INTERNATIONAL JOURNAL OF RESEARCH IN COMPUTER APPLICATION & MANAGEMENT

IJRCM

IJRCM

A Monthly Double-Blind Peer Reviewed (Refereed/Juried) Open Access International e-Journal - Included in the International Serial Directories

Indexed & Listed at:

Ulrich's Periodicals Directory ©, ProQuest, U.S.A., EBSCO Publishing, U.S.A., Cabell's Directories of Publishing Opportunities, U.S.A., Open J-Gage, India [link of the same is duly available at Inflibnet of University Grants Commission (U.G.C.)], Index Copernicus Publishers Panel, Polandwith IC Value of 5.09 &number of libraries all around the world.

Circulated all over the world & Google has verified that scholars of more than 2592 Cities in 161 countries/territories are visiting our journal on regular basis.

Ground Floor, Building No. 1041-C-1, Devi Bhawan Bazar, JAGADHRI – 135 003, Yamunanagar, Haryana, INDIA

http://ijrcm.org.in/

CONTENTS

CALL FOR MANUSCRIPTS

We invite unpublished novel, original, empirical and high quality research work pertaining to recent developments & practices in the areas of Computer Science & Applications; Commerce; Business; Finance; Marketing; Human Resource Management; General Management; Banking; Economics; Tourism Administration & Management; Education; Law; Library & Information Science; Defence & Strategic Studies; Electronic Science; Corporate Governance; Industrial Relations; and emerging paradigms in allied subjects like Accounting; Accounting Information Systems; Accounting Theory & Practice; Auditing; Behavioral Accounting; Behavioral Economics; Corporate Finance; Cost Accounting; Econometrics; Economic Development; Economic History; Financial Institutions & Markets; Financial Services; Fiscal Policy; Government & Non Profit Accounting; Industrial Organization; International Economics & Trade; International Finance; Macro Economics; Micro Economics; Rural Economics; Co-operation; Demography: Development Planning; Development Studies; Applied Economics; Development Economics; Business Economics; Monetary Policy; Public Policy Economics; Real Estate; Regional Economics; Political Science; Continuing Education; Labour Welfare; Philosophy; Psychology; Sociology; Tax Accounting; Advertising & Promotion Management; Management Information Systems (MIS); Business Law; Public Responsibility & Ethics; Communication; Direct Marketing; E-Commerce; Global Business; Health Care Administration; Labour Relations & Human Resource Management; Marketing Research; Marketing Theory & Applications; Non-Profit Organizations; Office Administration/Management; Operations Research/Statistics; Organizational Behavior & Theory; Organizational Development; Production/Operations; International Relations; Human Rights & Duties; Public Administration; Population Studies; Purchasing/Materials Management; Retailing; Sales/Selling; Services; Small Business Entrepreneurship; Strategic Management Policy; Technology/Innovation; Tourism & Hospitality; Transportation Distribution; Algorithms; Artificial Intelligence; Compilers & Translation; Computer Aided Design (CAD); Computer Aided Manufacturing; Computer Graphics; Computer Organization & Architecture; Database Structures & Systems; Discrete Structures; Internet; Management Information Systems; Modeling & Simulation; Neural Systems/Neural Networks; Numerical Analysis/Scientific Computing; Object Oriented Programming; Operating Systems; Programming Languages; Robotics; Symbolic & Formal Logic; Web Design and emerging paradigms in allied subjects.

Anybody can submit the **soft copy** of unpublished novel; original; empirical and high quality **research work/manuscript** ***anytime*** in ***M.S. Word format*** after preparing the same as per our **GUIDELINES FOR SUBMISSION**; at our email address i.e. infoijrcm@gmail.com or online by clicking the link **online submission** as given on our website (***FOR ONLINE SUBMISSION, CLICK HERE***).

GUIDELINES FOR SUBMISSION OF MANUSCRIPT

1. **COVERING LETTER FOR SUBMISSION:**

DATED: _____

THE EDITOR
IJRCM

Subject: **SUBMISSION OF MANUSCRIPT IN THE AREA OF .**

(e.g. Finance/Marketing/HRM/General Management/Economics/Psychology/Law/Computer/IT/Engineering/Mathematics/other, please specify)

DEAR SIR/MADAM

Please find my submission of manuscript entitled '_____' for possible publication in your journals.

I hereby affirm that the contents of this manuscript are original. Furthermore, it has neither been published elsewhere in any language fully or partly, nor is it under review for publication elsewhere.

I affirm that all the author (s) have seen and agreed to the submitted version of the manuscript and their inclusion of name (s) as co-author (s).

Also, if my/our manuscript is accepted, I/We agree to comply with the formalities as given on the website of the journal & you are free to publish our contribution in any of your journals.

