

ASSET BUILDING AND POVERTY REDUCTION IN GHANA: THE CASE OF MICROFINANCE¹

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Abstract

This paper examines the extent to which microfinance has contributed to poverty reduction in Ghana by supporting their clients with both financial and non-financial services to build up their asset base. The study found that participation in the programme has enabled established clients to own savings deposits and subscribe to a client welfare scheme to pay off debts in times of illness or death. They were also found to be in a better position to contribute towards the education of their children, payment of health care for members of their households and the purchase of household durables. The study further noted that clients who remained in microfinance programmes for long periods of time suffered from diminishing marginal returns. There should be some form of up-scaling to accommodate these clients or they should be able to join other financial service providers in the formal sector in order to benefit fully from a participation in microfinance programmes.

Keywords: microfinance, asset building, poverty reduction, financial sustainability, Sub-Saharan Africa, Ghana

1. INTRODUCTION

This study links three key issues of microfinance, asset building and poverty reduction. Given the immense recognition and acceptance of microfinance by governments, development partners and non-governmental organizations (NGOs) as an interventionist strategy towards poverty reduction in developing countries, an evaluation of the effects of microfinance programmes on poverty reduction through asset building is deemed to be a use-

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ful topic to research for the continuous support for such programmes and sustainability of development financing. This paper examines the extent to which *Sinapi Aba Trust (SAT)*, the leading NGO microfinance provider in Ghana, has contributed to poverty reduction among rural and urban poor through asset building.

Microfinance enables clients to protect, diversify and increase their income, and build assets, thereby reducing their vulnerability to income and consumption shocks (Arun and Hulme, 2003; Armendariz de Aghion and Morduch, 2005). The solidarity group lending methodologies common in microfinance help increase the confidence of the poor, thereby empowering them to become more effective in confronting inequities. The availability of financial services has proven to be a critical factor in reducing poverty and its effects, resulting in positive impacts on nutrition, education, health, gender equity, and the environment (Littlefield, 2003). The literature on microfinance offers a diversity of findings with regard to the type and level of impact (Buckley, 1997). In general, three main types of programme effects have been ascertained and measured as a result of providing the poor with access to microfinance services: *economic* (such as income and productive assets including savings, insurance and household durables); *well-being* (such as access to education, health, food, clean water etc.) and *social and political* (such as ability to participate in decision-making, access to social networks and participation in collective actions to take control over resources that affect their lives) (Hulme and Mosley, 1996; Snodgrass and Sebstad, 2002). These effects could be assessed at the individual, household, enterprise and community level.

Even though microfinance programmes are deemed to play a vital role in poverty reduction among the poor, it must be emphasized that knowledge about the achievements of such initiatives remain only partial and contested. At one extreme are studies arguing that microfinance has very beneficial economic, well-being and social impacts (Khandker, 1998; Morduch, 1999). At the other extreme a number of writers caution against such optimism and point to the negative impact that microfinance can have (Adams and von Pischke, 1992; Montgomery, et al., 1996; Buckley, 1997). In the middle are the works that identify beneficial impacts but argue that microfinance does not assist the poorest, as is so often claimed (Hulme and Mosley, 1996; Vanroose, 2007). For instance, Adams and Von Pischke (1992: 1468) argue that "many of the loans being made to micro-enterprises will not be repaid, most of these programmes are likely to be transitory, and many of the targeted borrowers will not be materially assisted in the long run through programmes that increase their debt." They further argue that debt is not an effective tool for

helping most poor people to enhance their economic conditions, be they operators of small farms or micro-enterprises. Hulme and Mosley (1996: 134) also conclude from their studies of various micro-credit programmes that "...most contemporary schemes are less effective than they might be". The authors argued that microcredit is not a panacea for poverty reduction and that in some cases the poorest people have been made worse off. Buckley (1997: 1091) also states that, "despite the growth over the last decade in micro-enterprise credit programmes throughout Africa, there appears to be little evidence to suggest significant and sustained positive impacts on the supposed beneficiaries.

The main objective of this paper is to assess the effectiveness of microfinance programme as a tool for poverty reduction by assisting participants in building up the asset base and the policy implications with respect to programme funding and management. This stems from the fact that a key characteristic of poor people all over the world is that they lack assets in the form of education and health care, savings and insurance products as well as household durables (World Bank, 1990; Moser, 2006).

The remainder of the paper is organized into five sections. Section two examines the theoretical linkage of poverty, asset building and an eventual reduction of poverty levels or movement out of the poverty trap whilst section three examines the role of microfinance as a poverty reduction strategy in Ghana. Section four related on the data for the study whilst Section five presents the empirical results of the study. The final section concludes the paper with lessons learned from the study.

2. POVERTY, ASSET BUILDING AND POVERTY REDUCTION

In this section we examine poverty as a multi-dimensional phenomenon and how it could be reduced through asset building. According to Lipton and Ravallion (1995:2553) "poverty exists when one or more persons fall short of economic welfare deemed to constitute a reasonable minimum, either in some absolute sense or by the standards of a specific society". In broad terms poverty is defined as an absence of well-being or of capabilities that are generally accepted as being desirable or valuable. Lack of well-being therefore implies severely curtailed human capabilities (Sen, 1997). It must be recognized that the human capability of doing and being are not themselves measurable, even though attributes of their lack such as hunger, under-nutrition, physical weakness, illness, lack of shelter, being dressed in rags among others are recognized as descriptions of the many facets of being

poor. However, economists and some researchers approach well-being or the lack of it indirectly, using indicators that attempt to capture important dimensions of poverty which are measurable within certain time and cost constraints. It must be noted that income has been the long favored unit of welfare analysis because it is a cardinal variable that is directly comparable among observations, making it easy to interpret and use in quantitative analysis (Moser and Felton, 2007). By the 1990s, interest in the use of income poverty was however superseded by consumption-based poverty (World Bank, 1990, 2000) In the past decade, development economists have increasingly advocated the use of assets to complement both income and consumption-based measures of welfare and wealth in developing countries (Carter and May, 2001; Moser and Felton, 2007).

