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Full Length Research Paper

The role of Grameen Ghana in improving income of women shea butter processors

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This paper examines the role of Grameen Ghana's microcredit scheme in improving the incomes of women engaged in shea butter processing in Ghana. Cross-sectional data obtained from 414 women were fitted into a regression model. The results indicate that Grameen Ghana's credit programme has not significantly improved the income of women processors who participated in the project suggesting that the objective of the project that aims at improving the incomes of women shea butter processors cannot be attained unless women shea processors gain improved access to market services, particularly international market. This is because the regression results show that women shea processors' ability to affect (increase) incomes, is significantly determined by their levels of education and market access. In order to maximize the welfare of shea processors, there is the need to embark on activities that link shea butter producers to market opportunities. It is equally important for Grameen Ghana to strengthen its education for credit activities through capacity development of women shea butter processors participating in the project.

Key words: Shea butter, Grameen Ghana, income of women.

INTRODUCTION

Microcredit projects have emerged as important antipoverty instruments in many low-income countries including Ghana. The projects target the poor, especially women, with financial services to help them become self-employed in rural economic (farm and non-farm) activities of their choice. It involves granting of small loans (credit) to low-income households and those who cannot otherwise receive loans to set up micro-enterprises. Improved access to credit is not only expected to overcome credit market imperfections (which can smooth consumption and ease constraints in production) but is also expected to raise incomes and productivity of the poor (Khandker, 1998). Chowdhury (2008) argues that microcredit enables micro-enterprise owners to increase their income, accumulate assets, and enter into mainstream society. Credit is the main channel through which savings are transformed into investments (UN, 2007). Access to credit is important because it affects the level of investment made by a firm, which in turn is associated with its growth and overall contribution to economic activity.

It has been almost three decades since Muhammad Yunus advanced the celebrated idea that microcredit is important for bettering the lives of the poor borrowers and also for the local economy. This idea has had a lasting influence on researchers and policy makers about the impact of microcredit. Yunus' idea has directly or indirectly brought about the establishment of microfinance institutions (MFIs) in the form of village/rural banks, NGOs and governmental agencies in many countries. For example, Morduch (1999) explains that the Grameen's group lending model has been replicated in many countries including Bolivia, Chile, China, Ethiopia, Honduras, India, Malaysia, Mali, the Philippines, Sri Lanka, Tanzania, Thailand, the US and Vietnam. The plausibility, limitations, and policy implications of the microcredit promise (Morduch, 1999) synthesis remain of

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central interest in rural microenterprise development. Zeller and Sharma (1998) wrote that credit facilities enable poor rural households to tap financial resources beyond their own and take advantage of potentially profitable investment opportunities. The authors argued that for rural households without land, credit and savings facilities help them to establish or expand family enterprises, potentially making the difference between grinding poverty and an economically secure life. Some researchers have concluded that one single action which will enable the poor to overcome their poverty is credit because credit empowers women by strengthening their economic roles, increasing their ability to contribute to the family's income, helping them establish their identity outside of the family, and giving them experience and confidence in the public sphere (Sinha, 1998).

Seidu and Bambangi (2006) showed that women's access to financial services has enhanced their decision-making capacity in the Kassena-Nankana District in the Upper East Region of Ghana. These are similar to Khandker's conclusion in 2005 that microfinance programmes are helping the poor beyond income distribution with contribution to local income growth. For Khandker microfinance programmes have spillover effects in local economies, thereby increasing local village welfare. Also, using the experience of Sri Lanka, del Mel et al. (2009) found that grants generated large profit increases for male business owners, but not for female business owners. Despite the importance of microcredit as stated earlier some researchers are pessimistic about the potency of microcredit. For instance, Diagne and Zeller (2001) have explained that when households choose to borrow, they realize lower net crop incomes than non-borrowers and that access to microcredit may not be an effective way of alleviating poverty if the necessary infrastructure and socio-economic environment are lacking. Similarly, Simtowe and Zeller (2006) have also shown that while access to credit increased adoption among credit constrained households, it had no effect among unconstrained households. Pitt and Khandker (1998) found that microcredit only end up raising household consumption or reducing vulnerability but not of poverty (Morduch, 1998).

