MICROFINANCE SERVICES AND HOUSEHOLDS ASSET ACCUMULATION IN GHANA AND SOUTH AFRICA: AN ASSET-INDEX[1] APPROACH

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Abstract

This paper examines the link between microfinance services and households asset accumulation in Ghana and South Africa. Using FINSCOPE data from the nation-wide households' surveys conducted by FinMark Trust, we create a household asset index using the multiple correspondence analysis approach. We employ three methods; Heackman sample selection, instrumental variable and treatment effects models to estimate the impact of micro-insurance, micro-credit and savings on household welfare gains. These models control for the problem of endogeneity treatment effects and self-selection bias associated with the usage of microfinance services.

The findings show that that micro-savings has a positive welfare impact in terms of household asset accumulation in both countries. In Ghana micro-insurance also positively impacts on households' assets. In contrast, in South African, whilst microcredit positively impacts on household asset accumulation, micro-insurance does not significantly impact asset accumulation.

Our results also show that households with access to a combination of all three products have a higher asset accumulation. Therefore integrating these products into the various poverty interventions for low-income households is therefore necessary to empower them to escape poverty and sustain the welfare gains achieved.

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1 Introduction

The first of the Millennium Development Goals (MDGs) is to reduce by half the percentage of people suffering from abject poverty and starvation/famine by the year 2015. Although this goal is achievable, many developing nations are far off-track in achieving this objective. One major cause for this is that millions of the citizens of such countries do not have sufficient insurance cover and thus are very susceptible to manifold risks such as illness, unemployment and old age (Loewe, 2006).

Risks impede the capacity of poor people from breaking the vicious cycle of poverty (Guha-Khasnobis and Ahuja, 2004). According to Churchill (2007), "poverty and vulnerability reinforce each other in an escalating downward spiral".

Exposure to risks such as fire, floods and accident involving households can disrupt their normal cause of life and hence affect their productivity and welfare adversely. Again, bad weather conditions (e.g. severe drought) and lack of a ready market for rural farmers' products impact negatively on the welfare of households.

Micro financial services – micro-credit, micro-savings and micro insurance -help households manage their exposure to such risks and improve household welfare through income and consumption smoothing, assets accumulation and women empowerment. This has facilitated the growth of its customers in developing countries from 16.5 million in 1997 to 154.8 million clients in 2007 representing 838.2% growth (Daley-Harris, 2009). Although, micro financial services have a lot of potential for extending markets, increasing welfare and fostering socio-economic change, they present a number of puzzles, many of which have not yet been resolved conclusively (Armendariz and Morduch, 2010). In particular the available empirical evidence of their impact on households' welfare has been inconclusive and controversial. Whereas one group of researchers (eg. Schuler *et al.,* 1997; Pitt and Khandker, 1996) provide evidence of the beneficial socio-economic impact, others such as Adams and Von Pischke (1992) and Rogaly (1996) indicate otherwise.

Micro-credit provides low-income households with funding in a timely manner to acquire essential assets and meet certain unexpected expenses. Micro-credit, especially productive loans, has been found to increase per capita household income (Imai and Azam, 2010), enhances households' multidimensional wellbeing outcomes and improves the living standards of rural folks (Imai, Arun and Annim, 2010).

Micro savings products are also essential tools for helping low-income households to build up financial assets for investment and self-insurance. Together with micro-credit they facilitate the economic and financial empowerment of households (especially

women empowerment) by financing the acquisition of essential assets for productive purposes. Again, beneficiaries of micro-savings and micro-credit products have been noted to provide better education and healthcare to their households' members (Adjei *et al*, 2009).

Micro-insurance also helps the poor to deal with risk effectively by reducing uncertainties associated with large losses (Brown and Churchill, 1999). By insuring households against future welfare losses, micro insurance helps in the reduction of vulnerability and poverty. Vulnerability and poverty go hand in hand but micro insurance can break a part of the cycle that ties them together. According to Dercon (2003) insurance removes the risk of worsening poverty or poverty traps.

Whereas some empirical studies have discovered that micro insurance leads to counterintuitive tendencies such as moral hazard, adverse selection and inertia in investment among households (Giesbert et al, 2011; Gine and Yang, 2009), others such as Guha-Khasnobis and Ahuja (2004) and Nicola (2011) argued that micro insurance facilitates households investments into productive assets which improves upon their productivity and welfare.

Most studies either ignore or do not combine micro-insurance with the other micro financial services in their examination of the link between microfinance and household welfare. However the welfare effect of microfinance lies more in combining all three main pillars of microfinance namely: micro-savings, micro-credit and micro-insurance. Indeed, if households are given financial assistance (either in form of government grants or credit from MFIs) but are not indemnified against the risks that push them into poverty that aid will go down the drain.

Combining micro-insurance with micro-credit and micro-savings services ensures that income and consumption smoothing is done with ease. It eliminates assets pawning or liquidation at "give-away" prices and thus promotes financial stability among low-income households.

These three micro financial services complete the risk management toolkit needed by low-income households to manage risk effectively and efficiently in order to improve upon their welfare outcomes.

This paper therefore seeks to evaluate the individual and the combine effects of the three micro-financial services on the welfare of low-income households. In addition this study also makes use of asset-index as a measure of households' welfare instead of the money metric measure of income and consumption parameters. The available microfinance literature relies heavily on income, consumption expenditures, educational

outcomes, healthcare and individual assets to measure welfare gains or poverty reduction. In particular the capacity of microfinance to equip low-income earners to accumulate households' assets will be evaluated through the Heckman sample selection, the treatment effects and instrumental variables models as well as an asset-index constructed through multiple correspondence analyses (MCA).

The rest of the paper is structured as: section two gives a brief overview of the microfinance industry in both Ghana and South Africa; section three reviews the theoretical and empirical literature; section four describes the estimation techniques; sections five discusses the results and section six concludes the study.

2 An Overview of the Microfinance Industry in Ghana

Anecdotal evidence indicates that the journey of the microfinance industry in Africa began at the Northern Region of Ghana in 1955 with the establishment of a credit union by Roman Catholic missionaries from Canada (Bank of Ghana, 2007; Nanor, 2008). This microfinance idea spread to the other parts of Ghana and together with the *susu* and rotating savings concepts, the rural financial architecture was laid.

The financial sector reforms and certain key regulations such as the PNDC Law 328, that allowed the operations of different variant of MFIs, have facilitated the evolution and growth of the microfinance industry tremendously. Firms in the microfinance industry are licensed and regulated by the Bank of Ghana (BoG). As at March 2013, the BoG has licensed 133 rural and community banks (RCBs), 144 microfinance institutions (MFIs), 24 moneylenders and 3 financial NGOs (FNGOs) (www.bog.gh.com).

MFIs are licensed into three different business categories namely formal MFIs, semi-formal MFIs and informal MFIs (BoG, 2007). The formal MFIs accept deposits and make loans. Examples of the formal MFIs are rural and community banks, savings and loans companies (SLCs) and commercial banks[3]. The semi-formal MFIs are mutual or member-based financial societies. They provide savings and credit products to a defined community such as a trade union, church or any recognized society. In most cases the clients are also the owners and hence such MFIs normally do not offered financial services to other members of the general public. Examples of the semi-formal MFIs are credit unions, financial NGOs (FNGOs) and cooperatives. Although the credit unions are under the general supervision of the BoG, they are registered and regulated by the Credit Unions Association of Ghana. They are registered as workplace-based, church/faith-based or community-based credit unions (www.ghana.microfinance.com).

[3] Certain commercial banks (eg. Ghana Commercial Bank, HFC, Barclays Bank, etc) have subsidiaries and in-house microfinance products which are offered to low-income clients.