Poverty research has further revealed much about the characteristics that are widely shared by poor people and families with the most fundamental of these being lack of assets. According to Moser (2006) looking at the assets of the poor is essential in understanding upward mobility, and in particular the transitions out of poverty. In a rural context, landlessness is seen as a highly accurate predictor of poverty as is low human capital resulting from poor health and inadequate education provision (Ellis, 2000, Haan and Zoomers, 2005). Otero et al. (1994: 13) observe that "the families that operate micro-enterprises typically lack assets, especially marketable assets". The World Development Report 2000 further states that "to understand the determinants of poverty in all its dimensions, it helps to think in terms of people's assets, the returns to (or productivity of) these assets and the volatility of returns" (World Bank, 2000: 34). The analysis of assets and their accumulation is aimed at complementing such measures by extending our understanding of the multi-dimensional character of poverty and the complexity of the processes underlying poverty reduction (Schreiner, 2004; Adato et al., 2006). Poverty is seen as a multi-dimensional phenomenon and, therefore, consumption-based measures are supplemented by other welfare indicators such as ownership of household durables and access to services including education and health care. Accumulation or changes in household ownership of assets such as household durables can be considered as an indicator of improvement in or changing living standards of households (Ghana Statistical Service, 2007). Thus, assets are identified as the basis of agents' power to act to reproduce, challenge or change the rules that govern the control, use and transformation of resources (Sen, 1997). The discussions above confirm that poverty is a multi-dimensional phenomenon and the important role asset building plays in poverty reduction.

3. MICROFINANCE AND POVERTY REDUCTION: THE CASE OF GHANA

A major development issue faced by governments in Sub-Saharan Africa, including Ghana, has been the need to reduce the scale and depth of poverty among the growing population. Due to the limited success achieved by top-down policies and programmes as well as the non-sustainability of previous government-backed credit programmes specially designed for the poor (Steel and Andah, 2003), Ghana has embraced microfinance as a major strategic tool to combat the severe poverty that continues to plague the country. This stems mainly from the belief that providing small loans, savings and insurance products to the poor, and more especially women, could be a way of providing opportunities to be self-reliant and play active roles in their households and communities (Khandker, 2003; Holvoet, 2005). According to Aryeetey (2008) during the past two decades the emphasis has been on establishing microfinance schemes as the best alternative to ensuring access to financial services for small borrowers.

Data from the Ghana Human Development Report 2004 indicate that the level of deprivation, as measured by the Human Poverty Index, had declined from 51.7 per cent to 41.0 per cent between 1997/98 and 2002/03 (UNDP, 2005). A recent data from the Ghana Living Standards Survey (GLSS) also estimate that poverty declined from 52 per cent in 1991/92 to 28.5 per cent in 2005/06 (Ghana Statistical Service, 2007). Though this represents a significant reduction there is, however, less optimism with the increasing growth of population. As argued by Aryeetey and McKay, (2004: 14), "the extent and depth of poverty are generally to be seen as outcome of the absence of effort to change the structure of the economy over several decades"². As a result of the depth and scale of poverty levels, Ghana has focused on poverty reduction as the core of its development strategy.

Since the early 1980s, Ghana has implemented a number of development programmes that were expected to impact positively on the livelihood of the poor and build their asset base to guard against vulnerability. For instance, the Economic Recovery Programme (ERP) aimed at reducing the scale and depth of poverty in the country (see Hilson and Potter, 2005). However, according to Asenso-Okyere et al. (1993), some of the policy reforms adversely

² The economy is dominated by traditional export commodities made up of cocoa, minerals and timber which are exported in their raw form instead of processing them to create added value and employment. Agriculture which employs majority of the populace is also rain-fed and labour intensive.

affected vulnerable groups, especially women, children and rural dwellers and some were even made worse off than when the programme was launched. Currently, the Government is implementing the Ghana Poverty Reduction Strategy (GPRS) I and II which began in 2002. The overall policy framework for microfinance is informed by the poverty reduction strategy which seeks to balance the growth and macroeconomic stability with human development and empowerment to positively impact the reduction of the country's poverty levels in the medium term (Government of Ghana, 2003). Since the beginning of the 1990s, there has been a proliferation of microfinance institutions in the country including non-governmental organisations, credit unions, savings and loans companies, *susu*³ clubs and associations as well as Rural and Community Banks (RCBs) which as at the end of 2006 numbered 122 (ARB Apex Bank, 2007) and could be found in almost all the districts of the country. Other microfinance providers include a few commercial banks which have set up units purposely to serve the sector with their own funds or funds borrowed from government-backed special microfinance programme funds. All these institutions provide different services and reach different poverty groups depending on their legal status, geographical spread and funding sources (see Gallardo, 2002; Steel and Andah, 2003).

Given this background, this paper assesses the extent to which SAT has contributed to poverty reduction among rural and urban poor by supporting them with small loans to expand their businesses, generate income and build up their asset base in the form of financial, human and physical capital. Using a cross-sectional survey, the paper analyzes data from two groups of respondents totaling 547, from nine administrative districts in Ghana, i.e. three districts from each of the three ecological zones of the country.

