Does Access to Credit Reduce Inequality? Evidence from Bangladesh

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Abstract:

The study intends to assess the impact of access to credit on the inequality of households. The analysis is based on a household-level survey of 3,481 (N=3,481) households. The sample households have been selected randomly from 140 villages from the different parts of the country. The inequality has been estimated at the household level through calculating the log mean deviation of per capita consumption expenditures of households. The log mean deviation of per capita consumption expenditures of a household reflects how far that household deviates from the mean. The multivariate results indicate that access to credit significantly reduces inequality in the society as it significantly and negatively determines the log mean deviation of per capita consumption expenditures of households and there is a U-shaped relationship between the total amount of credit and inequality.

Keywords: Inequality, Access to Credit, and Bangladesh.
JEL Codes: G21, I32

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1.1 Introduction

Access to capital has been recognized as one of the factors that contribute to the higher level of welfare of households. In developing countries, the formal sector financial institutions exclude poor households through the collateral requirement, credit rationing, preference for high-income clients, bureaucratic and lengthy procedures of loan sanctions. On the other hand, informal sector financial sources are exploitative in nature (Bhaduri 1983, Rao 1980, Bardhan 1980, Ghosh 1986, Ghate 1992, Flotz 2004, Pertick 2005). The credit constraint has a gender characteristic (Arenius and Minniti 2005). Women are more likely to be constrained than men in terms of accessing capital for starting new businesses (Fletschner 2008). The better access to credit reduces the liquidity constraint that individuals face. Singh, Square, and Strauss (1986) argue that the relaxation of the liquidity constraint of a household contributes to the better allocation of resources, increases production, increases income and welfare. Foltz (2004) argues that easing of credit constraint significantly increases the profitability of agricultural firms. Imperfections in the financial capital markets significantly contribute to the allocative inefficiency in the production of firm households (Chavas et. al. 2005). Access to microcredit increases income and consumption of households and thus, reduces poverty of participating households (Chowdhury et. al. 2005, Chowdhury and Khandker, 1996). The welfare effect of easing women's credit constraints on the entire family is more than easing men's credit constraints (Kabeer 2001).

The financial development in a country increases access to credit for the people in the country as it reduces imperfection in the credit markets and makes credit cheaper through reducing the transaction cost (Beck and Demirguc-Kunt, 2004; Honohan, 2004). The empirical literature indicates that financial development does not only promote economic growth, but it also reduces poverty. The literature also indicates that access to finance has positive impacts on income and welfare of the people of a country and thus, it has a

negative impact on the poverty in the society (Clareke et al., 2006; Bittercourt, 2006; Dollar and Kraay 2002; Honohan 2004; Beck et al. 2004; Odhiambo 2009, 2010).

The reduction of poverty in the society does not necessarily reduce inequality in the same society (Creedy, 1998). There is evidence in the literature that the inequality in the society might goes up even when the poverty level goes down. Regarding the relationship between financial development and inequality, the empirical findings are not straightforward like the relationship between financial development and economic growth. It is well accepted in the literature that financial development led financial deepening contributes significantly and positively to economic growth in the long run (Ang and Mckibbin, 2007; Beck et al., 2000; Demetriades and Hussein, 1996; Demirguc-Kunt and Levine, 2002; Levine, 1997). In the quest for understanding the relationship between financial development and inequality, researchers have identified three hypotheses (Tan and Law, 2012): (1) the financial development contributes to widening of inequality; (2) the financial development contributes to narrowing inequality; and (3) there is an inverted U-shaped relationship between financial development and inequality.

According to the widening gap hypothesis, financial development through financial deepening benefits rich and powerful people in the society when governance is very weak due to lower quality of institutions which are important for ensuring the governance in the society (Banerjee and Newman, 1993; Galor and Zeira, 1993). As per this hypothesis, it is argued that financial development induced financial deepening does not ensure access to credit for everybody in the society. The people who are wealthy have enough to provide with collateral to commercial banks can only have access to credit. Those who lack the required collateral for getting a loan are left behind. As a result, the extent of the inequality widens despite an increase in the availability of loanable funds in the economy. The inequality narrowing hypothesis indicates that the individuals who were not given loans before receiving loans due to financial development induced financial deepening. As a result, the income level of these people goes up and thus, the level of inequality reduces and that also contributes to poverty reduction in the society (Banerjee and Newman, 1993; Galor and Zeira, 1993; World Bank, 2001). Jalilian and Kirkpatrick

