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MICROLOANS AND AGRICULTURAL SECTOR INCOMES IN DEVELOPING COUNTRIES: AN EMPIRICAL STUDY OF THE PRU DISTRICT IN GHANA

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ABSTRACT

The agricultural sector of developing countries continues to contribute significantly to Gross Domestic Product. However, majority of actors in the sector remain low income earners and inequality exacerbates. Several interventions have been implemented including providing microcredit to farmers. However, the results of such interventions remain contested as the outcomes have been a mixed one: positive and negative results. This paper sought to evaluate microcredit impact on incomes within the agricultural sector of the Pru District of Ghana. A case study and quasi-experimental methods were employed. Data was collected from 96 crop farmers and 60 fishermen using questionnaires. It was revealed that microcredit has a positive relationship with incomes and aids in moderating income disparity amongst actors.

Keywords: Microloan, Income, Inequality, Agricultural, Developing, Pru.

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Contribution/ Originality

This paper is one of uncommon efforts that have examined microloan and incomes in least developed countries like Ghana. It produced novel knowledge on the relationship between microloan and incomes in the farming and fishing subdivisions.

1. INTRODUCTION

For numerous years, least developed countries have relied heavily on agriculture. Accordingly, there is a growing interest in the sector as demand for produce has increased owing to high rates of urbanisation and population growth (Wiggins, 2013; Ghana Statistical Service, 2014). As a result, majority (50.6 per cent) of the overall active labor force of Ghana has been absorbed in the agricultural sector (GSS, 2010). Unfortunately, actors in the sector rely on obsolete techniques of farming; employing hoe, cutlass and human labor. The result of the unproductive methods of farming has been low productivity and a consequential effect of low income among farmers (Ashun, 2010). It is therefore not surprising that farmers (particularly, crop farmers) are often the majority among poor people in Africa (FAO, 2010b). It has become an issue in development circles as agriculture remains a key activity in less developed countries particularly, in Africa. Whiles there exist limited empirically work on the subject, the results of the very few suggest that microcredit has played an integral role in uplifting the poor particularly Ghanaian farmers by cushioning them

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against shocks in the agriculture sector (FAO, 1994). This viewpoint is based on the well-grounded premise that the farmers will put the credit to productive use by acquiring agricultural assets which they previously could not afford, adopt modern technologies and improved methods of farming which consequently enhances agriculture income and well-being of these group of individuals. Addo and Kwarteng (2014) found that microcredit from the Bosomtwe and Atwima Rural Banks Limited had helped agricultural sector workers to improve their incomes, though the study could not quantify the contribution of the credit to the increased income of farmers. Accordingly, Okon *et al.* (2012) in their study came to the conclusion that microcredit provided a significant boost to production and income levels of farmers in Akwa Ibom state in Nigeria, which further helped improve their living conditions. Beneficiaries of the One Acre Fund, a scheme dedicated to providing credit and other services to Rwandan, Burundian and Kenyan farmers experienced an increase in their maize output in excess of 18 to 22 bags. Due to the excess in output, a good proportion of the beneficiaries were able to keep some of the produce for household consumption and sold the extra for income which were invested in other ventures (One Acre Fund, 2013).

A major setback to farmers, especially small holder farmers of developing countries who typically have limited collateral capabilities from reaping such benefits appears to be their inability to pay back loans (Okorie, 1986). Available literature indicates that the countable few of this group of farmers who have access to loans usually end up selling their assets to defray these loans as they often come with interest charges. Consequently, some researchers opinioned that microcredit has a counterproductive effect on farmer incomes (see Wright, 2000; Shane, 2004; International Monetary Fund, 2005). These authors posit that there exist instances where microcredits have rendered poor farmers even poorer as exemplified by high default rates and the sale of personal belongings and assets by some farmers in their bid to pay up the debts. The foregoing indicates a gross ambiguity regarding microcredit-farmer income nexus in developing countries. Following from this, the study sought to provide some clarity on the subject by: 1) assessing the impact of microcredit on farmer incomes and, 2) determining the impact of microcredit on income distribution among farmers.