4. DATA AND METHODS

4.1 *Sinapi Aba Trust (SAT)*

SAT, a partner in the Opportunity International Network was established in 1994. The name *Sinapi Aba* is the local language version of the biblical

³ *Susu* is a local terminology used for a savings and credit scheme with distinctive features and structures. The *susu* system primarily offers savings services to enable their clients to accumulate their own savings although credit is also a common feature. All members of a *susu* group, except the last one, receive their lump sum earlier than if they had saved on their own. It is synonymous to the rotating savings and loan scheme.

word 'mustard seed' and reflects its mission to serve as a *mustard seed*, through which opportunities for enterprise development and income generation are given to the economically disadvantaged to transform their lives. The organisation serves as 'the bank for the poor' for over 50,000 poor clients, offering credit, savings, insurance and holistic training services (SAT, 2007).

SAT is one of the few MFIs in the country which has a nation-wide coverage. SAT's growth since its establishment over the past fourteen years has witnessed tremendous changes which reflect the expansion of the programme, the lessons learned and the adoption of best practices in the micro-finance industry. Potential clients normally receive training at the branch prior to formal application for a loan and they are mainly engaged in the informal sector of the economy and predominated by micro-entrepreneurs, majority of whom are not able to access credit from the formal commercial banks as a result of the perceived risks posed by this group of people and the lack of collateral to secure credit facilities granted by these banks (Aryeetey, 1994; Basu et al., 2004). SAT adopts a group-based lending methodology called Trust Banks designed to reach the poorest of the self-employed poor. Conditions and procedures for extending credit to clients are more simplified and essentially include a regular cash flow from the business for which the loan is being sought and attendance of the SAT organized business orientation and training programme. Products and services offered by the organisation include loans, savings deposits, client welfare (insurance) scheme and non-financial services including business management training. SAT is a financially self-sustainable microfinance provider (SAT, 2007).

The survey which was cross-sectional in nature was carried out from February to July, 2007. In all, 547 questionnaires were administered to two groups of respondents which comprised 316 established clients, who had borrowed and utilized at least four loan facilities for periods of over two years and 231 new clients, who had either not benefited from any loan facility from SAT before (i.e. in orientation/training) or had benefited from one loan facility serviced.

Both groups of clients were selected by using a multi-stage sampling method. Since SAT has branches in all the ten regions in Ghana, the country was divided into three main geographical zones (i.e. coastal, forest and savannah), each zone covering at least three regions. At the second stage, three branches located in the three zones were selected to make the sample representative. Following from this, separate lists of established and new clients of SAT were compiled from which a systematic random sample of 330 established clients and 240 new clients were selected. This approach was adopted

in order to avoid selecting many members from a particular group and few from other groups. Thus, the use of the method helped to generate a proportional representation of all the groups in each branch of SAT. For both group of respondents, a second list was prepared from which absentee clients were replaced to ensure that the selected number of respondents were all covered in the survey. For the data analysis, questionnaires from 316 established and 231 new clients were deemed to be correct and acceptable for the purpose.

4.2 Regression model

According to Khandker (1998), the objective of modeling household behavior when there is an option to participate in a group-based programme such as the microfinance programme being implemented by SAT is to estimate the impact of credit programmes on various household outcomes, such as savings and household assets. Thus, the level of participation in credit programmes (C_{ij}), measured by the value of programme credit, is given by:

$$C_{ij} = X_{ij}\alpha + V_{ij}\beta + Z_{ij}\gamma + \varepsilon_{ij} \quad (1)$$

where X_{ij} is a vector of household characteristics (such as age, marital status, level of education and household size), V_{ij} is a vector of village characteristics (such as status of area, availability of water and road network), Z_{ij} is a set of household or village characteristics distinct from X_{ij} and V_{ij} in that they affect C_{ij} but not other household behavior conditional on C_{ij} , and α , β and γ are unknown parameters. ε_{ij} is a random error consisting of u_j an unobserved specific village effects; η_{ij} an unobserved household-specific effect; and e_{ij} a non-systematic error uncorrelated with the other error components or the regressors.

The conditional demand for household outcome, Y_{ij} , conditional on the level of programme participation C_{ij} is:

$$Y_{ij} = X_{ij}\alpha + V_{ij}\beta + C_{ij}\delta + \varepsilon_{ij} \quad (2)$$

where α , β , and δ are unknown parameters as in Equation 1 and $\varepsilon_{ij} = (\phi\mu_j + \eta\mu_j) + (\theta\eta_{ij} + \eta_{ij}) + e_{ij}$, where ϕ and θ are parameters corresponding to correlation coefficients), μ_j and η_{ij} are additional village and household-specific errors uncorrelated with other error components or with the regressors. If $\phi = 0$ and $\theta = 0$, the errors ε_{ij} and e_{ij} are correlated. Econometric estimation that does not take this correlation into consideration will yield biased estimates of the parameters. Correlation between ε_{ij} and e_{ij} can arise from two main

sources⁴. The first is the self-selection into a microfinance programme and subsequent decision to borrow and second is non random programme placement. In this study the problem of placement does not arise since all respondents reside in the same operational areas of the programme. Self-selection bias will be solved using the Heckman selection model. Equation 2 could therefore be stated as:

$$Y_{ij} = X_{ij}\alpha + T_{ij}\delta + \varepsilon_{ij} \tag{3}$$

where Y_{ij} , X_{ij} and ε_{ij} are defined as before. The variable T_{ij} measures availability of the programme to members who have self selected. Following from Coleman (1999), this paper models the effect of microfinance intervention on financial capital, human capital and physical capital as follows:

$$Y_{ij} = X_{ij}\alpha + VBMos_{ij}\delta + AmtLoan_{ij}\gamma + \varepsilon_{ij} \tag{4}$$

where Y_{ij} , X_{ij} and ε_{ij} are defined as before and α , δ , γ are unknown parameters. T_{ij} is represented by both $VBMos_{ij}$ and $AmtLoan_{ij}$. $VBMos_{ij}$ in this model represents the number of months since a participant took the first loan from SAT. This is a better measure of impact than the number of months that the programme has been in the village. $AmtLoan_{ij}$ represents the amount of loan borrowed by a participant from the programme. Thus, the effects of participation could therefore be well measured if we consider both the loan amount granted to a participant and the length of time since a participant took the first loan.

