

UNIVERSITY OF ZULULAND

PERFORMANCE OF MICROFINANCE INSTITUTIONS IN SUB-SAHARAN AFRICA: A CROSS COUNTRY ANALYSIS OF OUTREACH, SUSTAINABILITY, EFFICIENCY AND REGULATION

By

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Of

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DECLARATION

I, **Adams Abdulai** declare that:

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This thesis has never been submitted for the award of any degree or examination at any other University.

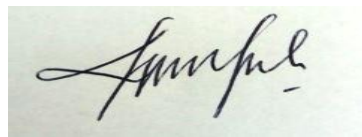
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Signature:

A handwritten signature in black ink, appearing to read 'Adams Abdulai', written on a light-colored background.

Date: 09/04/ 2017

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DEDICATION

This thesis is dedicated to my late father, John Amani Boginah, my mother, Awusara Adams and my wife and children (Gladys Diedong, Abdulai Hamsaud, Hamdia, and Hammaad).

ABSTRACT

The overall aim of this study was to conduct a cross-country analysis of microfinance institutions (MFIs) in Sub-Saharan Africa (SSA) in terms of outreach, sustainability, efficiency and regulation. The specific objectives were: (1) To conduct a general institutional review on the performance of MFIs; (2) To analyse the determinants and extent of outreach and sustainability of microfinance institutions in SSA; (3) To investigate the level of operational efficiency of microfinance institutions in SSA and analyse the factors influencing their efficiency and (4) To analyse the effects of financial regulation of MFIs on their sustainability and outreach performances.

The estimation methodologies employed were both descriptive and econometric and included the random effects (RE) method, fixed effects (FE) method, stochastic frontier analysis (SFA) and the generalised method of moment (GMM) approach.

The results of the outreach analysis indicated that a trade-off exists between the depth and breadth of outreach. The RE regression results showed that the gross loan portfolio, the interest rate, operating expenses to assets ratio, return on assets and return on equity are the main significant determinants of MFIs outreach in SSA.

In the sustainability model estimation, the FE results show that a negative and insignificant relation exists between MFIs sustainability as measured by operational self-sufficiency and depth of outreach. However, a negative significant relation is found between return on assets and depth of outreach. The nature of the trade-off between sustainability and outreach, therefore, depends much on the variables used. A positive association exists between breadth of outreach and sustainability and the results are robust and consistent using different measures of outreach. The main determinants of MFIs' sustainability as revealed from the analysis are the average loan size as a percentage of Gross National Income (GNI), gross loan portfolio, portfolio at risk, operating expense to assets ratio, interest rate, and governance effectiveness.

The results of the SFA show that a wide variation of inefficiency exists among MFIs as the institutions achieve an average cost efficiency of 40.09 percent. This suggests that substantial cost reduction possibilities exist which firms need to consider enhancing their efficient operations. The main determinants of MFI efficiency are total assets, operating expenses to assets ratio, average loan balance per saver, the percentage of female borrowers and borrower per staff member.

Finally, the GMM estimation revealed that regulation has a significant impact on both the social and financial performance of MFIs in SSA. This implies that the transformation of not-for-profit entities to become regulated institutions need to be pursued to enhance the attainment of the dual goals of MFIs.

The study recommends that governments should work to improve the business environments within which MFIs operate and also allocate more budgetary support to pro-poor interventions for complementary development. Also, improvements in the regulatory environment will help ailing MFIs to overcome liquidity constraints and achieve their stated objectives more sustainably. Managers of MFIs should monitor their cost side variables and adopt low-cost outreach technologies (such as the M-Pesa) innovatively to help cut down their cost of operation and improve their efficiency and sustainability.

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ABBREVIATIONS, ACRONYMS AND DEFINITION OF TERMS

ACC	Agricultural Credit Cooperatives
ALS	Average Loan Size
AP	Asia and the Pacific
AR	Autoregressive
BURO	Bangladesh Unemployment Rehabilitation Organization
CEMAC	Economic Community of Central African States
CGAP	Consultative Group to Assist the Poor
CGAP	Consultative Group to Assist the Poor
CPP	Client Protection Principles
CRS	Constant Returns to Scale
CRS	Constant Returns to Scale
CSFI	Center for the Study of Financial Inclusion
DEA	Data Envelopment Analysis
DEA	Data Envelopment Analysis
DFIs	Direct Foreign Investments
DMU	Decision Making Units
ECA	Europe and Central Asia
FDI	Foreign Direct Investment
FE	Fixed Effects

FGLS	Feasible Generalised Least Squares
GDP	Gross Domestic Product
GLP	Gross Loan Portfolio
GLS	Generalised Least Squares
GMM	Generalised Method of Moment
GNI	Gross National Income
GOE	Governance Effectiveness
HDI	Human Development Index
IBF	Index of Business Freedom
ICT	Information and Communication Technology
ICT	Information and Communication Technology
ICU	Irish League of Credit Unions
IPO	Initial Public Offering
IPR	Index of Property Rights
IT	Information Technology
IV	Instrumental Variable Regression
LAC	Latin America and the Caribbean
LM	Lagrange Multiplier
LSDV	Least Squares Dummy Variable
MCAI	Microfinance Clients Awareness Index
MDGs	Millennium Development Goals

MENA	Middle East and North Africa
MFIs	Microfinance Institutions
MIS	Management Information System
MIS	Management Information System
MIVs	Microfinance Investment Vehicles
MIX	Microfinance Information Exchange
MIX	Microfinance Information Exchange
NAB	Number of Active Borrowers
NBFIs	Non-Bank Financial Institutions
NGOs	Non-Governmental Organizations
NPT	Normative Analysis for a Positive Theory
OLS	Ordinary Least Square
OLS	Ordinary Least Squares
OSS	Operational Self-Sufficiency
PAR	Portfolio-at-Risk
PFB	Percentage of Female Borrowers
RE	Random Effects
ROA	Return on Assets
ROE	Return on Equity
SACCOS	Savings and Credit Cooperatives
SDGs	Sustainable Development Goals