2. MICROCREDIT FACILITIES IN GHANA

The administration and delivery of microcredit just like many other forms of financing is done by a multiplicity of institutions and goes through a series of processes. In Ghana, the institutions are put into three broad groupings namely: formal; semi-formal and informal. Key players and approaches under the various institutions are highlighted in this section.

2.1. Informal Institutions

Actors that fall under this category include:

- *Social Networks*

Quite common in societies with close social ties between people, typically rural areas, people often borrow from and lend money to their relatives and friends. Till date, this remains a key source of accessing financial help (Azevedo, 2007). These are the conventional sources of obtaining microcredit that existed long before the inception of any of the contemporary and formal sources. It has proven to be effective in contexts where ties are held in high regard, be it through blood relations, friendship or neighborliness. Usually, individuals' first point of seeking such financial aid is within their extended families (Yeboah, 2010). A common critique advanced against this source and approach to obtaining microcredit is its unreliability in terms of both accessibility and repayment (Yeboah, 2010). It is practically difficult to determine who may be in the position to grant such an aid and secondly, they are often characterised by repayment problems due to verbal and non-formal terms of repayment and hence creating problems in terms of willingness to give. However, not much clarity exist on the subject.

- *Moneylenders*

This is another important source of microfinance though many of them often deliver their services in secrecy (Andah, 2005). While these groups of individuals can be found in almost every community, they go about their businesses in the most private way possible, principally because it is expected of them to register under the Money Lenders Ordinance 1957, which they often sidestep (Steel et al., 2005). Moneylenders do not advertise themselves and hence, researchers have had to invest much effort in getting information about their operations. In a survey undertaken by Yeboah (2010), he found that the number of moneylenders was quite difficult to assess; few would admit being moneylenders. Moneylenders in Nsoatre were relatively wealthy cocoa farmers, traders and government employees. In their view, moneylending is a supplementary endeavor they engage in whenever they have the financial capacity to do so. His survey revealed that interest rates varied from 0 per cent to 1200 per cent per annum, depending on the relationship with the borrower. For instance, when an amount of $100 was given out for a repayment period of a month, the interest rate for such an amount for the stipulated duration was around 40 per cent (480 per cent per annum), which also required a guarantor. Most moneylenders however do not require collateral but others demand some collateral in the form of jewelry, cocoa farms, land, unharvested food crops or a guarantor. People usually borrow under crisis and emergency situations, particularly, for activities like funerals, paying school fees, cost of accessing healthcare and financing travel of family members for greener pastures abroad. Evidence suggest that the proliferation of formal microfinance institutions has not had any detrimental effect on people's preference for borrowing from moneylenders (Yeboah, 2010). Plausible reasons being the swiftness that comes with obtaining a loan from moneylenders and flexibility in payment.

- *The Itinerant Deposit (Susu Collectors)*

Individual Susu Collectors provide collection and safekeeping of monies for mostly market traders, artisans and other micro-entrepreneurs in Ghana. In his study, Yeboah (2010) observed that prior to the advent of the Nsoatreman Rural Bank (NRB) Susu Scheme, there existed some individual susu collectors in Nsoatre. However, the Individual Susu Collectors had been put out of business since the introduction of the Nsoatreman Rural Bank (NRB) Susu Scheme. The Susu Collectors were basically put out of their jobs because the Bank did not take commissions and further provided loans to clients after saving with them for some period of time.

2.2. Formal and Semi-Formal Financial Institutions

Yeboah (2010) realised that some of the formal and semi-formal financial institutions that provide microfinance services to the study community (Nsoatre) include; Microfinance and Small Scale Loans Centre (MASLOC), Nsoatre Cooperative Credit Union, Sinapi Aba Trust and the Nsoatreman Rural Bank. This category of institutions emerged out of microfinance intervention programmes instituted to increase financing of Small to medium scale enterprises and ranges from Community Banks to Commercial Banks.