NAME OF CORRESPONDING AUTHOR:
Designation:
Affiliation with full address, contact numbers & Pin Code:
Residential address with Pin Code:
Mobile Number (s):
Landline Number (s):
E-mail Address:
Alternate E-mail Address:

NOTES:
a) The whole manuscript is required to be in ***ONE MS WORD FILE*** only (pdf. version is liable to be rejected without any consideration), which will start from the covering letter, inside the manuscript.
b) The sender is required to mentionthe following in the **SUBJECT COLUMN** of the mail:
New Manuscript for Review in the area of (Finance/Marketing/HRM/General Management/Economics/Psychology/Law/Computer/IT/ Engineering/Mathematics/other, please specify)
c) There is no need to give any text in the body of mail, except the cases where the author wishes to give any specific message w.r.t. to the manuscript.
d) The total size of the file containing the manuscript is required to be below **500 KB**.
e) Abstract alone will not be considered for review, and the author is required to submit the complete manuscript in the first instance.
f) The journal gives acknowledgement w.r.t. the receipt of every email and in case of non-receipt of acknowledgment from the journal, w.r.t. the submission of manuscript, within two days of submission, the corresponding author is required to demand for the same by sending separate mail to the journal.

2. **MANUSCRIPT TITLE:** The title of the paper should be in a 12 point Calibri Font. It should be bold typed, centered and fully capitalised.

3. **AUTHOR NAME (S) & AFFILIATIONS:** The author (s) **full name**, **designation**, **affiliation** (s), **address**, **mobile/landline numbers**, and **email/alternate email address** should be in italic & 11-point Calibri Font. It must be centered underneath the title.

4. **ABSTRACT:** Abstract should be in fully italicized text, not exceeding 250 words. The abstract must be informative and explain the background, aims, methods, results & conclusion in a single para. Abbreviations must be mentioned in full.

5. **KEYWORDS:** Abstract must be followed by a list of keywords, subject to the maximum of five. These should be arranged in alphabetic order separated by commas and full stops at the end.

6. **MANUSCRIPT:** Manuscript must be in ***BRITISH ENGLISH*** prepared on a standard A4 size ***PORTRAIT SETTING PAPER***. It must be prepared on a single space and single column with 1" margin set for top, bottom, left and right. It should be typed in 8 point Calibri Font with page numbers at the bottom and centre of every page. It should be free from grammatical, spelling and punctuation errors and must be thoroughly edited.

7. **HEADINGS:** All the headings should be in a 10 point Calibri Font. These must be bold-faced, aligned left and fully capitalised. Leave a blank line before each heading.

8. **SUB-HEADINGS:** All the sub-headings should be in a 8 point Calibri Font. These must be bold-faced, aligned left and fully capitalised.

9. **MAIN TEXT:** The main text should follow the following sequence:

   INTRODUCTION

   REVIEW OF LITERATURE

   NEED/IMPORTANCE OF THE STUDY

   STATEMENT OF THE PROBLEM

   OBJECTIVES

   HYPOTHESES

   RESEARCH METHODOLOGY

   RESULTS & DISCUSSION

   FINDINGS

   RECOMMENDATIONS/SUGGESTIONS

   CONCLUSIONS

   SCOPE FOR FURTHER RESEARCH

   ACKNOWLEDGMENTS

   REFERENCES

   APPENDIX/ANNEXURE

   It should be in a 8 point Calibri Font, single spaced and justified. The manuscript should preferably not exceed ***5000 WORDS***.

10. **FIGURES &TABLES:** These should be simple, crystal clear, centered, separately numbered &self explained, and **titles must be above the table/figure**. **Sources of data should be mentioned below the table/figure**. It should be ensured that the tables/figures are referred to from the main text.

11. **EQUATIONS:**These should be consecutively numbered in parentheses, horizontally centered with equation number placed at the right.

12. **REFERENCES:** The list of all references should be alphabetically arranged. The author (s) should mention only the actually utilised references in the preparation of manuscript and they are supposed to follow **Harvard Style of Referencing**. The author (s) are supposed to follow the references as per the following:

- All works cited in the text (including sources for tables and figures) should be listed alphabetically.
- Use (**ed.**) for one editor, and (**ed.s)** for multiple editors.
- When listing two or more works by one author, use --- (20xx), such as after Kohl (1997), use --- (2001), etc, in chronologically ascending order.
- Indicate (opening and closing) page numbers for articles in journals and for chapters in books.
- The title of books and journals should be in italics. Double quotation marks are used for titles of journal articles, book chapters, dissertations, reports, working papers, unpublished material, etc.
- For titles in a language other than English, provide an English translation in parentheses.
- The location of endnotes within the text should be indicated by superscript numbers.

PLEASE USE THE FOLLOWING FOR STYLE AND PUNCTUATION IN REFERENCES:

BOOKS

- Bowersox, Donald J., Closs, David J., (1996), "Logistical Management." Tata McGraw, Hill, New Delhi.
- Hunker, H.L. and A.J. Wright (1963), "Factors of Industrial Location in Ohio" Ohio State University, Nigeria.

CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

JOURNAL AND OTHER ARTICLES

- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

UNPUBLISHED DISSERTATIONS AND THESES

- Kumar S. (2011): "Customer Value: A Comparative Study of Rural and Urban Customers," Thesis, KurukshetraUniversity, Kurukshetra.

ONLINE RESOURCES

- Always indicate the date that the source was accessed, as online resources are frequently updated or removed.