Coleman (1999) also argued that programme loans have little impact, although 'naïve' estimates of impact that fail to account for self-selection and endogenous programme placement significantly overestimate impact. Similarly, Karlan and Zinman (2009) opined that although microcredit contributes to improving firms' profits, the mechanism seems to be that businesses shrink by shedding unproductive works. That, in overall terms, borrowing households substitute away from labour (in both family and outside businesses), and into education. Karlan and Zinman concluded that microcredit works broadly through risk management and investment at the household level, rather than directly through the targeted businesses. The overall policy framework for microfinance in Ghana is informed by the poverty reduction strategy (GPRS), which seeks to balance growth and macroeconomic stability with human development and empowerment in such a way as to positively reduce the country's poverty levels in the medium term (Steel and Andah, 2004)[1]. Quartey (2002) has reported that access to finance remains a major challenge to many businesses but more particularly within the agricultural sector of the Ghanaian economy due to low title security.

Earlier studies have also highlighted the problem of limited access to credit by entrepreneurs, particularly from less developed countries. For instance, Parker et al. (1995) and Aryeetey et al. (1994) found that between 24 and 52% of entrepreneurs in Ghana are credit constrained. In terms of gender, intra-household dynamics generally show that women have more financial constraints than men (Chowdhury, 2008). According to Chowdhuri, women have approximately 42% higher probability to be constrained in finding adequate funds when their husbands are also constrained. On the other hand, men are only 12% likely to be financially constrained when their wives are also financially constrained. The experience of Ghana shows that the poor, especially women often find themselves in a vicious circle. They produce at a subsistence level which makes it difficult to accumulate savings and other assets. They face a difficulty of investing in productive resources or to gaining access to credit in formal capital markets, which leads to low productivity and continued poverty. Precisely, women shea processors operate with small working capital making it difficult for them to buy the requisite processing equipments, raw materials, storage facilities and to meet transportation cost. Coleman (1999) concludes on this by stating that one of the causes of poverty in less industrialized countries is the poor's lack of access to productive capital. Using the experience of Ghana, Egyir (2008) has shown that micro loans offered to rural women in Ghana have a positive impact on their livelihoods because for the majority, it increased their working capital, increased the household food supply, improved the quality of child education, improved household assets, improved the participation in group activities and increased their disposable income.

With these bunches of evidence about the impact of microcredit, there is no empirical analysis regarding the impact of credit on rural enterprises with particular regards to shea butter processing in Ghana. Previous works (Jebuni et al., 1992; Takane, 2004; Ocran et al., 2006) relating to the export sector have had a bias towards macro issues. Yet sectoral and micro level studies have largely been on the cocoa, coffee, palm oil, and pineapple sub-sectors. There is little emphasis on

[1] In 2006, the government adopted a poverty reduction strategy, Ghana Poverty Reduction Strategy Two (GPRS II), which constitutes the main policy framework for the country's aim at becoming a middle-income nation by 2015.

agro-processing commodities such as shea butter. Indeed, the effect of Ghana's economic performance on earnings and working conditions regarding the shea butter sub-sector has remained largely unaddressed. Particularly, most of the microcredit programmes have little incentive to complete impact studies (Morduch, 1999). The explanation is that many donors and practitioners argue that as long as programmes cover costs and appear to serve poor households, serious evaluations are a waste of time and money, yet better research is needed to sharpen both the growing body of microfinance theory and ongoing policy dialogues (Morduch, 1999). For almost a decade, there has not been an attempt to evaluate the impact of Grameen Ghana's credit scheme, in order to know whether or not the organisation is making the desired impact. Although recent studies (Egyir and Akudugu, 2009; Egyir, 2008; Seidu and Bambangi, 2006), and the Republic of Ghana (1999) have shown that microfinance is key to promoting economic development through poverty reduction in Ghana, the results are not generalisable. Aside, most studies on microcredit programmes in Ghana are qualitative in nature and yet have not taken into consideration the endogeneity problem associated with self-selection and non-random programme placement thereby suffering from the problem of producing biased estimates of treatment effects (Coleman, 1999).