3. CONCEPTUAL FRAMEWORK

Having looked at available literature on microfinance and agricultural income, it was essential to conceptualise all the issues under discussion and to present them in a comprehensive manner.

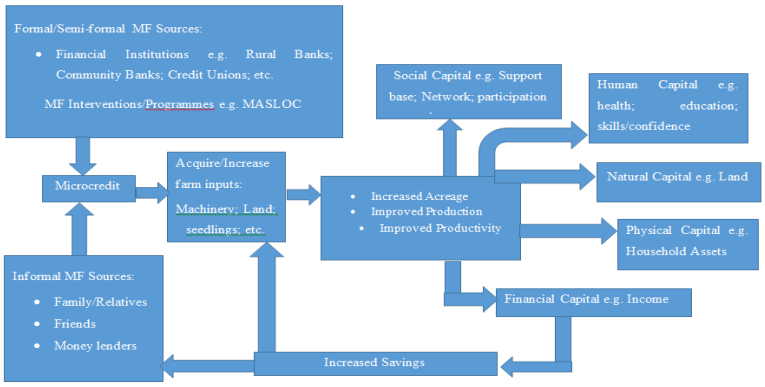

Figure-1. Conceptual Framework

Source: Researchers' Construct, 2014

The conceptualised relationship between the variables of the study (microfinance and agriculture) is as presented in Figure 1.

As exhibited in Figure 1, access to credit facilitates farmer acquisition of modern farm implements, the utilization of which help increase farm acreages. Consequently, productivity and production levels increase which has other impacts on households such financial, social, physical, natural and human capital.

4. STUDY APPROACH AND METHODOLOGY

4.1. Profile of Study Area

The study was conducted in the north-eastern part of the Brong Ahafo Region of Ghana, specifically the Pru District. The district stretches about 2,195kmsqm in terms of land area, constituting 5.6 percent of the total regional capital and about 310km (Nkoranza/Techiman North-East of Sunyani in the Brong Ahafo regional capital and also 493km North of Accra, the national capital (Pru District Assembly [PDA], 2010) and this supports agricultural activities (Sulemana and Appiah, 2015). Farming and fishing in the area is largely influenced by the biennial rainfall pattern. Of all the economic activities undertaken by the dwellers of the district, farming and fishing stand out as the predominant forms of occupation as 65 percent of the labour force are engaged in farming and fishing related activities (PDA, 2010). Although land is readily available in large quantities (PDA, 2010) farming in the district is largely carried out on small scale basis (Sulemana and Appiah, 2015). The average cultivated land ranges between 4 – 6 acres for all crops (See (PDA, 2010; Sulemana and Appiah, 2015). Staple crops such as yam, cassava, maize are produced in commercial quantities at the Prang-Abease corridor, Kadue, Adjaraja Beposo, Parambo/Sawaba and the district capital, Yeji (PDA, 2010). The financial institutions operating in the District included: Ghana Commercial Bank; Yapra Rural Bank; Amanten-Kasei Rural Bank; Yeji Community Co-operatives Credit Union; Brong-Ahafo Catholic Co-operative Society for Development (BACCSOD); Yeji Progressive Co-operative Credit Union and Mawunyo Susu and Micro Finance Scheme. The location of the district in National context and the studied communities within the district are represented in Figures 2 and 3 respectively.

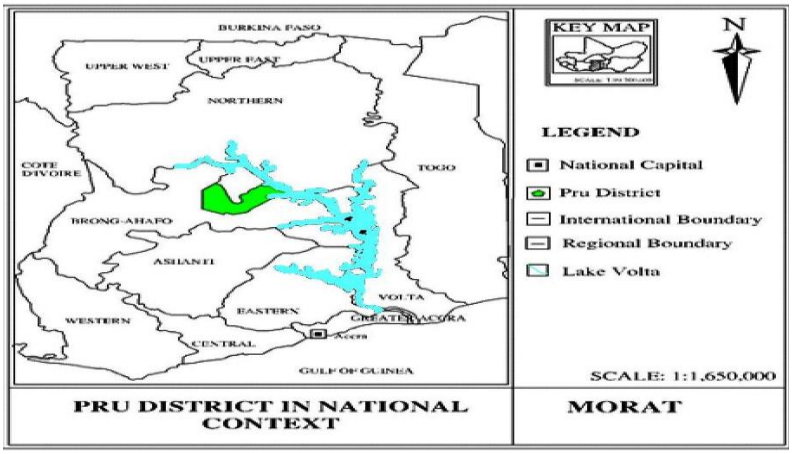

Fig-2. Pru District in National Context

Source: Adapted from PDA (2010)