5. FINDINGS AND ANALYSIS

5.1 Descriptive statistics

Table 1 presents a list of descriptive statistics of individual characteristics and programme variables (independent variables) as well as the outcome

⁴ Self selection bias arises where there are key differences between borrowers and non-borrowers that cannot be observed, measured and allowed for, with self-selection bias (that is, where those with particular characteristics choose to participate in a programme) being a key problem. Hence, whilst differences in education, age, or marital status can be accounted for statistically, there could also be differences in attitude to risk or entrepreneurship, which will be basically unobservable; whilst programme placement bias arises in situations where loans go to localities or areas that are in some way favored, such as villages and towns with better infrastructure and social services with strong demand growth.

Table 1: Descriptive statistics

Variable name	Weighted mean N=547	Established clients N=316	New clients N=231
<i>Independent variables</i>			
<u>Programme characteristics</u>			
Months with SAT since first loan	29.26 (26.13)	48.64 (16.98)	2.74 (1.81)
Loan amount	2,950,457 (2,343,039)	4,302,215 (2,417,075)	1,101,299 (879,796)
<u>Individual characteristics</u>			
Average age (years)	41.00 (10.24)	43.30 (9.65)	37.86 (10.22)
Marital status (married=1) Married/not married (%)	80/20	77/23	84/16
Level of education (attended school=1) Attended school/not (%)	42/58	44/56	40/60
Household size	4.63 (1.84)	4.67 (1.84)	4.58 (1.86)
<i>Dependent variables</i>			
<u>Financial Capital</u>			
Savings deposits	314,886 (257,981)	456,962 (245,114)	120,532 (100,191)
Client welfare scheme***	59,133 (46,879)	86,209 (42,872)	22,095 (17,745)
<u>Human Capital</u>			
Expenditure on health care	280,124 (285,314)	340,905 (319,144)	196,978 (204,286)
Expenditure on children's education	684,762 (920,318)	777,025 (929,442)	558,550 (894,349)
<u>Physical Capital</u>			
Sewing Machine	27,788 (49,125)	26,266 (46870)	29,870 (52,082)
Refrigerator	250,823 (311,875)	289,873 (313,139)	197,403 (302,730)
Gas/electric cooker	78,427 (203,677)	95,728 (222,230)	54,762 (172,825)

Figures in parentheses are standard deviations.

*** respondents are made up of established clients and new clients made up of contributors and non-contributors.

Source: *Survey Data, 2007*

variables (dependent variables) for the study. These include the means and standard deviations of each group of respondents and the total sample of 547 for both groups of respondents. The descriptive data provides a basis for

understanding the context within which the effects of participation in the programme occur. The average age of established clients is 43 years, compared to 38 for new clients, with a standard deviation of about 10 years for both groups. With regard to marital status, 77 per cent of established clients are married compared to 84 per cent for new clients; meaning that majority of SAT clients are married. In terms of levels of education, a higher proportion of established clients, that is 44 per cent, have attended school up to secondary level, compared to 40 per cent of new clients implying that a greater proportion of clients of SAT have no formal education. Client household sizes averaged 4.63, with 4.7 for established clients and 4.6 for new clients. Thus the dependency ratios of clients of SAT, on the average, are similar and quite high implying larger outlays of resources.

In general, it could be stated that, apart from the fact that both established and new clients of SAT have their own businesses, which is one of the criteria for membership, they also share similar individual characteristics including marital status, level of education and household size. They only differ quite significantly in terms of age. In this regard, the use of the new clients as a control group for the estimation of the programme effects will provide better estimates since both established and new clients share common entrepreneurial skills in addition to similar individual characteristics.

5.2 Programme effects - Financial capital

Financial capital has been identified as one of the effective tools to escape poverty. Indeed, the accumulation of financial capital is one of the best indicators of moving out of poverty (Moser, 2006) Poor people need financial products in the form of loans, savings and insurance schemes to smooth out their household cash flow, deal with emergencies and other unforeseen requirements of cash and augment income through investment in a gainful way (Rutherford, 1999). According to Sharif (1997), the challenge is to devise the right group of services for the right group of poor people. Here we considered participants' total savings deposits and contributions towards the client welfare scheme since the introduction of these two products by SAT.

Table 2 shows that none of the individual characteristics had any influence on the amount of savings deposits made by participants. These results are reflections of the fact that individual characteristics do not significantly affect borrowing from SAT. On the other hand, the programme variable with a significant effect on savings deposit was the loan amount (0.11; $p=0.000$). One should not be surprised of this result since there is a positive relation-

Table 2: Financial capital (Amount in Ghana cedis)

Dependent variable: Independent Variables	Savings deposits		Client welfare scheme	
Individual characteristics				
Constant	-5,007.86	(24,011.64)	-2,647.47**	(991.48)
Age	65.45	(1,195.28)	119.07**	(49.35)
Age ²	2.25	(13.64)	-1.15**	(0.56)
Marital Status	3,862.93	(2,050.37)	174.58	(213.09)
Level of Education	1,789.56	(974.77)	22.90	(40.25)
Household Size	-1,779.56	(1,126.77)	-30.57	(46.53)
Program variables				
No. of Months with SAT	-496.26	(258.26)	5.97	(10.66)
No. of Months with SAT ²	1.91	(2.94)	-.12	(.12)
Loan Amount	.11***	(.00)	.02***	(0.00)
Observations = 547	R ² =0.97		R ² =0.99	

*p < 0.10; **p < 0.05; ***p < 0.01

Source: Survey Data, 2007

ship between loan amount and savings deposits. Thus, all members who had benefited from loan facilities from the programme must have at least 10 per cent of such loan amounts in the form of savings deposits prior to the disbursement of their loans. Indeed, for every one hundred cedis increase in the loan amount, this resulted in an increase in savings deposit of eleven cedis or 11 per cent. This figure is close to the compulsory savings of 10 per cent of the loan amount in addition to the voluntary savings of about 1 per cent, since the majority of participants did not make any voluntary savings. This finding is further supported by the high R-squared which implied that 97 per cent of the variability in savings deposits was explained by the independent variables of which the loan amount was the only significant one. What is surprising, however, is the length of time that individuals had been with the programme, which had a negative coefficient and was not significant (-496.26; p=0.055).