WEBSITES

- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

ANALYSIS OF THE EFFECTS OF MICRO CREDIT ON RURAL HOUSEHOLD INCOME: EVIDENCE FROM RURAL MICROFINANCE PARTICIPANTS IN EASTERN TIGRAY, ETHIOPIA

HAFTOM BAYRAY, KAHSAY
LECTURER
DEPARTMENT OF ECONOMICS
MEKELLE UNIVERSITY
MEK'ELE

ABSTRACT

This paper evaluates the impact of micro credit program participation on household income. It also addresses whether gender specific participation matters or not. The study uses panel data collected by MU-IUC in two years difference. The study employs quasi experimental techniques. Specifically, Difference in Difference (DD) approach for impact analysis was used. This approach handles the time invariant bias. Accordingly, the study finds that micro credit participation significantly improves the income of poor people living in the rural areas of Eastern Tigray, Ethiopia. The result portrays that, on average total consumption expenditure increases by 35% for the participants when compared to non participants at 5 percent significance level. It seems this result is by far greater from the studies taken in Bangladesh and some other studies in Ethiopia. The following possible reasons are worth mentioning: First, majority of the respondents are living below poverty line and providing micro credit largely improves farm output and therefore their income. Secondly, we could not capture the effect of other programs such as productive safety net program. A detail of our justification is presented in the empirical part. On the other hand, the study found out women specific participation does not have significant effect on household income. Rather micro credit program has a large effect on household income when men are the program participants. However, in areas where men have control over resources and make vital decisions, comparing the heads of the families may not give a clear image regarding gender specific performances. This has good policy implications for the policy makers and donor agencies. Policy makers have to focus on enriching the poor rural community in terms of micro credit. There is also a need to bring women to micro credit and this can happen by synchronizing microfinance and other stakeholders.

KEYWORDS

Consumption expenditure, difference in difference, micro credit program impact, women specific participation.

1. INTRODUCTION AND BACKGROUND INFORMATION

Ethiopia is one of the least developed countries in Africa with a total population of 84 million (World Bank 2012 report). It is one of the poorest countries where there are a number of people living under extreme poverty. The extent of poverty in Ethiopia is severe. According to World Bank estimate, 29.6% of the population live under 1.25 dollar a day. Furthermore, the same report shows that, 17% of the total labor forces are unemployed. Agriculture is the main source of income and more than 80 % of the total population lives in rural areas. Since most of the agricultural activities are highly dependent on whether condition it is highly vulnerable. As a result poverty and food insecurity are the main challenges and fundamental issues of economic development in Ethiopia. Accordingly, the government of Ethiopia has been adopting a number of policies and strategies to alleviate poverty under the umbrella of Agricultural Development Led Industrialization (ADLI). Furthermore, the government also has been working with international donor agencies in areas that bring sustainable development and poverty reduction programs. The government has been giving special attention to MFIs as a means to reduce poverty. In response several micro finance institutions (MFIs) have established and have been operating to resolve credit access problem of the poor. Lending to the poor involves high transaction costs and risks associated with moral hazard and adverse selection problems. Moreover, the poor do not have any collateral and this makes the formal banks reluctant to provide loans. Nevertheless, several MFIs have been introduced to allow the poor access to credit. Dedebit Credit and Saving Institution (DECSI) is one of the MFIs working with the poor in the northern part of Ethiopia. DECSI is among the large microfinance institutions in Ethiopia that provides small scale credit facilities and other banking services to the poor people in the Northern part of Ethiopia. This institution was founded in 1994 to provide production earmarked micro credit to the disfavored rural and urban poor people of Tigray. It has been working exclusively with the rural poor community of North Ethiopia. As an objective, the institution focuses on poor rural and urban households in Tigray with a special focus on women. Women in rural areas face credit constraint. They are also marginalized from having access to sell their labor in off-farming activities in the rural areas. In many part of Ethiopia there is inequality in household decision making because of cultural and religious factors that favor men. Men have control over resources and therefore make major household decisions. Hence, the DESCI is striving to bridge this gap by extending credit facilities to them so that they can improve their livelihood. This paper will address the above idea and can be used as a mechanism to evaluate whether micro credit provided by DESCI improves the income of the poor. Also the paper will establish whether gender specific participation matters or not. The existing literature regarding the impact of microfinance in improving household income and reducing poverty asserts that in some cases micro finances significantly improves the income of the poor and it has a large effect when women are the program participants. Another argument is that microfinance benefits the poorest people and plays a powerful role in reducing poverty and enhancing their welfare. However, there is also evidence that microfinance does not support the poorest rural and urban people. Moreover, whether gender specific participation matters or not is questionable. Given these differences in literature this study will assess the impact of micro credit provided by DECSI in improving rural income in Eastern Zone of Tigray, Ethiopia. This paper is structured in five components; the first part provides a brief introduction about the study. The second part discusses literature review. The writer reviews literature that explains the effect of micro credit on poverty reduction amongst the poor. Based on the literature the gaps were identified and are addressed by the study. The third part deals with methodological framework. It explains the major methodological challenges in impact analysis, and how different quasi experiment techniques alleviate this problem. Finally, an appropriate and justifiable method was chosen for this research i.e. DD method. The fourth part focuses on data analysis and interpretation and it has two parts: Descriptive analysis and empirical analysis. The descriptive analysis part tests whether the counterfactual of the treated group was appropriately approximated or not. Then, the impact analysis discusses the empirical part. The fifth and last part of this research presents conclusions, policy recommendations and future research.