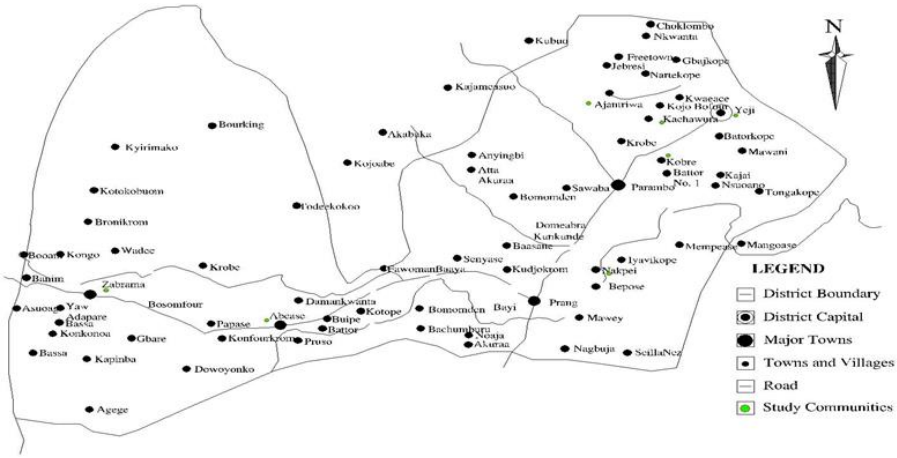

Fig-3. Map of Pru District showing the study communities

Source: Adapted from PDA (2010)

4.2. Research Design and Sources of Data

The research design was chiefly quantitative. Data for the study were gathered from two farmer groups. The first group, labelled the 'control group' consisted of farmers who did not access credit. On the other hand the second group was made up of farmers who accessed credit and was labelled the experiment group. Data was obtained through questionnaire administration, where the two groups of farmers were used as units on inquiry. The study covered 7 urban and rural communities in the Pru district namely: Yeji, Abease, Zabrama, Nakpei, Kobre, Kachawura and Ajantriwa. Prior to the data collection exercise, a list of farmers and Farmer Based Organisations (FBOs) was obtained from the District Agricultural Development Unit (DADU). The information gathered indicated that 52 farmers belonging to three different FBOs had accessed credit in 2009 thus 5 years prior to the conduct of this study. In addition, there existed other farmer groups who had no access to credit. Farmers who belonged to the three FBOs were used as the treatment group and the farmer groups who had no access to credit as the control group. Of the 52 farmers who had the credit, 4 farmers were not reachable as they had relocated to the Volta region of Ghana (Sulemana and Appiah, 2015). With 48 farmers available, they were all used as the treatment group for the 3 crops: Rice, Maize and Yam. An equivalent number (48 farmers) were selected from the farmer groups and used as the control group. Data was then gathered from the total of 96 crop farmers using interview guides.

On the other hand, a list of fishermen who had accessed credit was obtained from the Banks and this constituted the experimental group. A representative number of 30 of these group of fishermen was then selected for inquiry. For the control group, Volunteers of the fishing community as well as the Fisheries Development Unit and Regional Best Farmer helped to identify them. Just like the experimental group, 30 of them were selected for inquiry. In other to

ensure that this group of fishermen did not have access to any form of microcredit from other sources, they were asked a number of questions. This was done to prevent such factors distorting the validity of the findings of the study. A total of 156 individuals were selected for inquiry, consisting of 96 crop farmers and 60 fishermen.