The informal MFIs are the traditional moneylenders, susu collectors, and the rotating, savings and credit associations (ROSCAs) (BoG, 2007). The number and types of registered MFIs by the Bank of Ghana as at March 2013 are presented in Table 1.

Table 1: Types and Number of Registered MFIs in Ghana

Formal MFIs		**Semi-Formal MFIs**		**Informal MFIs**	
Type	Number Registered	Type	Number Registered	Type	Number Registered
RCBs	133	Credit Unions	380	Moneylenders	24
SLCs	144	FNGOs	3		

Source: BoG, 2007 and Annual Report of ARB Apex Bank, 2012.

The Micro Insurance Sub-Sector of Ghana

Access to micro insurance is generally very limited in Ghana. There are at present a number of insurance schemes running in Ghana; the National Health Insurance Schemes[4], other district health insurance schemes and private insurance schemes.

The National Health Insurance Scheme (NHIS) was started in 2003 by the government of Ghana to provide health insurance to all Ghanaians. It is funded by a combination of compulsory monthly contributions from formal sector workers and a VAT levy and contributions from private informal sector employees who desire to join it. The schemes' premiums range from GHC12 to GHC15 (about US$8 to 10) per policyholder per year (Matul et al, 2010). According to the Ghana Living Standards Survey V (GLSS 5) report, about 16.6 percent of the population are registered and covered by the health insurance scheme as at 2006. As at June 2010 coverage of the total population has increased very rapidly to 66.4 percent and 53.6 percent for registered members and active members respectively (NHIA[5], 2010). However, there are marked differences in registered or covered people by region[6]. Coverage is highest in Brong Ahafo region where a total of 35.3 percent are registered or covered and lowest in the Upper West region where only 5.3 percent are either registered or covered. Tables 2 and 3 below provide summary statistics about the scheme.

[4] The government of Ghana has introduced a health insurance program to among others help the poor. Some private insurance companies have also introduced insurance services to address the needs of low income households and small businesses.

[5] National Health Insurance Authority

[6] Ghana is divided into ten administrative regions.

Table 2: Summary Statistics of the NHIS, 2010

MEMBERS/ITEMS	NUMBERS (%)
Schemes in operation	145
Total Registered Members (% of population)	15,555,816 (66.4%)
Total Card-Bearing Members (% of population)	13,943,414 (59.5%)
Total Active Members as % of Total Registered Members	80.6%
Medical Conditions Covered	95%
Number of Service Providers	Over 5,000

Source: The Ghana National Health Insurance Authority (NHIA), 2010.

The scheme also provides free coverage for pregnant women and the aged. In terms of its coverage of low-income households, Matul et al, (2010) show that 3.2 million low-income households in Ghana have been insured as at 2008. This coverage in Ghana according to their report is more than the total coverage of all the other countries surveyed.

The small and medium scale enterprises (SMEs) are also heavily covered under the scheme. More than 4 million registered members are in the informal (SMEs) sector and this has reduced the health expenditures incurred by microenterprises on their employees. With increasing coverage, health services utilization has also grown, averaging two visits per head per year for insured persons, compared to the national level estimated at 0.5 visits (Matul et al, 2010). Indeed, the NHIS by removing the out-of-pocket expenditures on health has improved the health status and welfare of most Ghanaians.

Table 3: Groups and Percentage of Registered Members, 2010

Category	Number Registered	% of Total Registered
Informal Adult[7]	4,546,059	29.2%
Aged (≥70 years)	1,006,529	6.5%
Under 18 years	7,604,324	48.9%
SSNIT Contributors[8]	915,924	5.9%
SSNIT Pensioners	81,604	0.5%
Indigents	350,035	2.3%
Expectant Mothers	1,051,341	6.7%

Source: The Ghana National Health Insurance Authority, 2010.

Apart from the government's health insurance, some private insurance companies have also introduced some micro insurance products onto the market. Examples are: GLICO's Anidaso Policy, MicroEnsure's Obra Pa[9] policy and Package Policy, SIC's Life

[7] Owners and employees of SMEs.
[8] Formal sector workers
[9] Obra Pa means good life in the future

Sika Plan and Vanguard's Shop owners' policy. Table 3 contains commercial micro insurers, the products offered and the number of policyholders.

Table 4: Status of Micro Insurance Products, Premiums and Claims, 2011

Type of Product	Number of Product	Number of Policies	Number of Policyholders	Volume of Premiums (GHS)	Volume of Claims (GHS)
Funeral/term life	4	319,244	626,582	903,169	269,121
Savings-linked and endowment	7	106,461	130,346	9,255,396	3,935,629
Credit-linked	3	257,507	497,197	1,206,135	158,341
Agricultural	1	10	3,073	36,209	0
Property	1	1,857	1,857	302,579	58,403
Total	**16**	**685,078**	**1,259,055**	**11,703,488**	**4,421,494**
UD$ equivalent				***6,087,473***	***2,299,803***

Source: Yaw and Gruijters, 2012; National Insurance Commision, 2012.

Through policy facilitation by the National Insurance Commission, many commercial insurers have shown increased interest in getting further involved in micro insurance provision. Some providers who have been able to partner rural banks to provide the micro insurance services at the grassroots have increased their market shares and are beginning to reap the benefits of economies of scale. For instance, GLICO's Anidaso Policy which is distributed through 26 rural banks has been able to expand its operations to five of the ten regions of Ghana. This has helped the company to increase its policyholders by 471 percent from 14000 in 2005 to 80,000 in 2009.

The Anidaso[10] insurance policy was developed by Gemini Life Insurance Company (GLICO) with technical assistance from CARE International in 2003 to meet the insurance needs of low income earners. The policy is a term insurance plan and it is offered as a joint product with the Edwa Nkosuo product. The Anidaso policy and the Edwa Nkosuo product together provide a savings avenue and insurance protection for low-income households and SMEs at very affordable premiums.

The Anidaso Policy can be taken out as a standalone policy or together with the savings benefit. It covers the life of the policyholder and his/her immediate dependants such as spouse. Other benefits of the policy include Hospitalization Income Benefit and Accident Disability Benefit. The product is sold by GLICO in partnership with selected rural, community and microfinance firms in five administrative regions of Ghana.

[10] Anidaso means hope.

MicroEnsure is a U.S.A. based micro insurance company providing affordable insurance services to SMEs and the materially poor. Established in 2005, it is now operating in Ghana, Kenya and Tanzania. Among others it offers the Obra Pa and Package policies. The Obra Pa policy covers credit life, fire, flood and property loss. The Package policy combines a number of products to meet a specific need. It covers all the benefits under the Obra Pa policy in addition to funeral, health and disability into a single 'care' policy. This reduces clients subscription cost and facilitates easier administration.

Star Life Assurance has established a subsidiary called Star Microinsurance Services Limited which is dedicated to the provision of only micro insurance services to the informal sector and low-income households. Its products on offer are investment and funeral policy, micro-health plan, childcare plan, *abusua nkyemfa*, banc assurance, uni-mobile, savings linked and credit protection plan. Star Microinsurance Limited distributes its products in partnership with 25 rural banks, 6 microfinance companies, 35 savings and loans companies, 11 direct market agencies and on the extensive platform of Ghana Post Company (www.starmicroinsurance.gh.com).

The uni-mobile is a life policy sold in partnership with one commercial bank (Unibank Limited) and a mobile phone company (Airtel Limited). It is an innovation that allows clients to use mobile phones to pay insurance premiums, make bank deposits, transfer money and top-up mobile phone credit (www.starmicroinsurance.gh.com). Table 5 presents the different distribution channels of micro insurance companies in Ghana and the level of outreach in terms of policies sold (Yaw and Gruijters, 2012).