The client welfare scheme was introduced by SAT as a form of insurance to cover default risk in case of the death or severe illness of a participant who has an outstanding loan to settle. Prior to that, such debts were paid off by members of the Trust Banks, who had jointly and severally guaranteed such loans. As shown in Table 2, the loan amount was positive and very sig-

Table 3: Human capital (Amount in Ghana cedis)

Dependent variable: Independent Variables	Health care		Children's education	
Individual characteristics				
Constant	259,531.05	(141,584.67)	-1,028,898.00**	(440,214.04)
Age	-5,651.80	(7,047.96)	29,404.46	(21,913.47)
Age ²	85.40	(80.41)	-237.10	(250.01)
Marital Status	128,598.20***	(30,429.80)	593,998.73***	(94,612.11)
Level of Education	13,753.68**	(5,754.76)	16,063.90***	(17,870.88)
Household Size	1,007.49	(6,644.02)	230,167.51***	(20,657.53)
Program variables				
No. of Months with SAT	1,708.67	(1,522.81)	-162.37	(4,734.72)
No. of Months with SAT ²	-44.16**	(17.34)	-14.72	(53.92)
Current Loan Amount	.05***	(.01)	.05**	(.02)
<i>Observations = 547</i>	<i>R²=0.24</i>		<i>R²=0.21</i>	

*p< 0.10; **p< 0.05; ***p< 0.01

Source: Survey Data, 2007

nificant at the 1 per cent level (0.02; p=0.000). Similar to the savings deposits, the premium paid towards the client welfare scheme was also positively associated with the loan amount and this is confirmed by the high R-squared of almost 100 per cent. Thus, for every one hundred cedis increase in the loan amount, the contribution to the client welfare scheme increased by two cedis or 2 per cent. The length of time a client had been with SAT was, however, is not significant in terms of contribution to the scheme (5.97; p=576). With regard to the individual characteristics, only age of the respondents was significant at the 5 per cent level (119.07; p=016).

5.3 Programme effects - Human capital

Human capital refers to the labor available to the households in terms of its level of education, skills and health status. It is the chief asset possessed by the poor, and can be increased by investment in education and training, as well as skills acquired through pursuing one or more occupations (Ellis, 2000, Moser, 2006). The health status of people determines their quality of life, level of productivity and longevity. Education, on the other hand, has been identified as the most important tool in providing people with the basic

knowledge, skills and the competencies to improve their quality of life at all levels of development. Respondents were asked whether they contribute or not towards the health care of their household members and the education of their children and how much.

The variable health care refers to the ability of participants and their children/dependants to access health services either by themselves or with the support of their partners. On the other hand, the variable education refers to the ability of participants to sponsor their children's education either on their own or with the support of their partners. Table 3 shows that for every one hundred cedis increase in the loan amount, expenditure on health care was increased by five cedis. Established clients in general contributed significantly towards health care, either on their own or with the support of their partners. Whilst on average established clients contributed 340,905 cedis, new clients contributed 196,978 cedis. Individual characteristics which were significant were marital status (-128,598.21; $p=0.000$) and the level of education (13,753.68; $p=0.017$). For programme characteristics, only the loan amount recorded a positive coefficient and was significant (0.50; $p=0.000$). The programme variable which was not significant was the length of time with the programme (1,708.67; $p=0.262$). The results indicate that health care seems to be affordable to a majority of Ghanaians, including clients with the introduction of the National Health Insurance Scheme (NHIS) by the government.

Ghanaians place high value on education and invest in their children's education. Most people prefer sending their children to private schools at very high costs compared to public schools in order for such children to get a 'better' education. Ghana currently has a policy of free compulsory universal basic education (FCUBE). Beyond the basic school level (i.e. primary school plus 3-year junior secondary school education) tuition fees must be paid in addition to other expenses such as uniforms, footwear, food, transportation cost, books, and special levies towards furniture replacement, computer acquisition and school buildings. The results in Table 3 indicate that, with the exception of age, all the coefficients of the individual characteristics are positive and significant. Similar to the programme effects on health care, loan amount is positive and significant whilst the length of time is not significant. For every one hundred cedis increase in the loan amount, expenditure on children's education increased by five cedis. On average, established clients' contribution towards their children's education per annum stood at 777,025 cedis, whilst new clients contributed 558,550 cedis during the same period. Most established clients were also in a better position to sponsor their children to private schools than new clients. Compared to public schools, expenditure on children in private schools is almost four times or more in most cases.