The objective of this paper is to evaluate the impact of Grameen Ghana (GG) on the potential for expanded exports and women's incomes in the shea butter processing sector. This study is particularly relevant for a country such as Ghana, because the study concentrates on the microeconomic aspect of income. In particular, many studies on income are concentrated at the macroeconomic level and as a result such studies only provide a generic picture of the situation. The findings of the study will provide the specific picture of the actions on the ground thereby enabling the understanding of actual agricultural industries that have potential to grow and eventually provide employment for rural households. The rest of the paper deals with the theoretical and conceptual framework followed by the methodology, results and discussions and conclusions and recommendations.

Grameen Ghana

Grameen Ghana is a not-for-profit organisation that was established in Ghana in 2001. The organisation has its headquarters in Tamale, the capital city of Northern Region of Ghana. Operating in three Credit Branches, Grameen Ghana directly contributes to Ghana's Poverty Reduction Strategy (GPRS) which places particular emphasis on the development of storage, transport and processing capacity of rural produce. The overall goal of Grameen Ghana is to reduce poverty and improve living conditions in the rural areas and especially increase the incomes of women and vulnerable groups through increased self- and wage- employment. The immediate objective of Grameen Ghana is to promote a competitive rural micro and small enterprise sector in participating districts, which is supported by relevant, good quality, easily accessible and sustainable services.

The organisation works to reduce poverty in three main areas, namely, 1) microcredit, 2) food security and 3) education. The microcredit component of Grameen Ghana was started in June 2003 with the goal of providing financial services with education to economically active people (women) in rural communities. Thus, the credit scheme targets rural enterprises owned and managed by women. With an initial membership of 900 in 2003 the project serves over 8,000 women. The organisation aims at attaining operational sustainability, and to increase its outreach to a total of 18,000 beneficiaries and to achieve financial sustainability by 2012. Grameen Ghana operates in six Districts in the Northern Region of Ghana. The Districts are Tamale, Savelugu-Nanton, Central Gonja, Zabzugu-Tatale, Nanumba North and Nanumba South. The Districts have been zoned into three Credit Branches – Tamale Branch comprising Tamale, Savelugu-Nanton and Central Gonja Districts; Zabzugu-Tatale Branch comprising only Zabzugu-Tatale District and the Nanumba Branch comprising two Districts (Nanumba North and Nanumba South). Grameen Ghana has prepared a penetration plan describing a scale up procedure into new Region, the Upper East Region of Ghana. In all, three new Branches are expected to be added. These are Karaga Branch and Central Gonja Branch both in Northern Region and Bolgatanga Branch in the Upper East Region. Would-be beneficiaries in the new branches have self-selected and have organized themselves into solidarity groups ready to take loans.

The organisation has several funding partners. The partners provide technical assistance, small grants, concessionary and commercial loans to the organization. Examples of the funding partners are UNDP, SPEED Ghana, Grameen Foundation, Planet Finance, Ghana Commercial Bank and Cordaid. The main methodology used to disburse credit is credit with education characterised by the peer or solidarity group lending approach. The main policies are the provision of 12 to 24 weeks loan period, weekly/fortnightly repayment, absence of guarantee period and sponsorship of children's education. Membership is opened to all women but is based on the individual's interest or willingness (self-selection). Members self select themselves into smaller groups of between 5 and 6. The selection process begins with community investigation process. This is usually carried out by staff of GG to know the ground truth of communities before programme placement

placement. The main reason for investigating communities is to avoid duplication of resources. Thus, communities already benefiting from microcredit programmes are precluded from the list of programme placement. Community investigation also enables GG to study existing markets and to identify market opportunities that will address the demand side of the intervention.

Other important issues considered during the investigation process are availability of social infrastructure such as access roads, availability of water for agro-processing activities and schools for educating children. Programmes are placed in communities through marketing of the service and sensitisation of men to understand the need to provide support to their spouses. This is in line with the idea that women's behavior is affected by the level of cooperation of their male counterparts (del Mel et al., 2009). This is to nip in the bud the problem of business failures resulting from lack of husbands support. More importantly, new members receive 4 to 6 weeks capacity building training in key areas like business skills, leadership skills, book-keeping and group dynamics. The capacity training is aimed at improving the business management skills of women beneficiaries. Indirectly, the capacity training helps to reduce unobserved differences (e.g., entrepreneurship and character) among individual clients but does not eliminate them completely. On average, the loan size is GH¢ 120 representing over 200% increase over the average loan size of GH¢ 37 in 2003.