4.3. Analytical Methods

Quantitative analysis was carried out using the IBM SPSS software version 17. In doing so, the survey data for both the experimental and control groups were first coded into forms that made it possible for running simple linear regression. Having done this, the researchers proceeded with the determination of the influence of the microcredit on the income levels of the farmers using the regression analysis. Qualitative analysis took the form of inferences made out of individual farmer perceptions of the influence of microcredit on their agricultural income levels and presented to buttress the quantitative findings of the study. The impact of microcredit on income distribution among the farmers was then established using the Lorenze Curve. Results were presented in the form of graphs and ratios with interpretations.

5. RESULTS AND DISCUSSION

5.1. Impact of Microcredit on Farmers' Income Levels

From table 1, nominal incomes had increased for all farmers showing an increase in average income per farmer from GH₵1,333.33 to GH₵1,633.33 for the control group and GH₵1,855.56 to GH₵7,244.44 for the treatment group.[1] Whiles these figures indicate an improvement in incomes, they are misleading since the estimations were carried out at nominal rates and hence do not cover inflation and other occurrences that are likely to affect real income levels within the 5 years duration. Real incomes of the farmers over the period is therefore assessed and presented in Table 2 to present a true depiction of the income levels of the farmers.

Table-1. Income Levels of Crop Farmers (Nominal Income in GH₵)

	CONTROL GROUP		TREATMENT GROUP	
	Before	**After**	**Before**	**After**
All three crops				
Total Income	35,100.00	47,800.00	61,110.00	234,350.00
Average Income Per farmer	731.25	995.83	1,273.13	4,882.29
Rice				
Total Income	5,400.00	10,200.00	11,930.00	36,450.00
Average Income Per farmer	360.00	680.00	795.33	2,430.00
Maize				
Total Income	4,900.00	8,200.00	15,780.00	67,500.00
Average Income Per farmer	326.67	546.67	1,052.00	4,500.00
Yam				
Total Income	24,000.00	29,400.00	33,400.00	130,400.00
Average Income Per farmer	1,333.33	1,633.33	1,855.56	7,244.44

Source: Researchers' Field Survey, 2014

Table-2. Real Income of crop farmers in Ghana Cedis (Average income per farmer)

	Control			Treatment		
	Before	**After**	**age change**	**Before**	**After**	**age change**
All three crops	731.25	677.16	-7.4	1,273.13	3,319.96	+160.8
Rice	360.00	462.49	+28.4	795.33	1,652.40	+107.8
Maize	326.67	371.74	+13.8	1,052.00	3,060.00	+190.9
Yam	1,333.33	1,110.66	-16.7	1,855.56	4,926.22	+165.5

Source: Researchers' Field Survey, 2014

[1] 1GH₵ was equivalent to 3.32USD as of May, 2014

Table 2 provides an entirely different picture of the impact of microcredit on income levels. Whiles farmers within the control group experienced increment in their nominal income levels as shown in table 1, real incomes on the other hand decreased. The experimental group, who had access to microcredit had their real incomes increased. There was a reduction however in the average income levels of all farmers within the control group from GH₵731.25 to GH₵677.16 representing a 7.4 per cent reduction. Quite the contrary, there was a 160.8 per cent rise in the average income per head of farmers in the treatment group as their real income levels increased from GH₵1,272.13 to GH₵3,319.96, generally brought about by the increase in their production levels. With respect to individual crops, the greatest of reduction (28.4 per cent) in income levels was experienced by rice farmers. This was followed by maize and yam farmers with a reduction of 13.8 and 16.7 per cent respectively.

With the credit users, the highest income increase was realised by maize farmers, followed by yam and finally rice farmers as the figures indicate 190.9, 165.5 and 107.8 per cent in that respective order. The fall in real income of farmers within the control group is accounted for by the rise in inflation rate from 9.52 per cent in 2009 to 14.0 per cent in 2014 as well as the generally lower output levels within the period. For the treatment group, despite the inflationary increases, output levels have grown high and some economies of scale have reduced their production costs hence, increasing the profitability of their activities (accredited to microcredit).