2. REVIEW OF LITRATURE

Different scholars have been evaluating the role of microfinance in poverty reduction. The empirical study of Khandker and Pitt (1998) depicts that micro credit significantly improves the income of poor people in Bangladesh. Furthermore, they found an interesting result explaining that micro credit has a large effect when women are the program participants. For example, according to them household annual consumption expenditure increases by 18 percent for the women participants and 11 percent for men. The poverty impact of microfinance in an economy is an argumentative issue. Some scholars argue that poverty impact of microfinance with low economic growth is modest or nonexistent. Kahandker (2003) using panel data from Bangladesh found out that microfinance benefits the poorest and plays a crucial role in reducing poverty. According to him it has a strong effect in reducing extreme poverty than moderate poverty. Similarly, Mahjabeen (2007) using computable general equilibrium (CGE) analysis found that micro credit institutions improve income, consumption, reduce income inequality and maximize welfare of the poor. He further established that microfinance create job opportunities particularly for the poor society. According to him micro finances are a strong means for alleviating poverty and enhancing welfare of the poor society. Swain et al (2008) empirically examined the effect of

microfinance in poverty reduction in the Mekong Delta community in Vietnam. Their main findings suggests that micro credit helps the poor in accumulating their livelihood asset when compared to the non participants but it could not help them escape from poverty. Furthermore, they also noted that the treated groups have improved their human capital through training and experience sharing among group members. The works of Bakhtiari (2006) shows more optimist results. Accordingly, the provision of micro credit enables the poor to manage risks, smooth consumption, improve income earning capacity and maximize welfare. On the other hand, Montgomery and Weiss (2010) found that when compared to better off borrowers, the poorest people were not significantly affected in any major ways in terms monetary measurement. But access to micro credit helps them in improving their health and educational status. This study result challenges many of the earlier scholars that advocate microfinance institutions are pro poor and the research findings that assumed it is the poorest that gains most from micro credit. There are also arguments that microfinance does not support the poorest rural and urban people. Conversely, there is a debate among scholars regarding whether micro credit lifts the poorest people above the poverty line. The size of the loan, the petty nature of the business and low skills and knowledge of the micro finance clients is challenging the poverty reduction effect of micro finances. Given these different arguments, this study assesses the effect of micro credit provided by DESCI in improving the rural income in Eastern Tigray, Ethiopia. The study further analyses whether gender differences in participation matters or not.

3. METHODOLOGICAL FRAMEWORK

The major challenge in impact analysis is finding the counterfactuals of the treated. If the counterfactual is inappropriately approximated the outcome of the method applied shows biased result. Furthermore, a method has to be designed to handle the bias created from unobserved individual and village level heterogeneity. Hence, there are a number of quasi experimental techniques to handle the problem of counterfactual and biased created by unobserved variables. There are a number of approaches to assess the impact of micro credit on household income and poverty reduction. The choice of approach basically depends on the required data and handling of selection bias. This part focuses on the different quasi experimental techniques which are commonly used in microfinance literature on impact assessment. Quasi experiments make a comparison the outcomes of an intervention with what could have happened had there not been an intervention (Hulme, 2000). Propensity Score Matching (PSM) technique is one of the quasi experiment techniques which is widely used in impact assessment of micro credit. This method ensures matching the treated and control groups through an estimated probability of participation (Hulme, 2000). The idea behind PSM is a comparison of before and after the intervention can be easily done when an identical non participants can be created by their propensity score. Once the treated and control groups are matched by their propensity score, the average treatment effect can be determined easily. PSM minimizes the problem of self selection bias which is common in micro credit by creating an identical counterfactual through propensity score matching. PSM works efficiently if the assumptions of conditionality, common support and unconfoundness are satisfied. One basic problem with PSM is the assumption that there are no unobserved variables left over. However, in reality there are unobserved variables such as motivation and entrepreneurial skill differences among farmers. Such bias cannot be cleaned by PSM.

DECSI microfinance provides individual microcredit to group of 3 to 6 members. Groups are self selected and members act as collateral. If there is any defaulter among them the whole group will be responsible and also the group will be ineligible for renewal or extension of any loan. Loan history is a crucial variable in participation but the number of loans that individuals took from the firm will not affect the outcome.