Table 5: Micro Insurance Distribution Channels

Distribution Channels	Total Number of Policies
Direct sales / company agents	24,668
MFIs and other financial institutions	343,243
Telecom providers	302,194
Churches	13,116
Others	1,857
Total	**685,078**

Source: Yaw and Gruijters, 2012; NIC, 2012

Brief Overview of the Microfinance industry of South Africa

The financial market of South Africa is the best developed market in Africa. However, her microfinance market is among the least developed in Africa in terms of number of firms and penetration. For instance, whereas the penetration rate of microfinance (credit unions) in Benin is 43.5 percent that of South Africa is just 0.1 percent (WOCCU, 2008). The low level of activity in the South African microfinance sector may not be surprising,

because the well developed formal financial sector covers the financial needs of most citizens. In other words, since microfinance thrives in the absence of a robust formal financial system, its limited penetration in South Africa is a sign that the formal banks may be reaching out to many sectors of the South African economy.

The National Credit Act (Act 34) of 2006 and the Cooperative Banks Act (Act 40) of 2007 are the basic legal frameworks for the regulation of the microfinance industry in South Africa. These legislative instruments provide a harmonize environment for the advance of financial services to low-income earners in a cost-effective manner.

The microfinance operators in South Africa range from the big banks to stokvels. The stokvels operate just like the Ghanaian susu and the rotating credit and savings schemes of Tanzania. The types of microfinance firms and the number of operators are presented in the following table. These financial institutions and societies provide transaction accounts, micro-savings, micro-credit and micro-insurance services to the informal sector.

Table 6: The Microfinance Industry of South Africa

Institution	Number of Operator
Member-Based Firms	***1,050,277***
Stokvels	1,050,000
Co-operative financial institutions	77
Friendly societies	198
Mutual banks	2
Banks	***14***
Banks (retail business)	10
Microbanks	3
Mzansi (big four banks)	7
Others	
Non-banks credit providers	4143
Microenterprise lenders	3
Ithala Limited	1
Postbank	1

Source: Supervisor of Co-operative Banks; Financial Services Board; National Credit Regulator; Finmark Trust and South Africa Post Office as cited in van Wyk, Botha and Goodspeed (2011).

3 Literature Review

The theory underlying the effect of finance on economic growth and vice versa has received a lot of academic and policy-related debates for almost a century. Joseph Schumpeter (1911) contended that the activities of financial markets such as savings mobilization, investment appraisals, management of financial risks, monitoring of managers through loan covenants and the facilitation of transactions and international trade are crucial for technological innovations and economic growth. He further argued that financial markets have remarkable impacts on economic growth because they determine which enterprises are 'economically fit' to get to use the limited savings of society. This view has been supported by other researchers that financial markets influence the rate of technological innovation by identifying those entrepreneurs with the

best investment ideas for initiating new goods and production processes and thus raising economic growth (King and Levine, 1993; Galetovic, 1996; Blackburn and Hung, 1998; Morales, 2003; Acemoglu *et al.,* 2003).

The mainstream finance theory extends to the theoretical underpinnings of microfinance. Indeed, microfinance is just an offshoot of the formal financial system due to the heavy credit segmentation in the formal financial market. That is, microfinance exist to meet the needs of those households and microenterprises – the 'missing middle' – which have been excluded or segmented out of the formal financial market due to reasons such as clients lack of tangible collateral, perceived as highly risky due to informational opacity and the high transaction cost involve in intermediating for such low-income clients.

The extension of financial services such as micro-credit to low-income earners assists in the creation of households microenterprises. This helps to generate employment and extra income for poor households and villages (Bateman, 2010). The additional income generated enhances the welfare of households through improved nutrition and consumption, investment in household members' education, and some modest investment in productive and households' durable assets.

According to Bateman (2010) "poverty is not simply a lack of income; it is also a lack of income at the time it is needed". Hence for the poor getting microcredit to smooth out certain key household consumption expenditures is a great relief afforded them by MFIs. For instance during the lean or dry season, rural farmers are assisted by microloans to meet their households' health and education expenditures. Such loans which are then repaid during the harvesting period enable poor farmers to compensate for the ups and downs of economic life and overcome vulnerability (Bateman, 2010). By aiding households to smooth out consumption of essential expenditures such as health and education, microfinance enhances the capacity of the poor to increase their skills and value on the job market, which are critical for sustainable poverty reduction.

Despite acknowledging the potential welfare enhancing effect of microcredit services, Bateman (2010) also provoked an intense debate about the ability of microfinance to lead to sustainable improvement in the welfare of poor households. He argued that the so-called welfare impact vehicles – income and employment generation, consumption smoothing, gender empowerment and a helper of the helpless (poorest) - through which microfinance is acclaimed to impact positively on the poor are all myths and "largely built on hype and on egregious half-truths". He further posits quite strongly that "microfinance is largely *antagonistic* to sustainable economic and social development, and so also to sustainable poverty reduction. Put simply, microfinance does not work".

The Empirical Literature

The empirical literature concerning the microfinance industry is growing in leaps and bounds and so are the controversies regarding it capacity to equip the poor to escape the poverty trap. The available evidence on the influence of microfinance to increase welfare is very much inconclusive ranging from the very radical position of Bateman (2010) that "microfinance does not work" as well as the near zero impact in Thailand (Cull *et al.,*2009) and to the remarkable positive effects in Bangladesh (Imai and Azam, 2010; Ref).

Studies with Positive Findings

Imai, Arun and Annim (2010) used the nation-wide cross sectional data of India collected by Small Industries Development Bank of India (SIDBI) on 5,260 clients and non-clients of 20 MFIs affiliated to SIDBI. The authors used an index created based on households' food security and socio-economic characteristics to rank households on a five index based ranking indicators ranging from the very poor households to households with surplus resources. They then employed treatment effects models to estimate the effects of microfinance productive loans on household poverty alleviation. Propensity score matching and Tobit regression were used to augment and also check the robustness of the results. The findings indicate that microfinance productive loans have significant positive influence on households' welfare outcomes and that this positive impact is more profound in rural areas that the urban centers.

In a similar study Imai and Azam (2010) used four series national panel data of the Bangladesh Rural Employment Support Foundation (PKSF) collected on 3000 participants and non-participants households of 13 MFIs across Bangladesh. The study reports that access to MFIs' productive loans has a significant increasing impact on households' per capita income but access to general loans does not. The paper further indicates that the analysis of each series of the panel data points to a reducing trend of the strength of microfinance to equip households to reduce poverty. That is the capacity of microfinance to reduce poverty even though positive; it is at a reducing rate. The authors thus concluded by calling for the re-focusing of microfinance on its primary objective of reducing poverty and the need to monitor loans utilization.

Coleman (2006) undertook a survey of 444 households in 14 villages in northeast Thailand between 1995-96 to assess the outreach and the true beneficiaries of micro financial services. Eight villages out of the 14 were randomly selected as treatment villages and after controlling for program placement bias as well as participants' selection bias, weighted logit regression was for the econometric estimation. The findings were mixed whereas the well to-do participants especially the village committee members derived significant positive impacts, the impact on the ordinary members is negligible. The positive effects on the committee heads range from improvement in wealth, income, savings, productive expenditures to increased leisure hours.

A cross-sectional survey of 547 households in Ghana was analyzed by Adjei *et al.*(2009) to evaluate the products of one microfinance institution – Sinapi Aba Trust (SAT) - in facilitating asset-building among the program participants. In particular, the study assessed how access to loan and loan amount influenced the tendency of participants to save money and also take up insurance cover (welfare scheme). In addition, the impacts of access to loans and loan amount on clients' human capital and physical capital was evaluated. The study reports that participation in the SAT program enhances clients saving culture and increases insurance up-take which in turn reduces clients' vulnerability to crisis. It further indicates that clients are better equipped by SAT to provide better education and health care for their households and also acquire durable assets.

