The relationship of microcredit with the standard of living of people of a developing country: A study on Bangladesh

Tahmina Akter

Abstract: The objectives of the study are measuring the real impact of microcredit on standard of living on the people of Bangladesh and finding out the relationship of microcredit with economic indicators like GDP per employed person, health expenditure, food deficit, household consumption and labor force. Though microcredit is playing an important role in the economy of Bangladesh, only a few studies have done on overall impact of microcredit on the living standard of people. To find out if there is any cause and effect relationship among microcredit and other economic factors and to find out whether microcredit has positive impact on economy of a developing country. Unit root test, granger causality test, single equation co-integration test and correlation analysis are done. Granger causality test says that labor force causes GDP per employed person and health expenditure. There is no cause-effect relationship between microcredit and other variables. Unit root was found in household consumption and therefore not used in further analysis. From the analysis, it is visible that microcredit has co-integration with standard of living of the people of Bangladesh.Also, Microcredit is highly positively correlated with GDP per employed person, Health expenditure and labor force at 97%, 97% and 94% respectively. Microcredit has a 63% negative correlation with food deficit.

Keywords: Microcredit, Quality of Life, Savings, Food deficit, Granger Causality, GDP per Employed Person, Health Expenditure

---

Introduction:

Microcredit is very small amount of financial support provided without collateral designed specially so serve poor people and rural women(Microfinance and microcredit, 2016). The concept of microcredit was introduced in Bangladesh by the noble laureate professor Dr. Muhammad Yunus. He started this revolutionary project by establishing Grameen Bank at 1983. In fact, the modern concept of microcredit is originated through the Grameen Bank, Bangladesh at the village named Jobra at Chittagong, Bangladesh. Later, world's largest NGO Brac, and organization like ASA followed Grameen Bank.

In spite of being a widely accepted concept, microcredit is attacked by some criticism also. Economist like Esther Duflo (2012) claimed that microcredit has no impact on poverty alleviation, gender discrimination, expense, savings and quality of life. This report is designed to find out the impact of microcredit on a developing country. Bangladesh can be an ideal country for this study as a developing country and the pioneer of Microcredit.

Literature review:

According to **Barofsky, (2011),**Quality of life is the standard of health, consumption, expenditure, income and basic needs enjoyed by a person or group of people.Quality of life is a general wellbeing including physical and mental health, family, employment, education, wealth etc.

According to **Wen Cong Lu, (2011)**, microcredit played a vital role in changing the life of rural people. Especially rural women having microcredit are financially independent, have more income and savings.

According to **Osmani, L. (2007)**, micro-credit is essentially the dispersion of small collateral-free loans to jointly liable borrowers in groups in order to foster income generation and poverty reduction through enhancing self-employment.

The report titled **'Micro-credit and Poverty Reduction'** was written by, **H.I. Latifee (2013)** from Grameen Trust. In this report, he highlighted the impact of microcredit on poverty reduction, the improvement of women along with economic impacts of micro credit and Grameen Bank in Bangladesh. He critically analyzed the economic impact of microcredit on savings and coping capacity.

Islam, A. (2015), evaluated the impact of microcredit on poverty reduction from both subjective and objective point of view. The sample size is 950 credit takers of different NGOs. From a logit regression on collected data he found that microcredit has contribution on subjective and lower objective poverty.

According to **Aktaruzzaman, K. (2013)**,microcredit is reducing poverty by providing loan to people unable to take collateral. By doing this, microcredit is helping people living below poverty line.

S. Sultan and S. S. Hasan (2010) analyzed the impact of microcredit on rural women's economic empowerment on the area of Gazipur districts. Their total respondents were 90 divided into two groups where one group takes credit from Brac and another group from other NGOs. They found that microcredit increased their income, savings and overall quality of their life.

In the study of **Ayayi(2012)** at his study named **Micro-credit and Micro-equity: The David and the Goliath of Micro-enterprise Financing**suggest that mixing microcredit with micro equity can generate better result. In this study the author showed the relationship among stockholder and lender of a microfinance institution.

The study of **Islam, Md. Nazmul; Robel, K. H.; Adnan, Ashique Mahmood; Ekram, Chowdhury Shahrear(2013)** investigated the impact of microcredit on improving the standard of living through poverty reduction by survey analysis and regression model. They recommended more efficient loan recovery and loan repayment system.