If participation is self selective it will be very difficult to measure the net impact of the program using PSM and any other type of matching. Furthermore, PSM needs large representative participants and non participants from the population. However, the number of non-participants in the survey they are too few to represent the population under consideration. Furthermore, the number of non participants as compared to the treated group has to be large enough for a good matching but the reverse has happened in this survey. Therefore, in this case using PSM will provide biased estimate. Difference in difference (DD) helps us to capture the time invariant non randomness problems in program participation that might happen because of self selection and program placement bias created in the initial stage of the program. However, this method assumes the unobserved variables are time invariant. According to Khandker (2003) endogeneity problems related to program placement and program participation is a serious issue that a researcher has to account in impact evaluation. Furthermore, empirical evidences have shown that unobserved covariates such as entrepreneur skills a household gained are a crucial element in influencing participation in micro credit over time. DD method which controls time invariant unobserved variables may not yield a consistent estimate with panel data when unmeasured determinants vary over time. In such a case an adoption of Instrumental variable method can overcome the problem. According to Pit et al (1999) the powerful method for impact assessment when regressors are endogenous is to apply the instrumental variable approach. The instrumental variable method is also one of the standard methods in non experimental studies. Unfortunately, finding a good instrumental variable which is a crucial element in this type of method is equally a difficult task. For example, Khandker and Pitt (1998) have used an IV method assuming land as an exogenous variable that determines eligibility to participate in the micro credit but they assumed that this variable is not correlated with the outcome variable which is more subjective. One can argue that the more income you have the more probability of shifting from agricultural activities then the less land you will be acquired for farm output and more likely to satisfy the land limit that micro finances set. Hence, you will be eligible for participation. Finally, to choose a method for this study it is better to look at the nature of the data and characteristics. In this survey the number of participants and non participants are 145 and 34 respectively. PSM will show a good result if larger number of eligible nonparticipants are compared to participants in the survey. Furthermore, the differences in motivation and entrepreneur skill among farmers can create biased results if adopted PSM in this study. Hence, considering panel data and if we believe there are time invariant unobservable variables, it is appropriate to use difference in difference approach. Another importance of longitudinal data analysis is that it reduces the potential for specification errors relative to cross sectional data. This study assumes there are differences in unobservable variables among farmers but as our panel data is only 2 years difference we could not expect these unobservable variables to change in this short span. We can explain the above argument from the following major justifiable reasons: Firstly, the economy in the rural areas is largely dominated by agriculture. The outcome of agriculture when it is compared with service activities is harvested in a longer period. Entrepreneur dynamism from experience takes longer time in Agriculture. In addition, the group based collateral type of micro credit accompanied by poor extension service adversely affects the behavior of farmers. Motivation to take risk and diversify farm and off farm activities is also influenced by group members. In a group based collateral any default coming from the members will be shared among them. They will be risk averse and less motivated to diversify their farm and off farm activities. To change this behavior it will take longer time. Secondly, one of the crucial elements that improve entrepreneur skill is education. However, on average the respondents in this survey are illiterate. We cannot assume an illiterate farmer can create a significant jump in education within 2 years. Thus, our study applies the DD method to assess the impact of micro credit in improving household income.

4. DATA ANALYSIS, INTERPRETATIONS AND PRESENTATION

4.1 DESCRIPTIVE ANALYSIS

Micro credit is one of the effective ways in reducing poverty. However, Poverty is a broad concept and determining the causality between micro credit and poverty is not straight forward. One way of assessing the impact of micro credit is looking at whether expenditure improves because of participation.

The data used for this study was collected by "rural finance" sub project of the socio economic research project under the Mekelle University and the Inter University Cooperation of Belgium (MU-IUC Belgium) program. The project collected data from a sample of 377 households from four representative Tabias located in three zones in Giba catchment. Giba catchment is one of the largest catchments in Tekeze basin with the highest land degradation levels, extreme poverty and high population and livestock density. The sample of households was selected randomly from the population in the study area. To avoid the problem of selection bias and assure external validity, DECSI clients were selected randomly from Tabia and Kushet. Members of the control group were selected to reflect similar socio-economic characteristics of DECSI clients. Again, these were selected from Tabia and Kushet because they have the same social, economic and infrastructural facilities.

This study uses the information from two Tabias, i.e., Rubafeleg and Tsenkanit. The two Tabias are found in Eastern Zone of Tigray. Again, the two Tabias share the same geographical location, annual rainfall, distance to market, etc. A sample of 179 households (145 participants and 34 non participants) was selected.

Data was collected in two different years of the same survey. The first data set was collected in 2007 and with the same survey questioner was used in the second data set of 2009. This data set satisfies the use of panel data in this study.

Before looking at the empirical analysis of this study, it is desirable to assess the household characteristics of the treated and control groups. First, let us see whether the counterfactual of the treated group was appropriately approximated. To do this, we will look at the household characteristics of participants and non participants of the micro credit program depicted in the table below:

TABLE 4.1: SOCIO-ECONOMIC CHARACTERISTICS OF TREATED AND CONTROL GROUPS (Year 2007)