(2002) argue that financial development can help policymakers in achieving the objective of reducing poverty in developing countries. Using a cross-country data set, Kai and Hamori (2009) argue that the microfinance sector development has the potential to reduce inequality in a country as it allows poor people to receive credit without collateral and as it gives preference to women in giving loans. Finally, the inverted U-pattern hypothesis illustrates that the relationship between financial development and inequality in non-linear. The higher availability of credit does not ensure credit for everybody at the beginning. Due to market imperfections at the beginning, credit remains out of reach for the poorer section of the society due to high cost and other non-price barriers. The richer section of the society gets the benefits of the increased level of the availability of credit as they can afford the high cost and overcome non-rice barriers and consequently, the income level of the richer section goes up at the beginning and thus, inequality in the society widens. However, the inequality situation improves gradually. At the higher level of economic growth and financial development, access to credit for the poorer section goes up as it becomes affordable to them and thus, the income level of the poorer section goes up and the level of inequality narrows down (Greenwood and Jovanovic, 1990).

The available literature on the relationship between financial development and inequality has looked into the issue from the macroeconomic perspective. The majority of the studies have been done using cross-country panel data sets. Some studies have been done at the country level using time series macro data. A few studies have examined the issue at the regional level within the country. None of the available studies has looked into the issue at the micro level. Therefore, there is a gap in the literature in terms of the assessment of the relationship between financial development and inequality at the microeconomic level. Considering this gap in the literature, this paper intends to assess the relationship between access to credit and inequality at the household level in Bangladesh considering access to credit as an indicator of financial development. The analysis is based on a household-level survey of randomly selected three thousand four hundred and eighty-one (*N=3481*) households. The inequality has been estimated at the household level through calculating the log mean deviation of per capita consumption expenditures of households.

The article finds that access to credit has a significant and negative impact on the inequality in the society as it negatively determines the log mean deviation of per capita consumption expenditures of households. Similarly, the results also indicate that the total amount of household credit significantly and negatively determines the log mean deviation of per capita consumption expenditures of households and thus, it reduces the level of inequality. There is a non-linearity in the relationship between total amount credit and inequality. At the beginning when the amount of credit is relatively lower, the level of inequality reduces up to a certain amount of credit. After that level, the level of inequality goes up with the increase in the total amount of credit. In contrary to the inverted U-shaped hypothesis in the relationship between financial development and inequality, the article finds a U-shaped relationship between the total amount of credit and inequality.

This paper is divided into five sections. The second section presents the estimation strategy. The third section describes the survey design of this study. In the fourth, results are presented. Finally, the conclusion of the paper is presented.

2.0 Estimation Strategy:

Using multivariate models, this paper tries to assess the impact of access to credit on the inequality at the household level. The following models have been formulated for achieving the objectives of the paper.

$$Y_{ij} = \beta ACCESS_j + \Sigma \varphi X_{ij} + \Sigma \delta Z_j + u_i \quad (1)$$

$$Y_{ij} = \eta LOAN_j + \Sigma \varphi X_{ij} + \Sigma \delta Z_j + u_i \quad (2)$$

$$Y_{ij} = \eta LOAN_{ij} + \varpi SLOAN_{ij} + \Sigma \varphi X_{ij} + \Sigma \delta Z_j + u_i \quad (3)$$

$$Y_{ij} = \Sigma \vartheta LS_{ik} + \Sigma \varphi X_{ij} + \Sigma \delta Z_j + u_i \quad (4)$$

Where Y_{it} reflects the extent of the inequality at the household level. It has been defined in the following way:

$$Y_{ij} = In(\frac{\bar{C}}{c_{ij}}). \quad (5)$$

In equation 5, following Theil L inequality index, Y_{it} is the log mean deviation of per capita weekly consumption expenditure of households (C_{ij}). The Theill L index (T_L) is constructed using the following formula, where y is the per capita income.