Table 4: Physical capital (Amount spent in Ghana cedis)

Dependent variable: Independent Variables	Sewing Machine		Refrigerator	
Individual characteristics				
Constant	-24,901.05	(27,821.28)	95,820.55	(159,233.67)
Age	2,726.10	(1,363.42)	.361.19	(7,926.51)
Age ²	-32.41	(15.51)	-88.30	(90.43)
Marital Status	-63.45	(2,346.77)	121,111.53***	(34,222.97)
Level of Education	2,468.92**	(1,115.70)	23,936.14***	(6,464.23)
Household Size	-25.26	(1,225.66)	-19,766.25	(7,472.21)
Program variables				
No. of Months with SAT	62.24	(295.40)	3,305.45	(1,712.64)
No. of Months with SAT ²	1.42	(3.37)	24.81	(19.50)
Current Loan Amount	-.01**	(.00)	.05***	(.01)
<i>Observations = 547</i>	<i>R²=0.15</i>		<i>R²=0.17</i>	

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Source: Survey Data, 2007

5.4 Programme effects - Physical capital

Poverty is examined in terms of ownership of household durables; this can be seen as an alternative measure of poverty such as income-based and consumption-based measures. One of the merits of these asset-based indicators is the ease with which they can be measured compared to indicators based on consumption expenditures and income levels. Respondents were asked about purchases they made solely or jointly with their partners. The results reveal that participation in SAT's microfinance programme is strongly associated with increased expenditure by established clients for the acquisition of household durables.

Almost 20 per cent of respondents indicated that they contributed towards the acquisition of a sewing machine for their households compared to a national average of 21 per cent. Table 4 shows that being a member in the programme for a longer period is not significant (62.24; $p=0.833$). In terms of contribution towards the acquisition of a sewing machine, there was no difference between established clients and new clients. This situation is not surprising within the Ghanaian context since most women normally acquire this particular asset as a productive asset to generate income for living, or to

use to mend torn clothes and dresses within the household. Sometimes they are reserved for their daughters to be used in learning sewing as a trade. Even though the effect of the loan amount was significant, its coefficient was negative (-0.003; $p=0.020$) signifying that though established clients benefited from larger loan amounts, profits generated from business activities were often not utilized for the acquisition of sewing machines. The only individual characteristic which was significant at the 5 per cent level with a positive coefficient was the level of education (2,468.92; $p=0.027$).

The ownership of a refrigerator is associated with a better standard of living. Refrigerators are used for either domestic or commercial purposes or both. About 45 per cent of respondents had this asset in their household compared to the national average of 24 per cent. Neighbors who do not possess this asset sometimes approach those who have, to request for iced water or space to preserve perishable items such as meat and fresh fish. As shown in Table 4, individual and programme characteristics which played significant roles in the acquisition of refrigerators were marital status (129,111.57; $p=0.000$), the level of education (-27,869.69; $p=0.000$), size of respondent household (-19,766.25; $p=0.008$) and loan amount (0.05; $p=0.000$). It is not surprising that people with high levels of education and are married tend to be more economical and, therefore, acquire items such as refrigerators in order to save money through purchases of goods in bulk for storage. Loan amount also played an important role in assisting participants of the programme to contribute towards the acquisition of refrigerators to improve their living standards. However being a member of SAT for a longer period was not a significant contributory factor towards the acquisition of refrigerators (-3,305.45; $p=0.054$). Thus, there was not much difference between established and new clients of SAT with respect to their contribution towards the acquisition of refrigerators for their households.

Ownership of a gas/electric cooker also serves as a proxy for improved standards of living. Women who possess these items no longer have to go to the bush in search of firewood. About 13 per cent of respondents indicated they have contributed towards the purchase of gas/electric cookers in their homes compared to the national average of 20 per cent. However the associated cost in the form of either gas or electricity often prevents people from using them. As shown in Table 5, individual characteristics which were positive and significant in the acquisition of gas/electric cookers were marital status (54,390.49; $p=0.020$) and the level of education of the respondents (13,278.86, $p=0.003$). This could be attributed to the fact that people with higher levels of education in most cases have experienced the use of this item and recognize its economic importance. In addition, higher levels of education are associat-

Table 5: Physical capital (Amount spent in Ghana cedis)

Dependent variable: Independent Variables	Gas/electric cooker		Television	
Individual characteristics				
Constant	35,175.97	(108,160.56)	-6,926.22	(72,892.43)
Age	-2,284.50	(5,384.14)	2,035.30	(3,628.52)
Age ²	27.85	(61.43)	-16.74	(41.40)
Marital Status	4,390.88**	(23,246.19)	57,488.76***	(15,666.26)
Level of Education	13,359.27***	(4,390.87)	11,057.73***	(2,959.13)
Household Size	-7,769.26	(5,075.55)	-3,925.33	(3,420.56)
Program variables				
No. of Months with SAT	-2,342.42**	(1,163.32)	323.64	(783.99)
No. of Months with SAT ²	22.87	(13.25)	-11.91	(8.93)
Current Loan Amount	.03***	(.01)	.02***	(.01)
<i>Observations = 547</i>	<i>R²=0.18</i>		<i>R²=0.16</i>	

* $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$

Figures in parentheses are standard errors

Exchange rate: US\$1.00=9,050

Source: Survey Data, 2007

ed with a higher standard of living hence they tend to acquire such items for use in their households. All the other individual variables were not significant. Similar explanation to that provided in respect of the acquisition of refrigerators applies to the acquisition of gas/electric cookers. On the other hand, both the loan amount and the length of time with the programme were found to be significant at 1 per cent and 5 per cent respectively.

In terms of the effect on participants, it is found that individual characteristics such as marital status and level of education were very significant at the 1 per cent level as in Table 5. Television serves as a source of entertainment; couples, especially those with children, tend to spend much money on their acquisition, whether in a rural or urban area. Moreover, people who are highly educated acquire television for information purposes and, therefore, it is not surprising that the coefficient is positive and significant (11,057.73; $p=0.000$). The only programme variable which is positive and very significant is the loan amount (0.02; $p=0.000$), meaning that more established clients either on their own or together with their partners acquired more tel-

evision with profits from their business than did new clients. However, the length of time with the programme did not play any significant role in the acquisition of this particular asset.