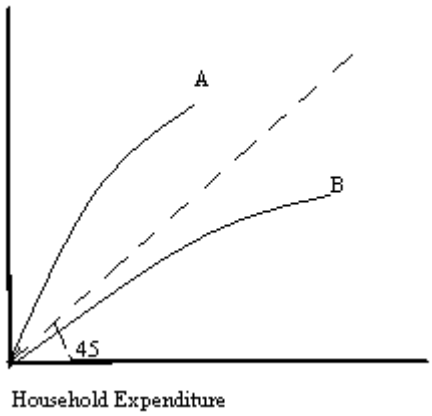
Household Characteristics	Treated		Controlled			P-value
	X_t	δ_t	X_c	δ_t	(X_c- Xt)	
Average age of household head	48.8	1.2	52	3.26	3.2	0.28
Average household size	6.19	0.18	3.97	0.38	-2.22	0.00***
Household head illiteracy level	1.8	0.09	1.5	0.13	-0.31	0.13
Average fertile land holdings (hectar)	0.58	0.08	0.62	0.17	0.038	0.83
Average value of livestock(000 Birr)	3.864	0.26	4.185	0.53	0.322	0.59
Average household asset(in 000 Birr)	9.15	0.96	9.59	1.95	0.445	0.84
Average hh consumption per year (in 000 birr)	14.267	0.525	9.52	0.932	-4.75	0.00***

Source: Own calculation based on base line survey

Where: X, δ are mean and standard error for the treated and controlled groups.

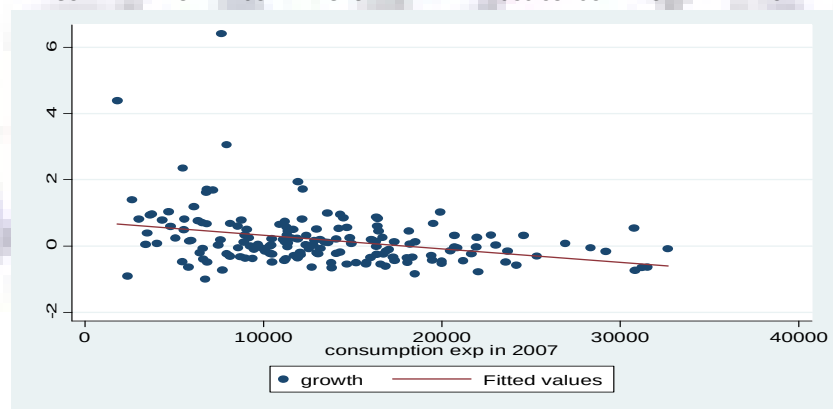
The above table reports that except for household size and household consumption per year, participants and non participants of the sample households on average share similar characteristics in the starting year (2007). The p-value for average age of household head, household head illiteracy level, average land holdings and average household asset are 0.28, 0.13, 0.83 and 0.84 respectively. This shows that the mean difference for those variables is insignificant even at 10% significance level. However, as it can be seen from the above table the mean differences for average household size and average household consumption per year are significantly different from zero at 1% significance level. The overall result of the above summary table shows us there was a problem in the sample survey especially in the approximation of the counterfactual. Therefore, in such circumstances unless we have justifiable reason these difference will not create bias on our impact analysis, the study will end up with biased result. Therefore, it is useful to check and justify whether these difference will create bias or not. When we look at the consumption expenditure per year, the two groups have different initial amounts and this difference can influence the outcome through rate of growth. Therefore, we have to look at the relationship between the rate of growth and total consumption expenditure in the year 2007. The trend can show increasing, decreasing or constant effect. If it is increasing, the initial statuses of treated groups will exaggerate our outcome of the impact analysis. On the other hand, if it is declining it shows the outcome could have been more than the result we got. The following figure can easily elaborate the above assumption.

Figure 4.1 growth rates versus household expenditure



When the graph of relationship is above the 45 degree as it is depicted by curve-A, such trend is an increasing trend and it will create bias on our impact analysis. Whereas, if the trend follows functional relationship depicted by curve-B, we do not have to be worried as it will not provide us an exaggerated result. But trend B doesn't mean it is free of bias but the bias effect is in the opposite direction showing that the result cannot be overstated because of the initial position of household expenditure. Rather it will understate our program impact. Based on the above argument, let us see the growth rate and household expenditure of the data in this study.

FIGURE 4.2: TWO WAY SCATTER GROWTH RATE VERSUS CONSUMPTION EXPENDITURE



As it can be seen from the above graph, the fitted line shows a declining trend moving towards the lower part of the 45 degree line. This indicates that the growth rate will not over state our final result from impact analysis. Thus, with this assumption it is possible to proceed to the empirical analysis of the effect of micro credit on improving households' income. Moreover, an application of DD method minimizes such problem.

One of the objectives of this study is to assess whether gender difference matters or not. In this survey all the participants in the micro credit are the head of the family. Before heading towards empirical analysis let us observe whether the male headed households are significantly different or not from those of female headed families.