$$T_L = \frac{1}{N}\sum_{i=1}^{n} \ln(\frac{\bar{y}}{y_i}) \quad (6)$$

The higher Y_{it}, i.e. log mean deviation, of a household, reflects the higher level of the deviation of per capita consumption expenditures of that household from the mean. The level of inequality goes up in a society when the aggregate log mean deviation of all households goes up. Therefore, Y_{it} reflects the level of inequality at the household level. In equations 2 to 4, *X* and Z are vectors of some control variables at household and village level that are assumed to be exogenous (for example, education of the household head, the existence of electricity in the household, etc.). Four types of specifications of access to credit have been formulated to assess the impact of these on the inequality at the household level. In equation 1, ACCESS is dummy variable which takes 1 if the household has access to credit and 0 otherwise. In equation 2, LOAN is the total amount of credit a household has taken from different sources. These two variables (i.e. ACCESS and LOAN) are going to examine the inequality widening and inequality narrowing hypotheses of the relationship between financial development and inequality (Banerjee and Newman, 1993; Galor and Zeira, 1993). In equation 3, a quadratic term of LOAN (LOANS) has been incorporated to understand the non-linearity in the relationship between credit and inequality. This variable (LOANS) is going to examine the inverted U-shaped hypothesis of the relationship between financial development and inequality (Greenwood and Jovanovic, 1990). In equation 4, the amounts of credit from different sources have been included to examine contributions of these sources to the inequality separately. These sources are commercial banks (LOANCB), microfinance institutions

(LOANMF), community-based organizations (LOANCBO), non-government organizations (LOANNGO), local money lenders (LOANML), friends and relatives (LOANFF), and finally, goods and services suppliers (LOANS).

Besides incorporating variables related to access to credit on the right side of the model, other regressors related to characteristics of households and villages have been incorporated to control for their impacts on the log mean deviation of per capita consumption expenditures of households. These other regressors include: two dummy variables that are related to the employment status of household heads: agriculture (EMPAG) and daily labor (EMPDL); one variable related to the total number of household members (MEMBERS); two variables related to the demographic information of household heads: age (AGE) and sex (MALE); one variable that is associated with the education level of the household head (EDUHEAD); one variable related to the religion of the household (MUSLIM); two variables on the size of household land ownership: irrigated land (LANDIRR), and non-irrigated land (LANDNIRR); two variables on the size of household non-land assets: productive assets (PASSETS) and livestock (LSTOCK); two dummy variables on survey areas: flood affected area (FLOOD) and cyclone affected area (SIDR); seven village-level variables: distance of a household from the nearest paved road (ROAD), distance of a household from the nearest school (SCHOOL), existence of electricity (ELECTRICITY), extent of river erosion in the village (RIVERERO), number of households (NHHS), number of homeless people (HOMELESS), and the number of persons migrated (MIGRATION).

3.0 Data:

The analysis is based on a household-level survey of randomly selected three thousand four hundred and eighty-one (*N=3481*) households from 140 villages in different parts of the country. Besides information on consumption and access to credit, the survey collected detailed information from all households on a variety of other factors such as demographic information (age, sex, marital status, etc.) and socio-economic information (education, employment, assets, microcredit etc.). The survey also collected detailed

village-level information such as the distance of a household from the nearest primary school, secondary school, market and district headquarters, along with variables describing village infrastructure such as the presence of schools, markets, roads, electricity, etc.

4.0 Results

Table 1 shows the estimated results of the equation 1. The results indicate that the access to credit (ACCESS) negatively determines the log mean deviation of per capita consumption expenditures of households and it is statistically significant. It means that access to credit has a significant and negative impact on the inequality in a society as it helps households to increase their income through investing in income-generating activities. The similar results are also reflected in the results in table 2. The results show that the total amount credit (LOAN) of a household has a significant and negative impact on the log mean deviation of per capita consumption expenditures of households. This result illustrates that the amount of credit reduces inequality at the household level. These results confirm the inequality narrowing hypothesis of Benerjee and Newman (1993) and Galor and Zeira (1993). The quadratic term of the amount of credit (LOANS) has a positive coefficient and it is statistically significant. It means that the relationship between the amount of credit and the log mean deviation is non-linear and it is U-shaped. The increase in the total amount of credit reduces inequality up to a certain level and it increases inequality after that level. The reason might be that the amount of credit reduces inequality of those households, which have income below the mean level, through enhancing their abilities to invest in income generating activities and the same credit increases the inequality of those households which belong above the mean income level through increasing their income further away from the mean level. This result contradicts the Greenwood-Jovanovic inverted U-shaped hypothesis in the relationship between financial development and inequality (Greenwood and Jovanovic, 1990).