5.5 Discussion

Overall, the findings show how SAT loans (in terms of amount) affected the poverty levels of participants. Thus, the findings indicate that established clients reaped significant benefits through participation in the programme. Overall, the results showed appreciable improvements in the accumulation of financial, human and physical assets. Established clients managed to diversify their asset holdings which provide protection against risk and vulnerability. These findings are underpinned by both external and internal factors and therefore will be discussed within those contexts. The findings are also consistent with researchers who argue that programmes that have attained financial sustainability provide the most impacts on participants' standards of living (Hulme and Mosley, 1996; Morduch, 1999). This provides an important lesson to governments and policymakers to ensure non-interference in the determination of interest rates by MFIs in order to enable them to fully their operational costs and make some profit in addition to the need to set up special programmes to cater for the very poor and poorest who cannot afford such rates of interest (Hashemi, 2006).

The significant effects of the programme on clients could also be explained by the fact that SAT has designed the right products and services to meet the needs of its clients in the form of savings, insurance and credit as well as skill training. As argued by Sharif (1997), the challenge for MFIs is to devise the right type of products and services for the right group of the poor. The extreme poor households are more inclined to be in need of survival measures which include voluntary savings mechanisms and emergency consumption credit facilities whilst the moderate poor need protectionist measures that offer relatively low-risk income-generation activities and other services such as education and training for the building of their debt capacity. On the other hand, the vulnerable non-poor require promotional measures which include primarily credit, savings and insurance for income generation, as well as support for sharing some of the risks of technical innovation. However, to ensure that the programme reaches the rural poor engaged in farming and other productive activities, there is the need to develop products such as micro-leasing, crop insurance and deposit services to cater for farmers and others engaged in productive ventures.

Participation in the programme reduced clients' vulnerability to crises

such as critical illness and sale of assets to repay debts by subscribing to the client welfare scheme. It also enabled them to cultivate the savings habit. The importance of savings cannot be over-emphasized. As argued by Robinson (2001: 21) "deposit services are more valuable than credit for poorer households. With savings, not only can households build up assets to use as collateral, but they can also better smooth seasonal consumption needs, finance major expenditures such as school fees, self-insure against major shocks, and self-finance investments".

The paper observed a negative relationship between the period of participation in the programme and most of the outcome variables. This situation could be attributed to one of these reasons: (i) the diminishing marginal rate of loan increment for established clients; (ii) the diminishing marginal returns on loan invested in the project over time; and (iii) finally, the fact that the MFI might place a cap on the amount of loan granted to a participant due to the absence of collateral; in each case, the effect of programme on the outcome variables will be minimal. The findings are also consistent with earlier studies in Africa which argue that participation in such programmes result in enhancement of human capital such as children's education and health status (Mosley and Rock, 2004). Barnes et al. (2001) also found that in general repeat clients have a significantly higher valued assets base of consumer durables than new clients. It must be noted that the acquisition of household durables not only indicate a higher standard of living, but also as a store of wealth that can be rented out or sold in case of extreme financial crisis (Sherraden, 1991; Barnes, 1996).

A striking feature of the study is the strong correlation between one's level of education and the acquisition of assets. The highly educated members normally serve as executive members of the respective groups and, therefore, benefit from larger loan amounts for the assumed responsibility than their counterparts (Hossain, 1988). Again a higher level of education is often associated with higher standard of living and since these household durables are proxies for high standards of living, it is not surprising that participants with higher levels of education tend to accumulate more of these assets than their illiterate counterparts.

5.6 Solution to Self-Selection Bias

Microfinance intervention has been tagged with the practice of targeting the household population with a pre-defined set of characteristics (Armenariz de Aghion, and Morduch, 2005). This presumption has been validated in number of recent empirical studies (Hulme and Mosley, 1996; Khandker,

Table 6: Second Stage Estimations (Amount in Ghana cedis)

Dependent Variable:	Coefficients & Robust Standard Errors		
	(1)	(2)	(3)
Explanatory variables	Least Squares	Probit	Heckman Selection
Amount spent on education			
Age	15656.22 (12312.76)	-.03546 (.0340217)	22085.47 (18440.87)
Marital Status	139521.6 (97460.58)	.7125302 (.0651414)***	29206.18 (92938.44)
Level of Education	66246.65 (18121.84)***	.1559225 (.0335191)***	51270.94 (18457.06)**
Household Size	128645.3 (18478.97)***	-.359878 (.0362346)***	157980.1 (23793.73)***
Age Squared	-149.7692 (156.0593)	-.0006899 (.0004011)*	-260.271 (232.1394)
No. of months with SAT	8161.459 (4593.44)*	-.0031946 (.008562)	8394.729 (3426.707)*
Current Loan Amount	195197 (68623.11)**	.0515359 (.1617483)	196156.3 (69569.37)**
No. of months with - SAT squared	-68.62927 (65.83835)	-.0000479 (.0001137)	-64.87499 (43.65749)
Women traders	655355.4 (761537.5)	2.042968 (.2879217)***	—————
Constant	-1173929 (286368.1)**	-.7262331 (.6499068)	-1237163 (374125.9)***
R-Squared	0.24	0.41	
No. of Observation	583	851	Censored – 268 Uncensored – 583
Women Traders (Exclusion Variable)			
Heckman Inverse Mills Ratio			1.77**

*** Significant at one percent; ** Significant at five percent; * Significant at ten percent

Source: Survey Data, 2007

1998; Coleman, 1999). In this paper, we apply the Heckman two-stage estimation for robustness check for sample selection. We argue that women who are traders are likely to self-select themselves into microfinance programmes. Therefore bias the coefficients of traders they are able to generate

cash flows quicker than farmers, artisans, small scale manufacturing etc., who take longer periods to generate cash for loan repayment. Non-women traders could also have access to traditional financial institutions and other sources of funding. This is anticipated to affect the impact on asset dimensions but not necessarily household financial behaviour. The basis for the latter argument is supported by the practice of the voluntary savings option product of SAT.