TABLE 4.2: SOCIO-ECONOMIC COMPARISON AMONG MALE AND FEMALE HEAD HOUSEHOLD (Year 2007)

Household Characteristics	Male Head		Female Head			
	X_m	δ_m	X_f	δ_f	(X_f-X_m)	P-value
Average age of household head	50.33	1.38	47.56	2.05	-2.77	0.26
Average household size	6.55	0.19	4.23	0.26	-2.31	0.00**
Household head illiteracy level	1.85	0.11	1.57	0.12	-0.28	0.102
Average fertile land holdings (hectar)	0.114	0.02	0.11	0.03	-0.003	0.93
Average value of livestock(000 Birr)	4.142	0.291	3.494	0.388	-0.648	0.19
Average household asset(in 000 Birr)	8.617	1.058	10.45	1.485	1.837	0.32
Average household consumption per year (in 000 birr)	14.562	0.575	10.991	0.786	-3.569	0.000**

Source: Own calculation based on base line survey

Based on the mentioned household characteristics presented in table-2 above, it illustrates that except for average household size, male headed households and female headed households are not significantly different. Male and female headed households are significantly different in family size. I argue that because of the excess labor force in the rural areas of Ethiopia this difference will not adversely affect our result. Therefore, differences in household size will not significantly create income disparity among households. Thus, the overall result of the above table shows us the survey was fairly approximate the counterfactual.

4.2 EMPIRICAL ANALYSIS

4.2.1 IMPACT OF MICRO CREDIT ON HOUSEHOLD INCOME

To assess the impact of micro credit on households income the DD approach was used and specified as follows:

Difference-in-Difference Estimator

Underlying assumption: this estimator assumes time invariant selection effects that can be eliminated by differencing the difference between the treated and control groups (Caliendo M and Hujer, 2005). In this study the duration of time between the initial and final survey (2 years) is short to vary the unobserved variables. Thus, these variables are assumed time invariant. Based on the above assumption the DD estimator can be presented as follows:

$$DD = E\,(Y^T_t - Y^T_{t'}\,/D=1) - (Y^C_t - Y^C_{t'}\,/D=0) \quad (1)$$

In equation (1), Y^T_t & $Y^T_{t'}$ denote average household expenditure after and before intervention for the participants of micro credit and conditional to participation (D=1). On the other hand, Y^C_t & $Y^C_{t'}$ indicate average household expenditure after and before intervention for the non participants of micro credit and conditional to non participation (D=0). Table 4.3 summarizes the outcome of double difference (DD) when it applies to our case study. The DD estimate can also be calculated using fixed effect regression analysis. The estimation equation is specified as follows:

$$Y_{it} = \alpha + \beta T_{i1}t + \rho T_{i1} + \varepsilon it \quad (2)$$

In the above equation, the coefficient β gives the average treatment effect which is equivalent with DD of equation (1). This coefficient is an interaction between the post program treatment variable (T_{i1}) and time (t=1…T). Time in this case is two years. Table 4.4 summarizes the outcome of the fixed effect regression analysis.

TABLE 4.3: EFFECT OF MICRO FINANCE PARTICIPATION ON HOUSEHOLD EXPENDITURE

Group	Observations	Mean	Std.err	p-value
o	37	-0.326	0.266	
1	133	0.031	0.047	
Combined	170	-0047	0.069	
Difference		-0.35	0.166	0.03**

Source: Own calculation

The above table reports a very optimist result that micro credit programs significantly improves total household expenditure. In this program micro credit participation improves household expenditure by 35%. And this result is significant at 5 percent level. It seems this result is by far greater from the studies under taken in Bangladesh and some other countries. The following possible reasons are worth mentioning: Firstly, 92% of the respondents in this survey are living below one dollar a day. Providing micro credit for their basic input for farming largely improves farm output and therefore income. Secondly, eastern part of Tigray-Ethiopia is one of the areas where productive safety net program has been applied. If the participants and non participants are not equally beneficiaries of safety net program, the micro credit program effect will be exaggerated especially, when there are more safety net program participants from the treated group. The Agricultural Office of Tigray is also providing rural farm agricultural packages. Beneficiaries of this program will not be deregistered because of membership in micro credit. Unless the benefit from this program is clearly identified, the micro credit impact result might show an exaggerated figure. Therefore, this study needs further data regarding the mentioned elements so that it will come with justifiable outcomes.

TABLE 4.4: FIXED EFFECT REGRESSION

No. of obs. 358			
F(2,168) 2.54	Prob>F 0.082		
lcexpyr	Coeff.	Std. error	Prob> t
Year	-0.3264	0.1472	0.028
crmktpYr	0.3572	0.166	0.033
Cons	9.36	0.047	0.000

Source: Own calculation

The above table shows that controlling for the fixed effects of time invariant unobserved variables micro credit participation significantly impacts household income. It improves for 35.7% at 5 percent significance level in the given panel year. There is no significant difference the results from DD method and the fixed effect regression analysis, indicating good strength of our results.

4.2.2 IMPACT OF GENDER SPECIFIC CREDIT ON HOUSEHOLD EXPENDITURE

In this part we establish whether gender specific participation matters or not. The basic question in this part is whether gender specific participation affects household income. Similarly, we can apply the above concept of DD method to address this question.