The distributional impact of the financial system with and without the microfinance industry of Bangladesh was evaluated by Mahjabeen (2008). The social accounting matrix data of Bangladesh for the period 1999 to 2000 was analysed through the basic and extended version of general equilibrium techniques by the author to ascertain the real impacts of MFIs. The evidence provided by the study indicates that microfinance have positive impacts on households income and expenditure levels, decreases inequalities and improves upon welfare. This finding lends supports to the earlier studies about Bangladesh (Pitt and Khandker, 1998; Khandker, 2005) that microfinance is a potent development tool and has the potential to lift the poor from poverty trap, reduce economic inequalities and facilitate the rapid attainment of the millennium development goals.

Other studies on microfinance and women empowerment (for example, Hulme and Mosley, 1996; Sharma and Zeller, 1997; Pitt and Khandker, 1998; Pitt *et al.,* 1999; Pitt *et al.,* 2003; Pitt *et al.,* 2006) have indicated that microfinance programs enhance female participants: (i) business acumen and decision making skills; (ii) financial and economic resourcefulness; (iii) formation of social capital networks; (iv) better parenting control in the education, nutrition and health of households members. For instance, Female borrowers have also been noted as credit worthy and thus their participation in a microcredit program improves the productivity and self-sustainability of MFIs (Hulme and Mosley, 1996; and Sharma and Zeller, 1997).

In addition, the gender disparity effect of microcredit indicates that whereas credit to women increases consumption and improves upon the health and nutritional status of households members; the impact on male borrowers is very negligible (Pitt and Khandker, 1998; Pitt *et al.,* 2003).

Studies with Adverse and Mixed Findings

Despite the general positive impacts of microfinance on households' welfare, there are some studies which have discovered that MFIs have either negative or no impacts at all on households' poverty reducing efforts. Adams and Pischke (1992) argued that microcredit cannot help the poor to escape poverty nor can it improve upon the economic welfare of the vulnerable. Two studies which have heightened the debate thereof on the welfare enhancing effects of microfinance are that of Pitt and Khandker (1998) and Morduch (1998) on Bangladesh. Whereas Pitt and Khandker (1998) report that microfinance has among others positive marginal impact on households' consumption, Morduch (1998) finds an inverse impact of microfinance on consumption.

Morduch's (1998) analysis further reveals that the educational outcomes of program participating households are in fact below that of the control group. The difference between these two studies probably, is due to the selection of the control group since this has been the major hindrance to effective impact evaluation. As Morduch admits, the control group though do not have access to formal microfinance credit, nevertheless are served by NGOs and other informal lenders. This might have blurred the actual differences between the control group and the treatment group.

Coleman (1999) employed significant effort in correcting selection bias, endogenous program placement and the control group deficiencies, and finds microfinance has no impact on households' poverty reducing efforts.

In particular the findings show that: (i) the rural banks-the providers of microfinance-have a significant adverse effect on men's healthcare expenditure; (ii) some of the women have been trapped in the vicious cycle of high interest debt because the borrow from the moneylenders to service the village bank loans; and (iii) the loans are not being invested in any productive venture. Coleman attributed some of the findings to the small loan size and context-specific issues.

Yet other studies produce mixed results on the welfare effects of microfinance. Makina and Malobola (2004) reports from the evaluation of the Khula Enterprise Finance limited of South Africa that microfinance has significant positive influence on clients' welfare, women economic empowerment and on microenterprises access to finance. The study however indicates that the desired impact on rural communities is minimal. This is an admission that microfinance may not necessarily be for the "very poor" communities as it is originally meant to be. In a cross-country study Hulme and Mosley (1996) also found that the positive impact of microfinance is much more substantial to richer clients than the ultra-poor. Coleman (2006) found a similar case in northeast Thailand where the rich in the rural communities benefit more from microfinance at the expense of the poor.

Kondo *et al.* (2008) indicate mixed results of the impacts of MFIs. For instance, whereas access to loans has a significant positive effect on income and expenditures of richer households, its influence on poorer households is retrogressive. The link between household asset accumulations, human capital investments and micro financial services was also found to be none existent.

Empirical Studies about Micro-Insurance

Much of the studies on the welfare effect of micro-insurance have, been limited to one aspect of micro insurance; that is, micro health insurance[11]. Studies thereof also have mixed findings. On the positive side, Wagstaff and Pradhan (2005) investigated the impact of health insurance on health outcomes, health care utilization and non-medical consumption expenditure for households in Vietnam. The results of their study revealed a positive influence of health insurance on height-for-age and weight-for-age of young school children. They also showed that micro health insurance has led to a rise in households' consumption of non-medical services and goods. This indicates that households may not engage in more precautionary savings meant for out-of-pockets health expenditures.

Contrarily Dercon et al (2008), posit that micro insurance services have a direct impact on the ex-post and ex-ante behaviours and decisions of households but an adverse impact on informal insurance (informal coping) systems. The adverse impact of micro-insurance on informal coping systems may result from the crowding-out of social insurance strategies such as the extended family system. It may also be due to the reduced reliance on informal coping mechanism due to the uptake of micro-insurance.

On the positive ex-post risk coping impact strategies, it enables individuals and small business entities to maintain a stable consumption pattern and avoid asset loss. Dercon et al (2008b) further recommended that "the impact of micro insurance on consumption, assets or other dimensions of welfare (such as health, nutrition, school enrolment) is a

[11] For instance see, Gine and Yang, 2007; Gruber and Yelowitz, 1999; Chou et al, 2003; Wagstaff and Pradhan, 2005; Dong et al., 1999; Dror et al., 2006; and Gumber, 2001.

useful indicator to investigate the role of micro insurance in allowing individuals to avoid further poverty and hardship".

Two studies further present contradictory effects of micro insurance in Malawi. Gine and Yang (2009) found that whereas weather insurance has positive correlation with farmer education, income and wealth, it does not have a significant impact on risk-taking behaviours such as the adoption of risky technologies. The adoption of risky technologies is expected to lead to higher crop yields and thus enhance farmers' welfare. So the unwillingness of the farmers to be proactive in the adoption of new high-risk high-return technology in relation with the weather insurance may be risk preference or risk appetite issue instead of the effectiveness of the insurance product per se. Interestingly, from the same Malawian perspective, Nicola (2011) provides evidence in contradiction of the findings of Gine and Yang (2009). Nicola (2011) finds that weather insurance enhances the adoption of riskier farming technologies that improves upon farmers' welfare.

Mosley (2009) discovered that micro insurance improves clients' loan repayment rates and have a direct impact on physical and human capital expenditures. That is, micro insurance makes expenditures more stable and predictable as a result of the micro-insured reduced reliance on emergency borrowing. Mosley (2009) further revealed that micro insurance policyholders perceived themselves as less vulnerable than non-clients, a behavior which facilitates the adoption of risky-technologies and ventures. Hamid et al. (2010) argued that micro insurance has a significant impact on household food sufficiency. They also posited that, although micro insurance has a positive influence on welfare outcomes, that impact is not statistically significant in the short run.

With the aid of ordinal probit regression, Morsink et al. (2011) analysed the impact of micro insurance on 215 households in the Philippines. Their findings indicate that micro insurance reduces vulnerability and lowers the households' probability of falling into the poverty trap.

Theoretically, clients of (micro) insurance are expected to save more than those without coverage. This is as a result of the stability in income flow and expenditure alluded to by

Mosley (2009). Although Hsu et al (2011) agree to this theoretical foundation of a positive impact of insurance on saving, they disagree with it on the basis of contrary empirical evidence. Specifically, Hsu et al (2011) argued that in countries where the social welfare system is small, households covered by insurance save less than those without coverage. The findings of Hsu et al (2011) support an earlier work on the same Taiwanese insurance market by Chou et al (2004). Chou et al. (2004) found a decline in savings and a rise in the consumption of clients of the Taiwan National Health Insurance Scheme.