Table 3 shows the estimated results of the equation 3. The results indicate that out of seven credit sources, five sources have negative impacts on the inequality of households

and the remaining two sources have positive impacts on the same inequality. The credit from formal sector commercial banks (LOANCB) has a significant and negative impact on log mean deviation of per capita consumption expenditures of households. The reason might be that commercial banks are cheaper than other sources of credit in Bangladesh in terms of the interest rate. Surprisingly, loans from microfinance institutions (LOANMFI) significantly positively increase inequality. This result indicates that microcredit loans make some households poorer and make some households richer. The probable reasons are that poorer households have lesser number of income generating opportunities due to poor capital bases and they fail to utilize their loans from microfinance institutions. Moreover, effective interest rates of loans from microfinance institutions are higher than loans from commercial banks and the repayment structure of these loans is totally different from that of loans from commercial banks. Loans from commercials banks are repaid at the end of the maturity and loans from microfinance institutions are repaid on a weekly installment basis and the repayments start immediately after the disbursement of the loan. Households which do not have entrepreneurial qualities and enough investable opportunities, instead of investing microcredit loans, these households consume these loans and they take more microcredit loans to pay off existing microcredit loans and thus, they fall into a trap of a vicious cycle of microcredit loans. Through this process, these households become poorer and the level of inequality in the society goes up. On the other hand, households, which have more investable opportunities due to higher levels of capital bases, invest microcredit loans and increase their income. Through this process, these households become richer and hence, they go further away from the mean and the inequality as a whole in the society goes up.

The results in Table 3 also illustrates that loans from community-based organizations (LOANCBO) have negative impacts on the level of inequality in the society. It means that loans from community-based organizations enable households living below the mean income to increase their income through investing them in income generating activities and thus, these loans reduce the of inequality in the society. However, the coefficient of LOANCBO is not statistically significant. Like loans from microfinance institutions, loans from NGOs (LOANNGO) have also positive impacts on the inequality. Loans from

NGOs are similar to loans from MFIs. Like the positive relationship between loans from microfinance institutions and inequality, probably the same reasons are also working on the positive relationship between loans from NGOs and the inequality. The loans from money lenders (LOANML) reduce the inequality. But, the result is not statistically significant. Usually, money lenders are exploitative, but households can easily acquire these loans from money lenders. The easy accessibility of these loans by households might be the main reason behind the negative relationship between these loans and the inequality as the easy accessibility enables poor entrepreneurial households to get the required amount of fund for starting income generating activities easily and quickly and thus, it reduces inequality. On the other hand, loans from family members and friends (LOANFF) have significant and negative impacts on the inequality. This result is logical in the sense that the terms and conditions of loans from family members and friends are easier and the interest rates are zero in most of the cases. These easy terms and conditions are likely to be the reasons behind the negative relationship between these loans and the inequality. Finally, loans from suppliers (LOANS) have negative impacts on the inequality. But, it is not statistically significant. Usually, households which have businesses take loans from suppliers in kind and these loans are paid back after selling the supplied finished product or finished products made from supplied raw materials. As these loans help some households to earn some extra income without any additional capital or incurring any costs, the relationship between loans from suppliers and the inequality is negative.

5.0 Conclusion

This paper intends to assess the role of access to credit, along with other household and village level characteristics, on the inequality. The inequality has been estimated at the household level through calculating the log mean deviation of per capita consumption expenditures of households. The log mean deviation of per capita consumption expenditures of a household reflects how far that household deviates from the mean in terms of per capita consumption expenditures. The inequality in a society as a whole is estimated through calculating the average log mean deviation of per capita consumption

expenditures of all households in that society. The analysis is based on a sample survey of three thousand four hundred eighty-one *(N=3,481)* households.