Need for the study:

Being a pioneer country of microcredit, Bangladesh has a large number of microcredit holders. The range of microcredit is all over the country and it has a good contribution in the economy. In this situation, analyzing the impact of microcredit on a single area is not enough. The impact of microcredit on overall living standard of the people of Bangladesh should be studied. Also, some people criticize microcredit for high interest rate and express lack of confidence on the real impact of microfinance programs. It is crucialto investigate whether microcredit has good impact on the standard of living. It is expected that this study will add value and assist future researchers in this regard.

Objective of the study:

The objectives of the paper are to measure the real impact of microcredit on standard of living of the people of Bangladesh. Secondly, to find out the relationship of microcredit with the standard of living indicators like GDP, expenditure, per employee GDP, food deficit and employment status. The study also aims to find out if there is any cause and effect relationship among microcredit and other economic factors; and to find out whether microcredit has positive impact on standard of living a developing country.

Research methodology:

Research type: The research is qualitative in nature.Six variables are taken for this study- amount of microcredit, health expenditure, GDP contribution per employee, food deficit, household consumption and labor force. All variables are quantitative economic indicators.

Data type: Quantitative data for 20 years from 1996 to 2015 have been collected of all variables in billion US$.

Data source: All variable's data except microcredit are collected from World Bank database. Microcredit data is collected from the annual report of Microcredit Regulatory Authority, Bangladesh Bureau of Statistics and publications of Ministry of Finance.

Here a table is presented describing variables:

Table 1: Variables

Variable Name	Description
Microcredit	Amount of total microcredit provided
Food deficit	Amount of food deficit
Per Employee GDP contribution	Amount of per employee GDP contribution

Health expenditure	Expenditure in health as a percentage of GDP
Household consumption	Household consumption per year
Labor force	Number of employed person over specified period

Reasons for selecting these variables:

This study tries to find out the relationship of microcredit with different economic indicators. GDP is one of the most important indicators of economic development for a country (Ec.europa.eu, 2016). As microcredit is believed to create self-employment, increase or decrease of GDP per employed person is another indicator of economic development as well as the efficiency of microcredit. Health expenditure and household expenditure are two important measures of quality of life of people of a country. They also indicate overall the economic development of the people of a country. Labor force is another measurement by which we can perceive the increased quality of life of the people of a country (The Economist Intelligence Unit's Quality of Life Index, 2005).

The indicators in the above table are used to describe the relationship of microcredit with these factors and vice versa.

Method: At first, unit root test is done to make sure all data are stationary. After unit root test one variable 'household consumption' is removed cause data of this variable has unit root. Data of other five variables do not have unit root and they are good enough for further analysis.

With the rest five variables- amount of microcredit, food deficit, health expenditure, GDP per employed person and labor force, Granger causality test is done.

A simple equation co-integration test is conducted to find out whether the variables move together.

And finally a correlation analysis is done on microcredit and other variables.

Analysis and Findings:

Descriptive statistics:

Table 2: Descriptive statistics

	AMOUNT_OF_MICRO CREDIT	FOOD_DEFICIT	GDP_PER_EMPLOYED_PERSON	HEALTH_EXP	HOUSEHOLD_CONSUMPTION	LABOR_FORCE
Mean	91.66310	153.2500	4004.955	15.83626	4.5112	65916448

Median	70.20000	122.0000	3834.540	12.43576	3.3712	66215874
Maximum	281.6700	279.0000	5661.170	30.83347	1.1113	78976778
Minimum	2.780000	114.0000	2813.300	8.546684	1.5412	53450595
Std. Dev.	86.77123	56.19410	895.8912	7.383133	2.9512	8012869.
Skewness	0.834522	1.331227	0.386988	0.761731	0.889873	0.010643
Kurtosis	2.580571	3.160000	1.882099	2.128309	2.552361	1.782921
Observations	20	20	20	19	20	19

Source: EViews Software Analysis Result (2016)

Food deficit is highly skewed and all other variables are moderately skewed. Food deficit is mesokurtic following a normal distribution. All other variables are platykurtic with a flatter tail than a normal distribution.

Unit Root Test

To make sure the data is stationary or non-stationary unit root test is done up to second difference for all variables

Null Hypothesis	**P-statistics**	**Result**
Amount of microcredit has a unit root	0.0246	Rejected
Food deficit has a unit root	0.0001	Rejected
GDP per employed person has a unit root	0.0005	Rejected
Household consumption has a unit root	0.6800	Accepted
Health expenditure has a unit root	0.0001	Rejected
Labor force has a unit root	0.0033	Rejected

Jorgenson, Jorgenson and Lau, 2002). Null hypothesis is rejected for all variables except household consumption because p statistic is less than 0.05 for all other variables except household consumption. So, no variable has unit root and all data are stationary.