Table-3. Regression Table for Income Analysis

Constant	R	R Square	Adjusted R Square	Std. Error of the Estimate
2394.835	0.596	0.355	0.348	2666.956000

Predictors: Amount of credit facility received

Dependent variable: Income after credit

Note: Significant at -0.000 Regression Equation: Y = a + 11.62794X

Where Y = Income a = Income without credit (constant) X = Amount of credit and Gradient = 11.62794

The regression analysis (Table 3) indicates that the amount of credit received is positively related to the income earned hence, an increase in the amount of credit results in an increase in income. However only 35.5 percent of the variation in income levels of the farmers may be attributed to the microcredit accessed. It is worth noting that for every GH₵1.00 received, farmers were able to earn extra GH₵11.63. This is therefore the underlying reason for the increase in income levels of the farmers belonging to treatment category whiles those in the control group witnessed a decrease in their income levels (see Figure 4).

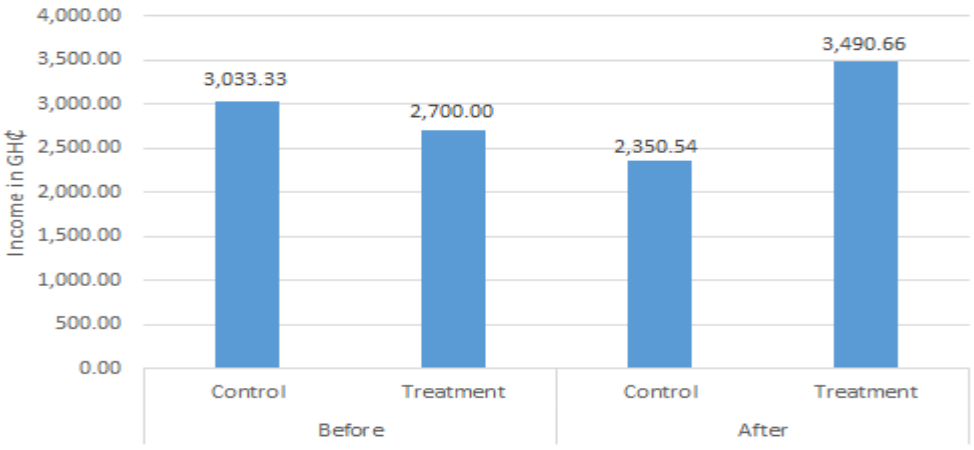

Figure-4. Comparative Analysis of Income between Control and Treatment Groups

Source: Researchers' Field Survey, 2014

The study identified a tremendous increase in the income levels of farmers who accessed and utilised microcredit. This finding appears to be the direct opposite of the findings of an earlier study on microcredit in Thailand. The findings of the study indicated that microcredit did not trigger any change in household income levels (Colman, 1999 cited in Montgomery and Weiss (2005) and also did not bring about profits in household businesses (Trapham and Lensink, 2008). On the other hand the finding collaborates findings of previous studies by authors such as Singh (2004) and Prean (2009) who in their studies established that microcredit caused an increase in household income levels and improved living standards respectively.

In addition, the study revealed that farmers who were microcredit beneficiaries and earning below average incomes prior to acessing the credit had their incomes increased from 25 per cent to 45.8 per cent upon receipt of the microcredit. This goes to show that microcredit has the capabilities of bridging income gaps and enhancing equity in income distribution. Results of the Gini coefficients (see Figure 5) buttresses this finding as the output clearly indicated a great reduction in the coefficient from 0.48 to 0.08 representing the before and after ratios respectively, thus before and after the farmers had access to credit.