The application of the Heckman two-stage estimation makes it imperative to increase the sample size by the inclusion of non-client sample, making the total sample 851 (547+305) for the first stage probit estimation. We compare the results of all three regressions (OLS, participation and Heckman second stage estimation) to deduce changes and reliability of each of the estimates. Table 6 and 7 shows the regression for the human capital and savings.

The sample selection indicator (σ) shows a much higher effect between clients and non-clients of SAT. The test of independence between the participation and the outcome equations also shows significant results.

It must be noted that the 'Mills coefficient' is at least significant at five per cent (1.77 from the Heckman mode in Table 6) and the coefficients and standard errors do not seem to vary much between the OLS and the Heckman Models. The essence of the probit is to show that the new variable generated (women who are traders) is significant in determining participation in a microfinance programme. A more fascinating result is that, once selection bias is corrected, staying with SAT for a longer period enables clients to spend more on education, which in the OLS it is not the case. Also the t-statistics for current amount of loan is much higher in the Heckman model. With regard to the savings equation in Table 7, it is found that the Mills coefficient from the Heckman model is not significant and that the OLS estimates are preferred.

6. CONCLUSION

The main objective of this paper is to assess the effect of a microfinance programme on participants in terms of asset-building. The paper observes that through participation in the programme, established clients of SAT diversified and accumulated various assets in the form of financial, human and physical capital. Thus, participation in the programme significantly improved established clients' living standards and, therefore, a reduction in their poverty levels was achieved through asset building. The paper concludes by noting that stakeholders in the microfinance sector have important

Table 7: Second Stage Estimations (Amount in Ghana cedis)

Dependent Variable:	Coefficients & Robust Standard Errors		
	(1)	(2)	(3)
Explanatory variables	Least Squares	Probit	Heckman Selection
Amount Saved			
Age	2676.456 (4614.80)	-.03546 (.0340217)	2938.365 (6680.624)
Marital Status	-11651.15 (24751.64)	.7125302 (.0651414)***	-15105.08 (34917.69)
Level of Education	41141.69 (70726.41)***	.1559225 (.0335191)***	41236.48 (66680.744)**
Household Size	-7540.257 (4185.621)***	-.359878 (.0362346)***	-7299.839 (8657.514)***
Age Squared	-5.844627 (60.55105)	-.0006899 (.0004011)*	-9.448467 (84.3766)
No. of months with SAT	12989.72 (1247.264)*	-.0031946 (.008562)	12915.77 (1222.915)*
Current Loan Amount	57771.37 (15587.64)**	.0515359 (.1617483)	60171.62 (24865.72)**
No. of months with - SAT squared	-110.5141 (14.81981)	-.0000479 (.0001137)	-109.9395 (15.56373)
Women traders	117402.2 (78097.3)	2.042968 (.2879217)***	—————
Constant	-5065.59 (93119.56)**	-.7262331 (.6499068)	-50332.06 (374125.9)***
R-Squared	0.4799	0.41	—
No. of Observation	583	851	Censored – 268 Uncensored – 583
Heckman Inverse Mills Ratio	0.07		

*** Significant at one percent; ** Significant at five percent; * Significant at ten percent

Source: Survey Data, 2007

roles to play towards the dissemination of microfinance as a strategy for poverty reduction. The roles and lessons learned are outlined below.

First, while the type of working capital or business loans evaluated in this study appear to be suitable for trading and service enterprises, they are not useful for those engaged in productive sectors of the economy, especial-

ly agriculture and some manufacturing concerns. In order to support the productive sectors, microfinance providers should develop products including micro-leasing, crop insurance and medium term working capital loans. *Second*, practitioners in the microfinance industry must understand that cash flow requirements are not the only burden that clients bear. Funerals for family members as well as health status of household members and education of children also place a heavy burden on clients and threaten their ability to fulfill loan repayment obligations. To address this burden, microfinance providers could collaborate with insurance companies to put in place affordable insurance products that will cover funeral cost for clients. *Third*, to realize the full effect of their operations on clients, microfinance providers must support and recommend their 'matured' clients to join formal institutions in order to benefit from larger loan amounts. Data on such clients and those who voluntarily exit the programme must be kept and used by the institution and researchers for impact studies. Similarly, highly poor clients who are being trained under various programmes, including beneficiaries of cash transfers, to equip them with skills in entrepreneurship and business management but lack access to credit could be absorbed by MFIs as clients.

Finally, it has been observed that programmes that have achieved higher levels of financial sustainability make larger impacts on changes in the borrowers' standard of living, supporting the argument that pursuing full financial sustainability is the surest way to deliver the most benefits to participants. This strengthens the argument that MFIs must be allowed to charge market interest rates to remain profitable and sustainable without any governmental interference. Disbursement of micro-loans set up by governments and donors must also be the sole responsibility of the private sector to ensure their sustainability and outreach.

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Résumé

Cet article examine le niveau de contribution de la microfinance à la réduction de la pauvreté à travers l'offre de services financiers et non-financiers pour la construction des actifs des clients. L'étude trouve que la participation au programme a permis aux clients d'ouvrir des dépôts et d'acheter un schéma d'assurance pour rembourser les dettes au cas de maladie ou de mort. Ces clients ont aussi plus de chances de payer pour l'éducation des enfants, pour les soins médicaux et pour l'achat des biens durables. En outre, l'étude a trouvé que les clients qui sont restés longtemps dans le programme de microfinance ont souffert d'une réduction des rendements marginaux. Il faudrait que ces clients puissent avoir accès à des services financiers d'échelle plus grande ou à des intermédiaires formels afin qu'ils puissent bénéficier complètement de la participation aux programmes de microfinance.