Household consumption has unit root at p>0.05 and it is removed from further analysis.

Now the data is good enough for further analysis.

Source: EViews Software Analysis Result (2016)

Granger causality test:

Table 3: Granger causality test

Pairwise Granger Causality Tests
Sample: 1 20
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.

1.Food deficit does not Granger Cause Amount of microcredit	18	0.14917	0.8629
2. Amount of microcredit does not Granger Cause Food deficit		0.94488	0.4139
3.GDP per employed person does not Granger Cause Amount of microcredit	18	3.38585	0.0655
4. Amount of microcredit does not Granger Cause GDP per employed person		0.94619	0.4134
5. Health Expenditure does not Granger Cause Amount of microcredit	17	0.96350	0.4092
6. Amount of microcredit does not Granger Cause Health Expenditure		1.75806	0.2140
7.Labor force does not Granger Cause Amount of microcredit	17	0.40295	0.6771
8. Amount of microcredit does not Granger Cause Labor force		1.16736	0.3442
9. GDP per employed person does not Granger Cause Food deficit	18	2.05156	0.1681
10.Food deficit does not Granger Cause GDP per employed person		2.42674	0.1272
11.Health expenditure does not Granger Cause Food deficit	17	1.53323	0.2553
12.Food deficit does not Granger Cause Health expenditure		1.02938	0.3867
13. Labor force does not Granger Cause Food deficit	17	1.61556	0.2392
14. Food deficit does not Granger Cause Labor force		2.55827	0.1187
15.Health expenditure does not Granger Cause GDP per employed person	17	1.28256	0.3128
16. GDP per employed person does not Granger Cause Health expenditure		3.24847	0.0746
17. Labor force does not Granger Cause GDP per employed person	17	6.13082	0.0146
18. GDP per employed person does not Granger Cause Labor force		1.50091	0.2620
19. Labor force does not Granger Cause Health expenditure	17	6.46366	0.0124
20. Health expenditure does not Granger Cause Labor force		1.61970	0.2384

Source: EViews Software Analysis Result (2016)

From the above table it is clear that there is a cause-effect relationship only for 2 sets of variables they are (1) labor force and health expenditure, (2) Labor force and GDP per employed person. So,null hypothesis 17 and 19 is rejected with a p value<0.05. All other null hypothesis is accepted at a p-value higher than 0.05 at 5% level of significance.

There is no cause effect relationship between microcredit and other variables.

Single equation co-integration test:

According to z-statistics null hypothesis are rejected at p<0.0001 at 5% level of significance and series are co-integrated.According to tau-statistic, null hypothesis is accepted at p>0.05 for all variables that is series are not co-integrated. As sample size is less than 30, the result of t-statistic is more acceptable.

Table 4:Single equation co-integration test

Series: AMOUNT_OF_MICROCREDIT FOOD_DEFICIT GDP_PER_EMPLOYED_PERSON HEALTH_EXP LABOR_FORCE

Sample (adjusted): 1 19

Included observations: 19 after adjustments

Null hypothesis: Series are not cointegrated

Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
AMOUNT_OF_MICROCREDIT	-5.836120	0.0545	15.66355	0.0000
FOOD_DEFICIT	-5.119851	0.1127	-35.19537	0.0000
GDP_PER_EMPLOYED_PERSON	-3.624046	0.5339	29.41058	0.0000
HEALTH_EXP	-4.579219	0.2278	28.81260	0.0000
LABOR_FORCE	-3.284665	0.6650	34.96798	0.0000

Source: EViews Software Analysis Result (2016)

Correlation:

Microcredit is highly positively correlated with GDP per employed person, Health expenditure and labor force at 97%, 97% and 94% respectively. Microcredit has a 63% negative correlation with food deficit. All correlations are significant at 0.01 level according to t-statistics and p value<0.0001.

Correlation t-Statistic Probability	AMOUNT_OF_MICROCREDIT	FOOD_DEFICIT	GDP_PER_EMPLOYED_PERSON	HEALTH_EXP	LABOR_FORCE
AMOUNT_OF_MICROCREDIT	1.000000				

FOOD_DEFICIT	-0.629985	1.000000			
	-3.344673	-----			
	0.0038	-----			
GDP_PER_EMPLOYED_PERSON	0.977829	-0.726143	1.000000		
	19.25320	-4.354583	-----		
	0.0000	0.0004	-----		
HEALTH_EXP	0.979640	-0.565301	0.971221	1.000000	
	20.11918	-2.825599	16.81277	-----	
	0.0000	0.0117	0.0000	-----	
LABOR_FORCE	0.949055	-0.817951	0.988233	0.929075	1.000000
	12.41810	-5.862286	26.63926	10.35621	-----
	0.0000	0.0000	0.0000	0.0000	-----