Theoretical and conceptual framework

Conceptually, evaluation criteria on rural lending can be examined in three forms. The first is self-sustainability (sustainability index) which measures the financial viability of a rural micro finance institution. Examples of indicators for this criteria are amount of savings, loan utilization, loan recovery rate, operation self-sufficiency and financial self-sufficiency. The second criterion is outreach to target clients. This criterion evaluates total number of clients and quality of services offered by the microfinance institution. This criterion is commonly proxied by average loan balance, number of branches and staff, number of clients and percentage of female clients. Impact on target clients (impact index) is the third criterion and it measures impact of rural financing on the clients. Access to financial services, that is savings, credit and insurance, is influenced by macro-economic and financial sector policy, and the specific policies and programs related to the promotion of microfinance institutions catering for the poor (Zeller, 1999).

According to the author, credit can increase the capital base of the household, or make it more resilient against shocks. Zeller (1999) further argued that micro-credit is not a single service that can be seen in vacuum by applying a *ceteris-paribus*-type of analysis and as such its social return needs to be evaluated in conjunction with the variation of other complementary services such as investment in human capital (e.g., capacity building) and in social services. Yunus (1975) stated that one single action which will enable the poor to overcome their poverty is credit. The reason is that in numerous instances, microcredit has helped alter perceptions regarding women's contribution to economic and social development and their role in this regard. More specifically, microcredit has led to greater recognition of women's capacity to devote themselves to work that produce income. Loans to women have a greater knock-on effect, children benefit from the increase in a mother's income. Women who borrow money establish links of solidarity through their involvement in lending circles and in village organisations. Studies (Berger, 1995; Khandker, 1998; Osmani, 1998) have shown that greater financial autonomy may have wider social implications, notably in terms of a greater say for women in family matters, including the family finances.

Thus, in the context of wider efforts to raise women's consciousness and to mobilise them, credit may have an important contribution to make as a first step towards empowerment. By participating in microfinance projects, women widen their contacts initially and consolidate their links with other women via meetings. Next, their ability to command and repay loans and accumulate savings is likely to boost their confidence and self-esteem (Sinha, 1998). Specifically, credit projects empower women by strengthening their economic roles, increasing their ability to contribute to the family's income, helping them establish their identity outside of the family, and giving them experience and confidence in the public sphere (Sinha, 1998).

METHODOLOGY

Research design

The study is designed to measure the impact of Grameen Ghana's microcredit programme on women shea butter processors in selected districts in the Northern Region of Ghana. A quasi-experiment is conducted that compares women who have access to credit and those who have not yet received credit. The target group of the research is those who buy nuts from the local market and process for the international market. The project operates in six districts in the Northern Region of Ghana. The districts are Tamale (peri-urban), Savelugu-Nanton, Central Gonja, Zabzugu-Tatale, Nanumba North and Nanumba South. The districts have been zoned into three Credit Branches – Tamale, Zabzugu-Tatale and Nanumba Branches. Three-stage random sampling was applied in selecting project enterprises and comparison enterprises. In the first stage, four out of six old districts (Tamale, Central Gonja, Savelu-Nanton and Zabzugu-Tatale) were selected using purposive sampling technique. These districts are selected because they are major shea butter processing districts. Two new districts, Bolgatanga and Karaga, were selected bringing the total number of

sampled districts to six (6). Bolgatanga and Karaga districts were selected because they are also popular shea butter processing areas and because they are new districts they can be used as control districts.

The second stage of sampling is at the community level which involved the survey of treatment group and control group. In both control and treatment communities, both members and non-members were surveyed. In total, twenty eight (28) communities were selected based on simple random sampling. Out of the 28 communities surveyed, eight (8) are new communities in the Bolgatanga and Karaga branches that have never benefited from Grameen Ghana's support, and have not received any project credit. This group is the control community. An important feature of the control group is that they have been organized into smaller groups and have been made to self-select according to the standard procedures normally used by GG to organize new beneficiary groups. In the third and final stage, a stratified random sample of enterprise owners was selected using lists of enterprise owners in each community. In the treatment communities, 206 project members and 82 non-project members were selected. In the control communities, 84 project members and 42 non-project members were selected. In total, enterprise level data were obtained from a random selection of 414 shea butter business owners, who buy nuts from the local market and process for the international market. In all, data were obtained from 288 treatment groups from a population of about 1,000 and 126 control groups from an estimated population of 300.