Another study on China by Cheung and Padieu (2011) confirms the results of both Hsu et al (2011) and Chou et al (2004). Cheung and Padieu (2011) posit that health insurance facilitates household consumption and reduces savings. They also claim that health insurance does not have a significant impact on poverty reduction.

Even though the literature suggests that micro insurance may have positive impacts on low-income households, there are clearly significant gaps in the existing literature. Important questions have not been answered by the literature, especially questions regarding how micro insurance is used by low-income earners to protect their assets and income from financial shocks.

The inconclusive empirical evidence from the various regions of the world and the many gaps in the existing literature calls for a very rigorous country-specific study that will test the real impacts of different micro insurance products on households' poverty. In this study we will show that micro insurance can have a positive influence on households' asset accumulation and hence improves welfare.

4 The Methodology

4.1 The Estimation Techniques

The ideal evaluation technique is to draw a comparison between a group of households' assigned microfinance "treatment" randomly with a control group lacking access to same (Janzen and Carter, 2013). However microfinance and insurance services are now ubiquitous in Ghana and South Africa. Thus the fact that these products were not

assigned randomly and their wide spread nature limit our option of using a pure control group to evaluate the impact of microfinance on households' asset accumulation. So the evaluation in this study is confined to a sample population in which all households have access to microfinance and insurance services but some decided not to take-up these financial products. The option to take up these products creates self-selection problems with the tendency of blurring the actual impacts of microfinance. Hence the estimation is done to account for selection bias issues using following estimations techniques; Heckman sample selection methods, treatment effects model and instrumental variable modeling:

The Heckman Sample Selection Model

Heckman (1974, 1978 and 1979) model for sample selection is regarded as one of essential contributions for the estimation of impact evaluations. The model which is designed for evaluating nonrandomized programs uses a two-step estimation approach to correct for participants self-selection bias and selection bias due to program placement (Heckman, 1979). These two-step equations are the selection equation and the outcome (regression) equation.

In the first stage (the selection equation), we run a probit model for each of the three products namely micro-insurance, micro-credit and savings on factors that determine the uptake of these products. For example, the probit function for micro-insurance[12] is a dummy variable which takes the value of one (1) if household *i* has taken up micro-insurance and zero (0) if otherwise. This is given in the following set up as:

$$INSURE_i = \begin{cases} 1 \; if \; household \; i \; has \; micro \; insurance \\ 0 \; if \; household \; i \; never \; had \; micro \; insurance \end{cases} \qquad (5)$$

The first-step equation or the selection equation is thus given as:

$$INSURE_i = z_i\delta + \mu_i \qquad (6)$$

Where; $Prob(INSURE_i = 1|z_i) = \Phi(z_i\delta)$ and $Prob(INSURE_i = 0|z_i) = 1 - \Phi(z_i\delta)$

Where $\boldsymbol{z_i}$ is a vector of exogenous variables determining treatment (the uptake of insurance) and $\boldsymbol{\Phi(\cdot)}$ is the standard normal cumulative distribution function, $\boldsymbol{\mu_i}$ is the error term. The inverse Mills ratio is then constructed from the estimated coefficients of the probit model. The inverse Mills ratio which is also referred to as 'selection hazard' or 'control function' controls for selection bias and accounts for the omitted variables or the unexplained variations in the error term that the sample selection. The inverse Mills ratio is given as:

[12]The estimations of the credit and savings models follow the same procedure as that of insurance.

$$\lambda_i = \frac{\phi(z_i\hat{\delta})}{\Phi(z_i\hat{\delta})} \qquad (7)$$

Where λ_i is the inverse Mills ratio, ϕ is standard normal density function, and Φ is as defined in the probit model above.

In the second step the outcome equation (that is the impact of insurance on asset-index) is then estimated with the inverse Mills ratio as an additional independent variable (Janzen and Carter, 2013; Lin, 2007).

$$AST_i = \beta_0 + \beta_1 INSURE_i + \beta_2 \lambda_i + \varepsilon_i \qquad (8)$$

The error terms (μ_i and ε_i) of both the selection and the outcome equations are bivariate normal with mean zero.

The Treatment Effect Model

In the treatment effects model a binary variable representing the treatment condition ***INSURE**$_i$* (that ***INSURE**$_i$* = 1 if household ***i*** is insured (received "treatment") and ***INSURE**$_i$* = 0 if household ***i*** is uninsured (not "treated") is directly captured in the outcome equation and thus the outcome variable – the asset-index – is observed for both the treated and the untreated. The selection and outcome models are specified in equations (9) and (10) respectively.

$$INSURE_i^* = z_i\delta + \mu_i,\ INSURE_i = 1\ if INSURE_i^* > 0,\ and\ INSURE_i = 0\ otherwise \quad (9)$$

$$AST_i = x_i\beta + INSURE_i\gamma + \varepsilon_i \qquad (10)$$

Where μ_i and ε_i are the error terms which are bivariate normal with zero mean. Since ***INSURE**$_i$* is an endogenous binary variable and given the assumption of sample selection, the impact evaluation under this model use the observed features of households to estimate the parameters of β and also account for selection bias due to non-ignorable placement of the insurance service. In order to obtain the regression models for the two regimes namely: the treated and the untreated, we substitute ***INSURE**$_i$* in equation (10) with equation (9) as follows:

When; $INSURE_i^* > 0, INSURE_i = 1$: $AST_i = x_i\beta + (z_i\delta + \mu_i)\gamma + \varepsilon_i \qquad (11)$

And when $INSURE_i^* \leq 0, INSURE_i = 0$: $AST_i = x_i\beta + \varepsilon_i \qquad (12)$

This implies that for treated households the outcome equation is $AST_i = x_i\beta + (z_i\delta + \mu_i)\gamma + \varepsilon_i$ and for the untreated households the outcome equation is $AST_i =$

$x_i\beta + \varepsilon_i$. These two equations are estimated in a two-step approach just like the Heckman model.

Instrumental Variable Model

Although the Heckman sample selection and the treatment effects models may help us to control for selection bias, the uptake of insurance service may be influenced by certain unobserved features such as fear, motivation or entrepreneur skills (Janzen and Carter, 2013). Hence we use instrumental variable (IV) model not only to capture the unobserved variables but also to check the consistency and the rigor of our estimates. IV is also an important impact evaluation model because according to Janzen and Carter, (2013) it accounts for "endogenous insurance participation".

To address the challenge of endogeneity bias, the IV model demands the usage of an observed variable that is (1) correlated with the uptake of insurance; and (2) uncorrelated with the error term or the unobserved factors influencing the asset-index. We selected three instruments namely insurance (voters') identity card, proximity to insurance company and whether or not one has heard of an insurance product. Following the theoretical exposition of Wooldridge (2002) about IV, we used these instruments to estimate the local average treatment effect of insurance on households' asset-index. Similar steps of the treatment effect model above and the IV's two-stage least squares was used to obtain the estimations of the IV.

4.1 The Data

The nation-wide households' data collected by FinMark Trust (FinsScope) with support from the World Bank and UKAid in 2009 and 2010 for South Africa and Ghana respectively were used for this study. Technical and field supports were provided by the statistical services of both countries. Stratified multi-stage random sampling comprising of geographically enumerated areas (regions/provinces, urban and rural), households and individuals above 15 years were captured by the survey. The survey adopted face to face interviews and questionnaires to gather the data from 3,643 households in Ghana and 3069 households in South Africa. The survey collected comprehensive data about households' demographics features, economic conditions, social backgrounds, access to public infrastructure, financial status, financial knowledge and risk management, perception about financial institutions and usage of financial products and remittances. For the purposes of this study we extract data set concerning households' usage of micro financial services for the analysis. In that regard 667 and 320

households in Ghana and South Africa respectively were drawn out for the empirical analysis.