Conclusion:

Though microcredit is growing rapidly in Bangladesh, it is not so significant to have impact on overall economic indicators. It might have impact on microcredit takers but it does not cause any quality of life indicators and discussed variables also do not cause microcredit. In terms of t-statistics microcredit, food deficit, labor force, health expenditure and GDP per employed person series are not co-integrated. In terms of z-value, mentioned series are highly co-integrated. A good correlation of microcredit with health expenditure, GDP per employed person and labor force indicates that microcredit and quality of life are related to one another.

References:

1.Aktaruzzaman, K. (2013). The Impact of Microcredit in Rural Bangladesh: A Fuzzy Regression Discontinuity Design Approach. *SSRN Electronic Journal*.

2.Anon, (2016). [online] Available at: http://www.mra.gov.bd/images/mra_files/Publications/mraannualreport15.pdf [Accessed 30 Nov. 2016].

3.Ayayi, A. (2012). Micro-credit and Micro-equity: The David and the Goliath of Micro-enterprise Financing. *Economic Papers: A journal of applied economics and policy*, 31(2), pp.244-254.

4.Barofsky, I. (2011). Can quality or quality-of-life be defined?. *Quality of Life Research*, 21(4), pp.625-631.

5.Chowdhury, M., Ghosh, D. and Wright, R. (2012). The Impact of Micro-credit on Poverty: Evidence from Bangladesh.

6.Develtere, P. and Huybrechts, A. (2005). The Impact of Microcredit on the Poor in Bangladesh.*Alternatives: Global, Local, Political*, 30(2), pp.165-189.

7.Ennonline.net. (2016). *Lessons From a Microfinance Pilot Project in Rwanda | ENN*. [online] Available at: http://www.ennonline.net/fex/20/lessons [Accessed 31 Aug. 2016].

7.Ec.europa.eu. (2016). *Quality of life indicators - measuring quality of life - Statistics Explained*. [online] Available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/Quality_of_life_indicators_-_measuring_quality_of_life [Accessed 29 Nov. 2016].

8.Islam, A. (2015). Heterogeneous effects of microcredit: Evidence from large-scale programs in Bangladesh. *Journal of Asian Economics*, 37, pp.48-58.

9.Islam, M., Robel, K., Adnan, A. and Ekram, C. (2013). Do Microcredit Programs Ameliorate Standard of Living? Spotlight on Major Microcredit Organizations in Bangladesh. *International Journal of Economics and Finance*, 5(4).

10.Jorgenson, D., Jorgenson, D. and Lau, L. (2002). *Econometrics*. 1st ed. Cambridge, Mass.: MIT Press.

11.Latifee, H. (2013). Micro-credit and Poverty Reduction. pp.5-7.

12.Mersland, R. (n.d.). Microcredit for Self-Employed Disabled Persons in Developing Countries. *SSRN Electronic Journal*.

13.Microfinance and microcredit. (2016). *The definition of microfinance | Microfinance and microcredit*. [online] Available at: http://www.microfinanceinfo.com/the-definition-of-microfinance/ [Accessed 29 Nov. 2016].

14.Osmani, L. (2007). A breakthrough in women's bargaining power: the impact of microcredit. *Journal of International Development*, 19(5), pp.695-716.

15.Spbdmicrofinance.com. (2016). *Samoa | South Pacific Business Development*. [online] Available at: http://www.spbdmicrofinance.com/spbd-network/samoa [Accessed 31 Aug. 2016].

16.Sultan, S. and Hasan, S. (2010). Impact of Micro-Credit on Economic Empowerment of Rural Women.*A Scientific Journal of Krishi Foundat*

17.The Economist Intelligence Unit's Quality of Life Index. (2005). *World in 2005*, p.1.

18.Wen Cong Lu, (2011). Effect of microcredit program on rural *ion*, (ISSN-1729-5211), p.43. poverty alleviation: An empirical study of four major microcredit organizations at Monirampur Upazila in Bangladesh. *Afr. J. Agric. Res.*, 6(26).

Other References:

19.Data.worldbank.org. (2016). *Bangladesh | Data*. [online] Available at: http://data.worldbank.org/country/bangladesh [Accessed 30 Nov. 2016].

20.Mra.gov.bd. (2016). *Microcredit Regulatory Authority*. [online] Available at: http://www.mra.gov.bd/ [Accessed 30 Nov. 2016].