Data were drawn from structured interviews. Data covered the social, economic and demographic characteristics of the survey sample (age, experience, education, loan amount and income). Other areas include capacity training, sales and marketing activities of enterprises as well as the challenges faced by women processors in the industry. The rest are home consumption of shea butter and source of market. Village level data included the type and status of village infrastructure. Data were analysed using STATA.

Empirical model

In estimating causal relationships, the difference-in-differences (DID) estimation has become a popular method (Imbens and Wooldridge, 2008). Simply, DID estimation consists of identifying a specific intervention or treatment, and then comparing the difference in outcomes after and before the intervention for groups affected by the intervention to the same difference for unaffected groups (Bertrand et al.,, 2004). DID estimates and their standard errors most often are derived from using Ordinary Least Squares (OLS) in repeated cross sections (or a panel) of data on individuals in treatment and control groups for several years before and after a specific intervention (Imbens and Wooldridge, 2008; Chowdhuri, 2008). The DID estimator is often criticized on the grounds that it is appropriate when the interventions are as good as random, conditional on time and group fixed effects (Bertrand et al., 2004). Nevertheless, the great appeal of difference-in-differences estimation comes from its simplicity, as well as its potential to circumvent many of the endogeneity problems that typically arise when making comparisons between heterogeneous individuals (Imbens and Wooldridge, 2008). Consider the following specification:

$$C_{ij} = X_{ij}\alpha_B + V_j\beta_B + \varepsilon_{ij}, \quad (1)$$

$$Y_{ij} = X_{ij}\alpha_Y + V_j\beta_Y + C_{ij}\delta_Y + \mu_{ij}, \quad (2)$$

Where C_{ij} is the amount borrowed from the project by enterprise owner i in village or community j; X_{ij} is a vector of enterprise characteristics; V_j is a vector of community characteristics; Y_{ij} is an outcome on which impact is measured; α_B, β_B, α_Y, β_Y, and δ_Y are parameters to be estimated; and ε_{ij} and μ_{ij} are errors representing unmeasured enterprise and village characteristics that determine borrowing and outcomes, respectively. δ_Y measures the impact of Grameen Ghana's impact on the outcome Y_{ij} and it is the primary parameter of interest.

Econometric estimation of this equation system will yield biased parameter estimates if ε_{ij} and μ_{ij} are correlated and this correlation is not taken into account (Maddala, 1983; Coleman, 1999). Coleman (1999) explains that correlation between ε_{ij} and μ_{ij} can arise from two different sources. First is the non-random selection of enterprises to participate in microfinance project (enterprise level) and, second is the non-random selection of places to establish branches of microfinance institutions (project level). There are three standard procedures used in a case where ε_{ij} and μ_{ij} are correlated (Moffitt, 1991). The first is to use instrumental variables. The identifying instruments would be variables that are included as regressors in Equation (1) but not in Equation (2); that is, they would have to be determinants of joining the project and borrowing amount B_{ij}, but not be determinants of the impact measures Y_{ij}. The instrumental variable method cannot be applied in this study because of the difficulty to justify the use of any variables as determinants of C_{ij} and not Y_{ij} (Coleman, 1999). The second method is to use panel data, so that differences in pretreatment outcome variables can be taken into account. The main problem with panel data is the practical difficulty and expense of collecting such a panel (Khandker, 2005). The third method is to assume an error distribution (almost always a normal distribution) of outcome variable without treatment. The effect of treatment is then determined by measuring the deviations from normality of the outcome within the treatment group. Problems inherent in this method are:

i) There is usually no good basis on which to make an assumption about the error distribution;
ii) The results are highly sensitive to the assumptions about the error distribution; and
iii) In the case of censored dependent variables, identification of the treatment effect is sometimes still impossible.