4.2 The Construction of the Asset-Index

The use of the asset-index in this study is however not a novelty. This is because it has been used quite extensively in the mainstream poverty or welfare literature to measure country-level poverty reduction efforts (see for example; Booysen *et al.,* 2008; Harttgen *et al.,* 2013; Filmer and Scott, 2012; Damien, 2011; Sahn and Stifel, 2000; Njong and Ningaye, 2008). The missing link in both the microfinance and the mainstream welfare literature is this: the microfinance literature has so far not used asset-index as a measure of households' welfare nor has the mainstream welfare literature assess the effects of financial inclusion on households' asset-index.

Asset-index is a welfare composite indicator constructed from specific underlying range of households' assets (Johnson and Abreu, 2013; Booysen *et al.,*2008). Hence, an asset-index $\boldsymbol{AST_i}$ is a function of specific underlying variables (properties) $\boldsymbol{P_{ij}}$, such that $\boldsymbol{P_{ij}}$ represents household ***i's*** ownership or lack of asset/property ***j.***

$$\boldsymbol{AST_i = f\{P_{ij}\}} \qquad (1)$$

This is expanded as: $\boldsymbol{AST_i = P_{i1} + P_{i2} + \ldots + P_{im}}$ (2)

Where $\boldsymbol{P_{ij}}$ is a binary or categorical variable and takes the value 1 if household ***i*** owns asset ***j***, and 0 if otherwise.

Following the methods of Benzecri (1973), Asselin (2009), Booysen *et al.* (2008), Damien (2011) and Van Kerm (1998) the weights of the individual assets were then computed using multiple correspondence analysis (MCA). The basic form of the asset-index is given as:

$$\boldsymbol{a_i = \sum_{k=1}^{k} F_{1k}\, d_{ki}} \qquad (3)$$

The *i*th household asset-index is α_i, d_{ki} is the *k*th value of the categorical variables (with k=1,…, K) indicating the households' assets variables included in the index construction. F_{1k} is the MCA weights generated for the analysis. The extended form of the asset-index for this study is given as:

$$\boldsymbol{AST_i = P_{i1}W_1 + P_{i2}W_2 + \cdots P_{ij}W_j} \qquad (4)$$

Where AST_i is the welfare composite index of household ***i,*** the response of household ***i*** to category/asset ***j*** is represented by P_{ij} and W_j is the MCA weight for dimension one applied to category ***j*** (Booysen *et al.,* 2008).

5 Discussion of the Results

5.1 The Summary Statistics

The MCA weights for each asset of the households in Ghana are presented in Table 6. The weights in Table 6 which was constructed for two groups of assets namely – public assets and private assets – also indicate that assets that enhance better standards of living contribute positively to the asset-index but assets or facilities that reduce the quality of life affect the index negatively. For private assets, not owning a mobile phone has the highest negative impacts of 2.79 on household welfare. This implies that owning a mobile phone is no longer a luxury but as an essential asset to facilitate productive activities such as transfers money, pay for certain services such as insurance premiums, be in contact with family and friends and builds and maintain social networks. All of these activities that mobile phones allow households to engage in promote the welfare of households.

For public assets, not owning electricity and using surface water has the highest negative effects of 2.75 and 14.24 respectively on households' welfare. Households in Ghana rely on the national electricity grid, instead of private generators, for electrical power, thus lack of it access reduces standards of living; more so since almost all the electronic households assets depend on electricity. Using surface water from sources such as rivers, streams, lakes and lagoons exposes households to deadly diseases such as cholera, guinea worm and bilharzias. This compromises the health status of households, reduces their productive hours, increases their hospital bills and lowers their wellbeing remarkably.

The trend for South Africa is similar to that of Ghana. Not owning a refrigerator has the most negative impacts on household standard of living in South Africa. In terms of access to public facilities, lack of electricity and pipe water have the highest declining effects on the asset-index and hence households welfare outcomes.

Table 6: Weights Generated from the MCA for Ghana

Variables	Categories	Weights
Private Assets		
Mobile Phone	Owns a mobile phone	0.2020
	Does not own a mobile phone	-2.7910
Microwave	Owns a microwave	2.1460
	Does not own a microwave	-0.4130
TV	Owns a TV	0.6200
	Does not own a TV	-1.2250
Refrigerator	Owns a refrigerator	1.1060
	Does not own a fridge	-1.2630

Kitchen condition	Has built-in sink	2.0060
	No built-in sink	-0.5100
Radio	Owns a radio	0.1960
	Does not own a radio	-1.2260
DVD Player	Owns a DVD player	0.9320
	Does not own a DVD player	-1.7690
Motor Cycle	Owns a motor cycle	0.1620
	Does not own a motor cycle	-0.0130
Cooking fuel	Electricity	1.8000
	LPG gas	1.3260
	Kerosene	1.1100
	Charcoal/wood	-2.6800
	Others	-0.1060
Tractor	Owns a tractor	2.0090
	Does not own a tractor	-0.0150
Toilet	Flush toilet	1.4660
	Pit latrine	-1.2620
	Bush/beach/open field	-2.0520
	Others	-0.8530
Public Facilities		
Electricity	Has electricity	0.4730
	Does not electricity	-2.7490
Water Source	Piped into house	1.9310
	Well in house	0.7320
	Public pipe	-2.6250
	Public well	-1.7380
	Surface water	-14.240
	Others	-0.8530

Source: Authors computation using the FINSCOPE data set of Ghana, 2010

Table 8 and Table 9 report the descriptive statistics and percentile distributions of the asset-index respectively. While the mean index of Ghana is greater than that of South Africa, the maximum index of South Africa is greater than that of Ghana. This may imply the average Ghanaian enjoys higher level of asset than the average South African; nevertheless, the upper class in South Africa enjoys higher level of asset welfare than their counterparts in Ghana.

Table 8: Descriptive Statistics, Asset-Index

Statistic	Ghana	South Africa
Mean	2.7983	2.5000
Standard Deviation	1.0008	1.0002
Minimum	0.0026	0.0884
Maximum	4.4947	4.7191
Observations	683	2611

Source: Authors computation using the FINSCOPE data set of Ghana, 2010 and South Africa, 2009

The percentile distribution indicates wide inequalities in asset welfare in both countries. The upper percentile (99^{th}) in Ghana is about twice that of the lower percentile. The inequality in South Africa is even more profound because the upper percentile is more than that of the lower end by about four times.

Table 9: Distribution of the Asset-Index by Percentiles

Percentile	Ghana	South Africa
25th	2.1476	1.7850
50th	2.9649	2.4808
75th	3.5401	3.1890
99th	4.3344	4.5210

Source: Authors computation using the FINSCOPE data set of Ghana, 2010 and South Africa, 2009.

5.2 Analysis of the Regression Results

The Ghanaian Situation

Three main financial products – micro-insurance, microcredit and savings – were analyzed to ascertain how they influence the accumulation of assets by households. The impact of each product was measured through the Heckman selection model, the treatment effects model and the instrumental variable model. The results of the estimations are discussed in relationship with the treatment effects and the IV models.

In the event of substantial negative shocks such as fire outbreak, motor accidents, severe illness or even death, households without the necessary insurance cover liquidate essential assets in order to raise money for the mitigation of the risky event. Some of these assets which are mostly liquidated below market prices might have taken low-income households' considerable number of years to accumulate. Such a situation has the tendency to worsen the economic status of uninsured households.