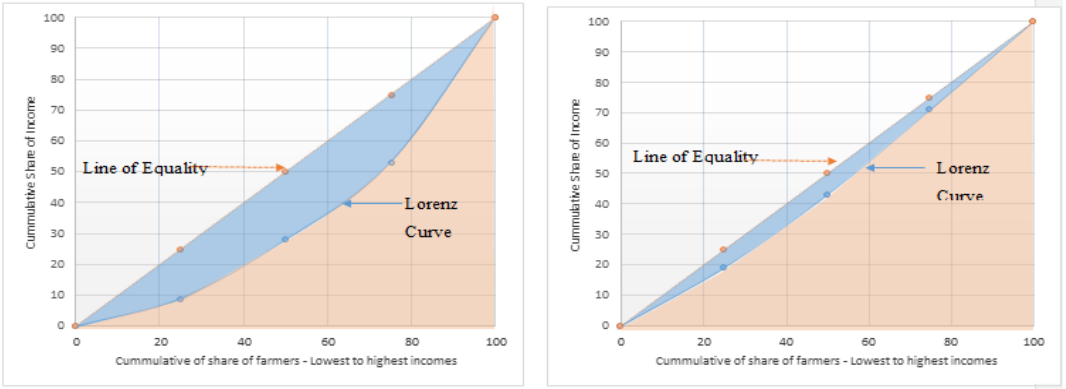

Figure-5. Income Distribution Curves of Treatment Group

Source: Researchers' Field Survey, 2014

Figure 5 depicts a fair distribution of income among farmers following the receipt of microcredit compared to the situation preceding their access to the credit. This is because before receiving any form of credit, the poorest 25 per cent of the farmers together earned only 9 per cent of the total income whereas the wealthiest 25 per cent earned almost half (47 per cent) of the income, giving a Gini coefficient of 0.48. Having received the credit, income inequality reduced with the poorest 25 per cent earning 19 per cent of the total income while the richest 25 per cent earned 29 per cent of the total income with the Gini Coefficient falling to 0.08.

With the above analysis, although income inequality was not very high before the intervention (Gini ratio was less than 0.5), the situation had improved significantly with the ratio falling very close to perfect equality. This is therefore an indication that microcredit can be used as a mechanism for addressing issues of income inequality by ensuring a more fair distribution of income at least among farming households as evident in this study. The result therefore confirms the observation by (Mayoux, 1999 in Shimelles and Zahidul (2009)) who pointed out that there appear to be a general consensus in the literature that the poor conceives microcredit as a means to earn equitably and sustainably from socio-economic endeavors in the twenty-first century. Relating the income levels among users of microcredit identified in this study to the national average annual income of GHC14, 059.92 (GSS, 2014), an overwhelming proportion (87.5 per cent) of them earn below the national average income with only 12.5 per cent earning close to that figure. The above finding suggest that despite microcredit giving a boost to farmer income levels, majority still earn less than the national average income and hence would require higher or additional forms of credit to increase their production levels and earn either close to or above the national average.

Table-4. Income of Fishermen in Ghana Cedis (Average income per fisherman)

	CONTROL GROUP		TREATMENT GROUP	
	Before	**After**	**Before**	**After**
Total Income	91,000.00	103,700.00	81,000.00	154,000.00
Average Income Per fisherman	3,033.33	3,456.67	2,700.00	5,133.33

Source: Researchers' Field Survey, 2014

Quite similar to the findings on the crop farmers, there was an improvement in the nominal incomes of both the control and treatment groups of fishermen. The real incomes of the treatment group however reduced whiles that of the microcredit users increased (see Table 5).

Table-5. Real Income of Fishermen in Ghana Cedis (Average income per fisherman)

CONTROL			TREATMENT		
Before	**After**	**Change**	**Before**	**After**	**Change**
3,033.33	2,350.54	-22.5	2,700.00	3,490.66	+29.3

Source: Researchers' Field Survey, 2014

As shown in Table 5, real incomes of farmers within the treatment group, thus the farmers who had access to microcredit increased from GH₵2,700.00 to GH₵3,490.66. This is credited to the increase in production that is made possible through the acquisition of the loans. A directly opposite situation was experienced by the control group, as there was a 22.5 per cent reduction in the real incomes, despite the rise in their nominal income.