Conducting a quasi-experiment allows for the use of village fixed effects to control for the possibility of endogenous project placement and identifies control group of would-be borrowers, and then surveys treatment members (Coleman, 1999). The quasi-experiment is capable of removing the bias in the selection process because of the use of both project village/community members and non-members. As stated earlier in the proposal, GG started in a few districts and has expanded its operations into other districts. This characteristic can be exploited when measuring impact of the credit project of GG. Keeping the idea of treatment and control groups in mind, Equations (1) and (2) can be replaced by a single impact equation as follows:

First substituting Equation (1) into (2) gives:

$$Y_{ij} = \alpha_y X_{ij} + \beta_y V_j + \delta_y[\alpha_B Xij + \beta_B V_j + \mathcal{E}_{ij}] + \mu_{ij}$$

$$Yij = \alpha Xij + \beta Vj + Vij \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots ^{**}$$

Where $\alpha = (\alpha_B \delta_y + \alpha_Y)$, $\beta = (\beta_y + \beta_j \delta_y)$ and $V_{ij} = (\delta_y \varepsilon_{ij} + \mu_{ij})$

Introducing the dummies and simplifying Equation ** gives Equation (3):

Table 1. OLS results on the role of Grameen Ghana in improving income of women Shea butter processors: Dependent variable is income.

Variables	Coefficients	t-statistics	Standard error
Constant	3.7452	3.37***	1.1109
Location	0.2211	0.89	0.2490
Market access	0.5094	1.80***	0.2830
Credit dummy	-0.1462	-0.72	0.2024
Education	0.4492	2.67*	0.1682
Capacity building	0.1626	0.87	0.1860
Age	0.0025	0.01	0.2983

Prob > F = 0.0858*; R-squared = 0.2186; adjusted R-squared = 0.1096; N = 414. Source: Field survey, 2010. *** and * represent 1 and 10% levels of significance, respectively.

$$Y_{ij} = X_{ij}\,\alpha + V_j\,\beta + A_{ij}\,\gamma + S_{ij}\,\delta + \upsilon_{ij}, \quad (3)$$

Where Y_{ij} , V_j , and X_{ij} are defined as before; A_{ij} is a membership dummy variable equal to 1, if enterprise *ij* self-selects into the credit project, and 0 otherwise; and S_{ij} is a dummy variable equal to 1, if a self-selected member has already had access to project loans, 0 otherwise. The membership dummy variable A_{ij} can be thought of as a proxy for the unobservable characteristics (e.g., entrepreneurship, group dynamics, etc) that lead enterprises to self-select into the project, that is, it captures the unobserved variables that caused ε_{ij} and μ_{ij} to be correlated across enterprises. The variable S_{ij} measures availability of the project to members who have self-selected, which, unlike the amount borrowed, is exogenous to the enterprise but may not be exogenous with respect to the village. In this specification, δ measures the average impact of the project Y_{ij}.

With this specification, the correlation between S_{ij} and μ_{ij} due to self-selection at the enterprise level is eliminated because unobservable enterprise characteristics are captured by A_{ij}. Moreover, if the order in which villages receive project support is random with respect to unobserved village characteristics, then efficient and unbiased estimates can be obtained with V_j as a vector of specific village characteristics affecting Y_{ij}. However, the order in which villages in the study area receive project support may not be random. Non-randomness with respect to unobservable village characteristics implies that using specific village characteristics as regressors will lead to a biased estimate of impact. One method of eliminating this bias is through village fixed effects estimation (Pitt and Khandker, 1998; Coleman, 1999). Following the work of Coleman (1999) the empirical model estimated in this study is specified as:

$$Y_{ij} = X_{ij}\,\alpha + V_j\,\beta + A_{ij}\,\gamma + D_{ij}\,\delta + \upsilon_{ij}, \quad (4)$$

The a priori expectation is that $\alpha, \beta, \gamma, \delta > 0$. Where the treatment dummy S_{ij} is replaced by D_{ij}, is a dummy representing zero for members in control villages and for non-members in control and treatment villages. The advantage of using Equation (4) is that it captures the impact measure in which project implementers are interested – the impact on enterprises of making the project available to them (for an additional month), rather than the impact in amount borrowed (Coleman, 1999). Another advantage is that it is easier to estimate. More so, inclusion of non-members in all communities allows for the use of village fixed effect estimates to control for the possibility that the order in which the beneficiary communities received project support is endogenous (Morduch, 1999; Coleman, 1999; Pitt and Khandker, 1998).