From the results presented in Table 10, the treatment effect and the IV models indicate that insurance[13] has a significant positive impact on households' asset accumulation. The impact of the health insurance variable (NHIS) on households' asset accumulation is also positive and statistically significant. The IV findings indicate 102 and 35 percentage points average increase of the insurance *(life and non-life)* and the NHIS on asset accumulation respectively. The treatment effect model also shows 49 and 13 percentage points average increase of the insurance (*life and non-life*) and NHIS on households' asset accumulation respectively. These findings imply that having insurance increases households asset accumulation and hence their welfare. This is in line with theory and empirics that insurance promotes households asset growth and stability due to the indemnity enjoys under the insurance cover. More importantly insurance that covers the healthcare cost of households prevents asset pawning and liquidation of essential households' assets at 'give away' prices. In other words, insurance policies especially medical insurance reduces the tendency of disposing off

[13] This insurance variable captures both life and non-life insurance products apart from health. The health insurance is captured by the national health insurance scheme (NHIS)

important household assets to raise money for medical treatment and care. Although this result confirms the findings of Morsink *et al* (2011), Mosley (2009) and Wagstaff and Pradhan (2005), it contradicts that of Cheung and Padieu (2011) about the Chinese health insurance market.

The results of the IV and the treatment effect regressions also indicate that micro savings have a very strong positive association with the asset-index at the 1 percent significance level. In terms of percentages, the IV and the treatment indicates more than 100 percentage points average increase in households' assets due to the uptake of financial savings products. Many microfinance institutions in Ghana have innovative savings products modeled in line with the traditional susu savings products. Under these savings, susu operators move from house to house to collect the daily savings of members for onward transfer to a designated MFI. This flexibility in-built in the susu schemes of most MFIs encourages many low-income households to access savings products in the formal financial system. This enables many low-income households to accumulate financial resources for the purchases of very essential households' assets.

Microcredit however was not statistically significant under all the three models. The implication is that microcredit does not lead to higher level of households' asset accumulation. This result seems to confirm the fears of Bateman (2010) and the empirical findings of Morduch (1998), Coleman (1999), and Adams and Pischke (1992).

The Combined Products

Under this section the analysis seeks to discover if it is more welfare enhancing to have more than one micro financial product. The different combinations are: (i) insurance and savings together; (ii) insurance and credit together; (iii) savings and credit together and (iv) insurance, savings and credit together.

The findings indicate that households having both insurance and savings are statistically different from those who used to have and those who never had these two products. Indeed those who never had insurance and savings have a lower level of assets at 5 percent significance level. The results further indicate that even though credit alone does not increase households' assets, a combination with either insurance or savings equips households to accumulate more assets. This is indicated by the results of the insurance and credit together and savings and credit together.

More importantly the combination of the three products altogether has resounding positive effects on the ability of households to accumulate more assets. Households who have either stop patronizing or have never used any of these three financial products have lower level of assets. The implication is that making the full package of

micro financial services available to low-income households equips them to save regularly, deal with life cycle risks effectively and better positioned to use credit facilities judiciously.

The South African Situation

Just like the case of Ghana, the three models were estimated for each financial product available to low-income households of South Africa. The treatment effect and the IV models indicate a positive impact of financial micro-savings at 1 and 5 percent significance respectively on asset accumulation. This is in line with that of Ghana which shows that acquiring these savings products facilitate better asset accumulation of households.

For the micro-credit, the Heckman and treatment models indicate significant positive impacts of microcredit on households' asset accumulation. This is in contrast to the findings about Ghana in which all the three models indicated insignificant relationship between credit and households assets accumulation. This finding lends support to the results of Imai and Azam (2010) that access to MFIs' productive loans has positive effects on households' welfare.

The Control Variables

In both Ghana and South Africa, the level of the respondents' education is significant and directly associated with households' asset accumulation. However, the impact of the education variable in Ghana is much stronger across all the models than that of South Africa. Improved welfare in the form of higher asset accumulation is a signal of better returns on education; hence it is not surprising to find that all the levels of education have robust impact on households' asset accumulation level. Gender disparity is also key in households' asset accumulation. The analysis indicates that male headed households accumulate more assets than female led households. This result is not context specific since it cuts across both countries. It however aligns with the cultural background of both countries where men are expected to acquire assets for the benefit of the entire household.

The amount of financial resources available to a particular household for the acquisition of assets is partly determined by the household size and the age of the household members. Two variables were used to capture this influence namely household size above 15 years[14] (total number of household members above 15 years) and the total number of household members (adults and children). Household size above 15 years is significant and positive in all the estimations. Conversely, the total household size (including children below 15 years) is negative and significantly related to the asset-

[14] The South African variable is above 16 years

index. This indicates that household members above 15 years engage in economic activities and hence are better place to contribute to the acquisition of household assets, however children being dependents, detract from household asset accumulation efforts.

Many research papers have provided evidence of the rural-urban differentials in terms of improved welfare in Sub-Sahara Africa (see for example Ravallion *et al.,* 2007; Booysen *et al.,* 2008; Damien, 2011; Sahn and Stifel, 2003). Sahn and Stifel (2003) for example report of wide and consistent poverty gap between rural and urban settings in Africa. Unsurprisingly, our study shows that rural households have limited access to both the private and public assets underlying the construction of the asset-index. The findings confirm the empirics that rural settings are unambiguously disadvantaged in terms of acquisition of critical assets for welfare enhancement.

Table 10: The Estimations of the Three Models for Ghana

	Insurance			Savings			Credit		
Variables	***Heckman***	***Treatment***	***IV***	***Heckman***	***Treatment***	***IV***	***Heckman***	***Treatment***	***IV***
Insured	0.2569	0.4850	1.0199						
	(0.023)**	(0.002)***	(0.029)**						
NHIS	0.1283	0.1342	0.3528						
	(0.031)**	(0.027)**	(0.049)*						
Savings				0.2019	1.4866	1.4639			
				(0.002)***	(0.000)***	(0.002)***			
Credit	-0.0522	-0.0496	-0.0631	-0.0109	-0.0059	-0.1239	0.0207	0.4253	-0.2525
	(0.388)	(0.406)	(0.317)	(0.852)	(0.918)	(0.152)	(0.719)	(0.260)	(0.865)
Inv.Mills ratio	-0.1275			-0.3272			0.5819		
	(0.143)			(0.064)*			(0.013)**		
Not Married	-0.1229	-0.1296	-0.1211	-0.1027	-0.0843	-0.0895	-0.0506	-0.0976	-0.0975
	(0.052)*	(0.037)**	(0.065)*	(0.091)*	(0.154)	(0.248)	(0.422)	(0.108)	(0.123)
Education	0.1734	0.1750	0.1667	0.1290	0.0709	0.0752	0.1926	0.1821	0.1877
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.037)**	(0.063)*	(0.000)***	(0.000)***	(0.000)***
T_HH_Size	-0.0613	-0.0626	-0.0663	-0.0449	-0.0524	-0.0368	-0.0510	-0.0582	-0.0553
	(0.000)***	(0.000)***	(0.000)***	(0.005)***	(0.001)***	(0.069)*	(0.001)***	(0.000)***	(0.004)***
HH Size≥15	0.0709	0.0766	0.0761	0.0531	0.0628	0.0413	0.0697	0.0708	0.0729
	(0.008)***	(0.003)***	(0.006)***	(0.042)**	(0.013)**	(0.217)	(0.005)***	(0.005)***	(0.005)***
Resp.Age	-0.0038	-0.0035	-0.0012	-0.0136	-0.0148	-0.0162	0.0165	-0.0072	-0.0038
	(0.751)	(0.763)	(0.931)	(0.244)	(0.187)	(0.273)	(0.267)	(0.523)	(0.876)
Resp.Age Sq	0.0000	0.0000	-0.000	0.0001	0.0002	0.0002	-0.0002	0.0001	0.0001
	(0.837)	(0.837)	(0.931)	(0.255)	(0.189)	(0.344)	(0.315)	(0.457)	(0.842)
Male	0.1012	0.0911	0.0978	0.1505	0.1236	0.1957	0.0084	0.1029	0.0695
	(0.094)*	(0.126)	(0.118)	(0.013)**	(0.029)**	(0.014)**	(0.896)	(0.073)*	(0.517)
Income	0.1203	0.1235	0.1263	0.0574	0.0885	0.0429	0.0625	0.1322	0.0269
	(0.161)	(0.147)	(0.158)	(0.468)	(0.367)	(0.672)	(0.427)	(0.200)	(0.885)
Tradecredit	0.1813	0.1828	0.1617	0.1854	0.1626	0.2273	0.1791	0.1925	0.0981
	(0.015)**	(0.013)**	(0.039)**	(0.011)**	(0.020)**	(0.016)**	(0.013)**	(0.008)***	(0.842)
Rural	-0.7409	-0.7456	-0.7287	-0.6696	-0.5429	-0.5779	-0.8424	-0.7249	-0.7918
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Non-Farming	0.4449	0.45300	0.4530	0.4359	0.4689	0.4406	0.3899	0.4368	0.4238
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Constant	0.6882	0.5315	0.1325	1.4873	0.8816	1.0172	0.2003	0.4253	1.8185
	(0.000)***	(0.000)***	(0.860)	(0.002)***	(0.000)***	(0.074)	(0.687)	(0.061)*	(0.410)
Observations	*590*	*590*	*590*	*645*	*645*	*645*	*667*	*645*	*667*
Adj. R-Squ.	*0.52*		*0.48*	*0.52*		*0.21*	*0.51*		*0.49*
P>F	*0.000*	*P>Chi2=0.000*	*P>F=0.000*	*P>F=0.000*	*P>Chi2=0.000*	*P>F=0.000*	*P>F=0.000*	*P>Chi2=0.000*	*P>F=0.000*