The results indicate that access to credit has a significant and negative impact on the inequality in the society as it negatively determines the log mean deviation of per capita consumption expenditures of households. Similarly, the results indicate that the total amount of household credit also significantly and negatively determines the log mean deviation of per capita consumption expenditures of households and thus, it reduces the level of inequality in the society. The results also indicate that there is a U-shaped relationship between total amount credit and inequality. Out of seven credit sources, five sources have negative impacts on the inequality at the household level and the remaining two sources have positive impacts on the same inequality. Loans from commercial banks, community-based organizations (CBOs), money lenders, family members and friends and suppliers negatively determine the log mean deviation of per capita consumption expenditures of households and thus, inequality in the society. Out of these sources, only loans from commercials banks and loans from family members and friends significantly and negatively determines the log mean deviation of per capita consumption expenditures of households. On the contrary, loans from microfinance institutions (MFIs) and non-government organizations (NGOs) positively determine the log mean deviation of per capita consumption expenditures of households and consequently, the inequality in the society. Out of these two sources, only the variable on loans from MFIs is statistically significant.

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Table 1: Determinants of Inequality and Access to Credit by Households

VARIABLES	Equation 1 (Access to Finance)
ACCESS	-0.0394***
RELIGION	0.0205
MEMBERS	0.116***
AGE	-0.00420*
AGE Square	2.74e-05
SEX	-0.148***
HEADEDU	-0.00670**
EDUMALE	-0.00918***
EDUFEMALE	-0.00711***
EMPAG	-0.102***
EMPDL	0.0194
LANDIRR	-9.23e-07
LANDNIRR	-0.000283***
ASSETSP	-0.0349***
LSTOCK	-0.0162***
RIVERERO	-0.000232*
NHHS	1.46e-05
HOMELESS	0.000113
MIGRATION	0.000107***
ROAD	0.00339
SCHOOL	0.00355
ELECTRICITY	-0.00439
FLOOD	-0.0421*
SIDR	-0.0662***
Constant	0.386***
Observations	3113
R-squared	0.252

*** p<0.01, ** p<0.05, * p<0.1

Table 2: Determinants of Inequality and Total Loan Amount of Households

VARIABLES	Equation 2 & 3 (Total Household Loan Amount)	
	Linear	Quadratic
LOAN	-6.93e-07***	-1.87e-06***
LOANS		2.07e-12***
RELIGION	0.0231	0.0220
MEMBERS	0.116***	0.117***
AGE	-0.00431*	-0.00413
AGE Square	2.92e-05	2.80e-05
SEX	-0.147***	-0.147***
HEADEDU	-0.00630**	-0.00596**
EDUMALE	-0.00917***	-0.00899***
EDUFEMALE	-0.00671***	-0.00668***
EMPAG	-0.100***	-0.0998***
EMPDL	0.0184	0.0183
LANDIRR	-8.01e-07	-7.98e-07
LANDNIRR	-0.000276***	-0.000279***
ASSETSP	-0.0357***	-0.0351***
LSTOCK	-0.0162***	-0.0162***
RIVERERO	-0.000223	-0.000222
NHHS	1.61e-05	1.77e-05
HOMELESS	0.000102	9.01e-05
MIGRATION	0.000102***	0.000101***
ROAD	0.00324	0.00328
SCHOOL	0.00368	0.00389
ELECTRICITY	-0.00307	-0.00599
FLOOD	-0.0415*	-0.0378*
SIDR	-0.0629**	-0.0575**
Constant	0.375***	0.365***
Observations	3113	3113
R-squared	0.254	0.256

*** p<0.01, ** p<0.05, * p<0.1

Table 2: Determinants of Inequality and Different Sources of Credit

VARIABLES	Equation 4 (Credit Sources)
LOANCB	-2.13e-06***
LOANMFI	1.69e-06*
LOANCBO	-2.81e-06
LOANNGO	4.68e-08
LOANML	-2.75e-07
LOANFF	-1.93e-06**
LOANS	-1.15e-06
RELIGION	0.0231
MEMBERS	0.115***
AGE	-0.00395
AGE Square	2.65e-05
SEX	-0.149***
HEADEDU	-0.00588**
EDUMALE	-0.00887***
EDUFEMALE	-0.00622***
EMPAG	-0.0981***
EMPDL	0.0172
LANDIRR	-8.41e-07
LANDNIRR	-0.000275***
ASSETSP	-0.0363***
LSTOCK	-0.0164***
RIVERERO	-0.000226*
NHHS	1.78e-05
HOMELESS	0.000101
MIGRATION	0.000102***
ROAD	0.00339
SCHOOL	0.00398
ELECTRICITY	-0.00377
FLOOD	-0.0387*
SIDR	-0.0634**
Constant	0.369***
Observations	3114
R-squared	0.267

*** p<0.01, ** p<0.05, * p<0.1