The dependent variable is the income status of microcredit project participants, whom are all women, and it is the annual sales income in Ghana New Cedi (GH¢). The variables included in the vector of enterprise characteristics (X_{ij}) are experience measured in terms of number of years of shea butter processing and level of education (years of schooling); type of shea butter market in the district dummy (1 = local market, and 0 = foreign market), and capacity building status measuring the number of times a business owner has participated in project capacity building training workshops. The variables included in the vector of village-level characteristics (V_j) are level of economic development of the village dummy (1 = endowed with accessible good road or roads, a school and a health facility, and 0 = otherwise) and location dummy (1 = peri urban, and 0 = otherwise). Equation (4) is estimated using the OLS estimation method.

RESULTS AND DISCUSSION

The OLS results are contained in Table 1. The R-squared is 0.2186. All the variables have the expected signs with the exception of the credit variable. The negative sign of the credit variable is surprising. The negative sign suggests that participation in Grameen Ghana's credit programme has not significantly improved the income of women processors. Presently, average loan size of the project appears too small (GH¢120) compared to the capital needs of women shea butter processors. Size of loans matter because empirical results indicate that when loans are small there is high tendency for such loans not to be directly invested in productive activities with a positive return. More so, when loans appear too small to be invested productively because of economies of scale, they serve primarily as consumption loans (Coleman, 1999). The implication is that access to microcredit may not be an effective way of alleviating poverty; if the adequate amount of loan is not given to beneficiaries (Egyir, 2009; Al-hassan, 2011a).

The market access variable has a positive sign and is statistically significant at 1% level. This means that the objective of the project that aims at improving the incomes of women shea butter processors cannot be attained unless the processors gain improved access to market services, particularly international market (Al-hassan, 2011b). Access to market boosts production on regular basis leading to sustained income level of women

processors. With improved market situation micro and small shea butter processors can grow and expand faster in order to enjoy economies of scale. The education variable is positive and significant. This means that the incomes of women shea processors can be increased with improved educational levels. This finding conform with the findings of Esther (2010), that fostering and ensuring an enhanced and consistent relationship between education and microcredit can expedite the continuous process of empowering women in Bangladesh. Education enables processors to effectively plan and manage their businesses in terms of resource mobilisation and utilization. Also, education enables women to organize themselves in small producer groups that put them in a better position to attract more loans.

CONCLUSION AND RECOMMENDATIONS

This paper examines the role of microcredit in improving the incomes of women engaged in shea butter processing in Ghana. Cross-sectional data obtained from 414 women microentrepreneurs engaged in shea butter processing were fitted into a regression model to arrive at its conclusions. The results indicate that Grameen Ghana's credit programme has not significantly improved the income of women processors suggesting that the objective of the project that aims at improving the incomes of women shea butter processors cannot be attained unless women shea processors gain improved access to market services, particularly international market and having an enhanced amount in terms of the quantum of money given them. Women shea processors' ability to affect (increase) incomes is significantly determined by their levels of education and market access. Majority of the women engaged in shea processing do not have formal education thereby limiting their ability to do research and to understand the basic market conditions based on demand and supply. These have policy implications. Improved incomes of shea processors cannot be attained unless owners of businesses have the necessary educational capacity. The implication is that improved educational attainment makes firms more innovative and competitive in both local and foreign markets.

In order to maximize the welfare of shea processors and for that matter their incomes, Grameen Ghana needs to embark on activities that link shea butter producers to market opportunities. Emphasis should be placed on foreign market because that will ensure quality production as a result of competition. Efforts should be made to sensitize shea processors to become aware of international market standards and promotion as this can enhance the export potential of shea butter in Ghana. Market access is also a key determinant of improved incomes of shea processors. This would not only better the lives of shea processors but to also open up more investment opportunities in the rural area. It is equally important for policy makers to design policies that will improve the educational capability of shea processors. The education process should include training in improved methods of processing, packaging and marketing.

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