The P-values are in parenthesis. ***, ** and * indicate 1%, 5% and 10% significance levels respectively.

Table 11: The Estimations of the Three Models for South Africa

	Insurance			**Savings**			**Credit**		
Variables	***Heckman***	***Treatment***	***IV***	***Heckman***	***Treatment***	***IV***	***Heckman***	***Treatment***	***IV***
Insured	0.1880	0.9327	3.6391						
	(0.355)	(0.286)	(0.369)						
Savings				0.1564	2.5112	3.1716			
				(0.297)	(0.001)***	(0.044)**			
Credit							0.2257	1.4053	0.9563
							(0.029)**	(0.066)*	(0.228)
In.Mills Ratio	-0.1607			-0.6018			0.0703		
	(0.263)			(0.000)***			(0.844)		
Rep.Age	-0.0425	-0.0374	-0.0339	-0.0864	-0.0453	-0.0842	-0.0360	-0.0393	-0.0168
	(0.015)**	(0.025)**	(0.162)	(0.000)***	(0.015)**	(0.014)**	(0.090)*	(0.027)**	(0.515)
Resp.Age Squ	0.0004	0.0004	0.0002	0.0009	0.0005	0.0009	0.0004	0.0004	0.0001
	(0.037)**	(0.057)*	(0.488)	(0.000)***	(0.017)**	(0.016)**	(0.137)	(0.057)*	(0.691)
Male	0.1390	0.1492	0.9210	0.3802	0.3049	0.3799	0.1674	0.1739	0.1961
	(0.166)	(0.125)	(0.561)	(0.001)***	(0.023)**	(0.037)**	(0.095)*	(0.070)*	(0.074)*
Education	0.0516	0.0507	0.0597	0.0272	0.0312	0.0179	0.0501	0.0713	0.0659
	(0.093)*	(0.098)*	(0.180)	(0.371)	(0.419)	(0.707)	(0.119)	(0.061)*	(0.069)*
Marital	0.0893	0.0827	0.0988	0.0755	0.0621	0.0777	0.0759	0.0706	0.0664
	(0.001)***	(0.002)***	(0.023)**	(0.003)***	(0.055)*	(0.045)*	(0.004)***	(0.021)**	(0.024)**
Total HH Size	-0.0212	-0.0485	0.0019	-0.0610	-0.0540	-0.0619	-0.0475	-0.0432	-0.0232
	(0.593)	(0.119)	(0.979)	(0.051)*	(0.107)	(0.193)	(0.174)	(0.162)	(0.572)
Total HH Size >16yr	0.1045	0.1153	0.1236	0.1489	0.1313	0.1504	0.0951	0.0916	0.0808
	(0.022)**	(0.018)**	(0.076)*	(0.002)***	(0.015)**	(0.038)**	(0.039)**	(0.037)**	(0.111)
HH Income	0.0107	0.0116	0.0109	0.0097	0.0118	0.0093	0.0114	0.0093	0.0101
	(0.004)***	(0.001)***	(0.034)**	(0.007)***	(0.002)***	(0.093)*	(0.002)***	(0.036)**	(0.014)**
Income Source	0.0136	0.0155	0.0009	0.0276	0.0219	0.0265	0.0213	0.0196	0.0208
	(0.288)	(0.213)	(0.976)	(0.012)**	(0.062)*	(0.114)	(0.054)*	(0.133)	(0.082)*
Rural	-0.9894	-0.9736	-0.9897	-0.8951	-0.9363	-0.8958	-0.9952	-1.1130	-1.0836
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Constant	3.1138	2.5997	2.4021	4.2397	2.2437	2.8201	2.4432	1.9554	1.6701
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.001)***	(0.088)*
Observations	*320*	*320*	*320*	*320*	*320*	*320*	*320*	*320*	*320*
Adj.R-Squ.	*0.33*			*0.35*			*0.33*		*0.22*
P>F	*0.000*	*P>Chi2=0.000*	*P>F=0.000*	*P>F=0.000*	*P>Chi2=0.000*	*P>F=0.000*	*P>F=0.000*	*P>Chi2=0.000*	*P>F=0.000*

The P-values are in parenthesis. ***, ** and * indicate 1%, 5% and 10% significance levels respectively.

6 Conclusions and Policy Recommendation

Microfinance is widely acclaimed to improve household welfare. This paper examined the effect of three microfinance services (micro credit, micro savings and micro insurance) on household asset accumulation in Ghana and South Africa. The results show that, in line with other studies, insurance equips households to increase their asset holdings. Integrating insurance into the various poverty interventions for low-income households is therefore necessary to empower them to escape poverty and sustain the welfare gains achieved.

In line with theoretical and empirical postulations, the savings vehicles with investment component have significant and positive effects on the ability of households to acquire more assets. Thus given the chance and improved access to financial facilities, low-income households can mobilize the needed financial resources to improve their living standards.

The analysis further indicates that whereas general loans do not have significant positive effects on households' asset building, specific purpose-driven loans have very significant positive influence on households' asset acquisition. It is thus essential for MFIs to improve upon their loan monitoring so as to help households to derive maximum benefit from their loan interventions.

In terms of similarities and differences between the two countries the findings indicate micro-savings has a positive welfare impact in terms of household asset accumulation in both countries. In Ghana micro-insurance also positively impacts on households' assets but micro-credit has no impacts. In contrast, in South African, whilst microcredit positively impacts on household asset accumulation, micro-insurance does not significantly impact asset accumulation.

More importantly, households who have access to the three products – insurance, credit and savings – were found to have higher asset-index and thus better asset accumulation. This underscores the need to integrate this financial package into private and public welfare interventions directed at low-income households. To the extent that insurance, savings and credit together improve on households asset accumulation, the campaign to advance financial inclusion by the World Bank should tirelessly be continued more so since "financial inclusion is inextricably linked to people's livelihoods" (Finscope, 2010).

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