TABLE 4.5: EFFECT OF WOMEN PARTICIPATION IN MICRO CREDIT ON HOUSEHOLD INCOME

Group	Observations	Mean	Std.err	p-value
O	113	-0.057	0.095	
1	57	-0.027	0.084	
Combined	170	-0.047	0.69	
Difference		-0.03	0.147	0.83

Source: Own calculation

As it can be seen from the above table, women-focused micro credit does not significantly improve their household income. Robustness of the method was also checked using the fixed effect regression. As it can be seen this result is against many of the studies in the literature which advocate that women-specific microfinance improves significantly household income. But we have to raise a question why this happens in rural Tigray area? There are two explanations for

this; one conventional answer may be the power over resources. In rural Ethiopia, men have the power and control over resources. Normally, profit gained from micro credit may be snatched by the husband and extravagantly spent in ventures which are not related to household consumption. Secondly, women equally contribute in the farm and off farm activities. Men access credit and pass it on to their wives. As long as the credit and outcome is reported by the head (male), the contribution of women in the household is understated. This is in practice a women-women comparison. Therefore, comparing the heads of households may not give a clear image regarding gender specific performance.

5. CONCLUSION, POLICY RECOMMENDATIONS AND FUTURE RESEARCH

This study examined the impact of micro credit on household income in Northern Ethiopia. It used panel data and DD method for its analysis. The result shows that micro credit participation significantly improves total consumption expenditure. On average, consumption expenditure increased by 35% for the participants at 5 percent significant level. On the other hand, the study found out that women-specific participation does not matter in improving household income. However, in areas where men have control over resources and make vital decisions, comparing the heads of the families may not give a clear image regarding gender specific performances.

This has good implication for the policy makers and donor agencies in Ethiopia. Micro credit significantly improves household income. Microfinance is the most appropriate way to provide micro loans to the rural poor. Policy makers have to focus on enriching the poor community by extending micro credit facilities to the rural poor. There is also a need to bring women on the microcredit stream and this can happen by integrating microfinance and other stakeholders. Further to this, instead of providing direct aid, donor agencies have to support MFIs for better outcome. This creates access to financial services for the poor and the fund will also revolve among the poor for better results. Finally, this study raises the following research questions for further study: Micro credit participation significantly improves household income but how far can this go to lift the poor above poverty line? What is the impact of microfinance on vulnerability to poverty?

REFERENCES

1. Caliendo, M and Hujer, R. (2005) " The Microeconometric Estimation of Treatment Effects- An overview", Bonn, IZA publications, Vol. 1653, pp 1-9
2. Hulme, D. (2000) " Impact assessment methodologies for microfinance: Theory, experience and better practice" World development Vol. 28 No. 1, PP 79-98
3. Khandker, S, Latif, Mckernan and Pitt, M. (1999) "Credit programs for the poor and reproductive behavior in low income countries: Are the reported causal relationships the result of heterogeneity bias?" Journal of Demography, Vol. 36, No. 1, PP 1-121
4. Khandker, S. (2003) "Micro-Finance and Poverty Evidence using Panel Data Bangladesh", World Bank Policy Research Working Paper Vol. 2945, pp 8-12
5. Khandker, S. Koolwal and Samad (2010) *Handbook on Impact Evaluation quantitative Methods and Practices*, Washington DC, World Bank Publishing, Ser No. 52099, pp 33-209
6. Khandker, S.and Pitt (1998) " The impact of group based credit programs on poor households in Bangladesh: Does the gender of participants matter?" The University of Chicago Press Vol. 106 No. 5, PP 958-996
7. Mahjabeen, R. (2008) "Microfinancing in Bangladesh: Impact on households, consumption and welfare", Journal of Policy Modeling Vol. 30, PP 1083-0192
8. Montgomery, H and Weiss (2011) " Can commercially oriented microfinance help meet the millennium development goals? Evidence from Pakistan" world development Vol. 39 No. 1, PP 87-109
9. Swain, R. Sanh and Tuan (2008) "Microfinance and poverty Reduction in the Mekong Delta in Vietnam", African and Asian Studies Vol.7, pp 191-215

REQUEST FOR FEEDBACK

Dear Readers

At the very outset, International Journal of Research in Computer Application and Management (IJRCM) acknowledges & appreciates your efforts in showing interest in our present issue under your kind perusal.

I would like to request you tosupply your critical comments and suggestions about the material published in this issue as well as on the journal as a whole, on our E-mail**infoijrcm@gmail.com** for further improvements in the interest of research.

If youhave any queries please feel free to contact us on our E-mail **infoijrcm@gmail.com**.

I am sure that your feedback and deliberations would make future issues better – a result of our joint effort.

Looking forward an appropriate consideration.

With sincere regards

Thanking you profoundly

Academically yours

Sd/-

Co-ordinator

ABOUT THE JOURNAL

In this age of Commerce, Economics, Computer, I.T. & Management and cut throat competition, a group of intellectuals felt the need to have some platform, where young and budding managers and academicians could express their views and discuss the problems among their peers. This journal was conceived with this noble intention in view. This journal has been introduced to give an opportunity for expressing refined and innovative ideas in this field. It is our humble endeavour to provide a springboard to the upcoming specialists and give a chance to know about the latest in the sphere of research and knowledge. We have taken a small step and we hope that with the active co-operation of like-minded scholars, we shall be able to serve the society with our humble efforts.

Our Other Journals