beta_{10} (S4_i) + \beta_{11} (S5_i) + \beta_{12} (S6_i) + \beta_{13} (S7_i) + U_i \quad (9)$$

where U_i is the disturbance term which is assumed to be normally distributed. The Breusch-Pagan test confirms the presence of heteroscedasticity in the data set. To overcome this problem, robust standard errors of the coefficients have been estimated. Additionally, the presence of multicollinearity is also tested by computing the variance of the inflation factor. It is found that the model is free from multicollinearity.

TABLE VI
RESULTS OF THE LINEAR REGRESSION FOR THE DETERMINANTS OF
GVA OF THE SAMPLE ENTERPRISES

Explanatory Variables	Coefficient	Robust S.E
Financial Access Index (FAI)	0.3553	0.9911
Turnover (MT)	0.0075	0.0054
Age of the Enterprise (AGE)	-0.0193	0.0188
Education1 (E1)	-0.9089	0.7075
Education2 (E2)	0.4601	0.9630
Location (LD.)	2.0967***	0.6519
Wooden Furniture (S1)	-0.5603	0.7973
Textile and Wearing Apparels (S2)	-1.5636**	0.6675
Food Product (S3)	-0.5836	1.1858
Fabricated Metal Prod. (S4)	-2.0163*	1.0557
Repairing M.V (S5)	-1.5104	1.8831
Land Transport (S6)	-0.9282**	0.3656
Restaurant (S7)	-1.6117**	0.7378
Constant	1.2167**	0.5298
R square		0.1868
F(13,142)		5.13***

Note: *** represents a 1% level of significance, ** represents a 5% level of significance, and * indicates a 10% level of significance.

The results presented in Table VI show that financial access does not have a significant effect on the GVA of an enterprise. One of the probable reasons is that a large percentage of the sample enterprises have not borrowed from external sources. Their own fund is the only source of investment in the business. However,

these enterprises have failed to meet the payment requirements to the raw material suppliers, which may be considered a deferred payment or, in a sense, a form of borrowing. The enterprises in Guwahati have performed significantly better than those in Dibrugarh. The coefficients of the textile and apparel sector, fabricated metal product sector, land transport sector and restaurant business are negative but significant, which means that the performances of the enterprises in these sectors are weaker than those in the retail trading (base category).

V. CONCLUSION AND POLICY IMPLICATIONS

A large percentage of the sample entrepreneurs depend on their own funds and credit from informal sources for financing their businesses. However, starting a business through self-contribution by way of investing only from own funds increases the risk level of the enterprise. Moreover, scaling up any business by depending primarily on its own funds is difficult, especially for the informal sector enterprises. There is a need for credit, and most entrepreneurs have reported financial access to credit as a constraint they face. In addition, the sample informal entrepreneurs have limited access to business insurance. In other words, entrepreneurs themselves bear the entire risk of their business. Awareness about existing policies on insurance coverage and their importance, therefore, would be helpful for informal entrepreneurs. Awareness among the informal entrepreneurs about payments through banks is also crucial. It calls for imparting training on financial literacy among these entrepreneurs.

The results of the study show that access to financial services is not a problem in the study area. However, the depth of financial access is unsatisfactory. Among the different factors affecting the financial access of informal enterprises, registration has a positive and significant impact on their financial access. There is, therefore, the scope for coming up with more informed and targeted policies to provide credit and other financial services to the unregistered enterprises, which are relatively small in size. Furthermore, financial access has no impact on the economic contribution of the sample enterprises. It may be due to the exclusion of a larger percentage of informal enterprises from credit and other financial services.

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