5.2. Microcredit and Financial Capital

All respondents shared the view that the credits often served as a boost to their financial performance. In general, household incomes got massive uplift as illustrated by the rise in the average income of both crop farmers and fisherman from GH₵1,272.13 to GH₵3,319.96 and GH₵2,700.00 to GH₵3,490.66 respectively (taking inflation into account). Likewise, the fraction of crop farmers already earning above the average income also had their incomes increased from 25 to 45.8 per cent. The situation was similar for fisherman as well. The above finding however is the direct opposite of the findings of Aroca (2000), who in his study established that microcredit has a counterproductive effect on household income levels.

It was further established that only 15.4 per cent of respondents were saving during the years preceding the year of accessing the microcredit. However all respondents after accessing credit are saving. Many of the respondents stated that they were saving in order to access larger loans in the future and to cover any emergency, or difficulty in meeting loan repayments, that may arise in the future. Vong (2009) opinioned that credit has the cabilities of making it easier for people to safeguard themselves from shocks such as ailments and disasters in general. The author's assertion was affirmed by the findings of this study as 79.5 per cent of credit beneficiaries mentioned that they have observed an appreciable improvement in their savings habits, prompted by the need to guard themselves against any unforeseen future events. This was confirmed by the MFI through an interaction with the credit officer and the manager even though the account balance of clients were not disclosed. Another noteworthy observation has to do with repayment of loans. Whiles 76 farmers constituting 97.4 per cent of credit beneficiaries stated that they have no challenges in repaying loans, the remaining 2.6 per cent finds repayment very challenging.

The result of the study is therefore affirmative of what earlier studies have stated. For instance, findings of a study by Hossain revealed that 91 per cent of a group of individuals were able to better their economic conditions through increase in their incomes after becoming members of the Grameen Bank, (Hossain, 1984 in Shimelles and Zahidul (2009)). Between 30-40 per cent of credit beneficiaries declared that they have witnessed growth in their earnings and this has improved the amount and frequency at which they remit to their relations living elsewhere.

Other farmers were of the view that, savings had made it possible for them to establish small businesses for some unemployed members of their households to engage in. This therefore contributed to the reduction in unemployment at the household level. It has further diversified and increased the sources of household incomes among households who prior to obtaining the credit had only one source of income which was predominantly farming to multiple and diversified sources including trading after receiving credit. This was acknowledged in a focus group discussion where some beneficiary participants strongly orated that microcredit has made it possible for them to avert financial hardships that comes with having a job like farming whose output is not always predictable. Therefore microcredit unquestionably plays an integral role in spiraling local economic development by enhancing household income levels and ensuring to some extent stability in earnings. Notwithstanding the plentiful benefits of microcredit, some individuals and households have witnessed only its downsides. In an interaction with the spouses of two beneficiaries, it emerged that the increase in household income did not necessarily improved the living conditions of their household. According to them it has rather worsened their conditions. The respondents were of the view that although microcredit has brought an improvement in their income levels, their husbands do not put this income to good use as it is often spent on alcohol, used in womanizing at the expense of relevant household needs. The above finding is in line with the findings of an earlier work by Wright (2000), who observed that microcredit is not necessarily helping reducing poverty by facilitating increase in household incomes. The money has to be put to the right use to generate the desired outcome, hence the need to spend increased incomes on poverty reduction resources and assets as the majority of beneficiaries have done.

6. CONCLUSION

Owing to the predominantly rain-fed nature of agriculture, unstable prices of produce, among numerous striking attributes of agriculture in the developing world, agriculture income in these parts of the globe remains unquestionably unpredictable. In most cases, this is further compounded by the general paucity of agriculture insurance schemes to safeguard farmers' especially small holder farmers against the volatility of incomes and its consequences. The above factors jointly serve as disincentives for investing in the sector and have over the years culminated into the limited nature of credit portfolio made available to the sector despite it being the backbone of most less developed economies and a major source of livelihood for an appreciable proportion of the populace. The study established that, microcredit remains indispensable to improving agricultural incomes and further helps address issues of income inequality. It is therefore recommended that efforts are made to help farmers with soft loan facilities and to guide them utilise the resource effectively.

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