SDI	Subsidy Dependent Index
SDR	Subsidy Dependent Ratio
SFA	Stochastic Frontier Analysis
SHG	Self-Help Group
SMART	Strategic Management and Reporting Technique
SPI	Social Protection Index
SSA	Sub-Saharan Africa
SUR	Seemingly Unrelated Regression
TC	Total Cost
UNDP	United Nations Development Programme
VRS	Variable Returns to Scale
VRS	Variable Returns to Scale
VSLA	Village Savings and Loan Association
WAEMU	Western Africa Economic and Monetary Union
WDI	World Development Indicators
WGI	World Governing Indicators
YLD	Yield on Gross Loan Portfolio

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND AND PROBLEM STATEMENT

Limited access to financial services is a major challenge to the development of low-income people in the developing world who seek out ways to improve their livelihood (Kono & Takahashi, 2010). Africa has remained the most financially underdeveloped continent despite recent improvements in economic performance (Allen, Otchere, & Senbet, 2011). Estimates from the World Bank (2016) suggest that while extreme poverty levels have declined, rapid population expansion has actually caused the number of people living in extreme poverty to rise from 288 to 398 million between 1990 and 2012. With Africa being the only continent not to have achieved the millennium development goal (MDG) of halving extreme poverty by 2015 (United Nations, 2015), more attention and new strategies are needed if the continent is to achieve the new Sustainable Development Goal (SDG) of eradicating poverty by 2030.

Financial access is important both as a measure of financial depth and in facilitating the usage of financial services (Beck, Demirguc-Kunt, Soledad, & Peria, 2007). Credit and savings play a crucial role in improving the economic conditions of poor people; they also enhance the investment efficiency of most nations (Besley, 1995). This implies that a bundle of financial services even in small amounts could make changes in their economic conditions. But against this expectation, financing poor people has remained a major concern due to market failures, higher probability of risk in repayment and lack of acceptable collateral which preclude poor people from accessing finance from formal sources (Hermes & Lensink, 2007). Though a lot of development aid has been received and several economic policies implemented with the aim of uplifting poor people since the 1950s, limited success has been achieved in reality (Khawari, 2004) due to the diversion of loans towards unintended beneficiaries with low repayment rates (Morduch, 1999). Also, the gap between demands for credit by poor people (products and product delivery mechanisms) and supply of credit continues to widen, to the extent that conventional financial institutions alone can no longer meet the need of clients (Jindal,

2008). Microfinance is defined as the supply of microcredit, microinsurance, savings and transfer payment services to the poor. Microfinance works to bridge the gap and has been widely seen as an effective tool for poverty alleviation. MFIs are the new generation institutions that provide microfinance services to clients.

Started as a project by Mohammed Yunus¹ who created “Village Bank” now The Grameen Bank, based on a group lending system², microfinance now provides business opportunities for millions of poor people, thus helping to alleviate poverty. The growing importance of microfinance as an effective tool for development, and one that has been remarkably successful (Bowman, 2006) is well-recognised both in national and international circles. For instance, Yunus (2007) declared that about one-third of Grameen Bank clients witnessed increased incomes and actually escaped poverty as a direct result of their membership of the Bank. Microfinance improves the well-being of the poor and marginalised rural communities (Vonderlack & Schreiner, 2001; Hietalahti & Linden, 2006; Hossain & Knight, 2008). The institutions that deliver microfinance services also benefit through interest payments on loans granted to people. Over the years, microfinance has also acquired an additional dimension as a tool for financial systems development with impressive growth rates (Ledgerwood, 1999; Woller & Schreiner, 2006). The demonstrated success of Grameen Bank has led to new entrants into the microfinance market with different legal status: non-governmental organisations (NGOs), non-bank financial institutions (NBFI), cooperatives, and banks.

Microfinance institutions (MFIs) are largely successful due to the innovative lending approaches (group lending with joint liability) used to create positive impacts on livelihoods. The microfinance industry has expanded substantially all over the world since the 1980s following the remarkable performance of these lending associations. The exponential growth in the industry could be attributed to a number of factors including: (i) liberalisation of financial policies, (ii) development and application of lending techniques which reduces transaction costs, (iii) recognition that poor people could

¹ Professor Yunus is the founder of Grameen Bank and Nobel Peace Prize Winner, 2006 for his efforts in fighting poverty in Bangladesh.

² Group lending systems are solidarity groups based on mutual trust and common objectives, groups act as collateral and each member has joint liability to take and repay loans.

benefit from deposit services as the desired way to capture funds and augment lending, and (iv) rapid growth, institutional diversification and application of communication technologies in reaching out to poor and marginalised clients in rural areas (Richardson & Lennon, 2001; Galema & Lensink 2009; Hermes, Lensink & Meesters, 2009). According to Hermes et al. (2009), new banking technologies such as charge cards, ATMs, use of cell phones and the internet have improved the sustainability and efficiency of microfinance institutions. The Microcredit Summit Campaign Report (2014) indicated that over 211 million clients had been reached as at December 12, 2013, out of which over 157 million were among the poorest clients. The report also noted that more than 3,700 MFIs worldwide were delivering financial services to low-income populations and that 54 percent of these were among the poorest. In terms of scale, the number of savers and borrowers, and the value of loan portfolios have increased exponentially. Ledgerwood and White (2006) report that the combined loan portfolio of MFIs worldwide is approximately US\$15 billion and that microfinance is growing annually at between 15 to 30 percent. Figure 1.1 shows the global outreach of MFIs since 1997.

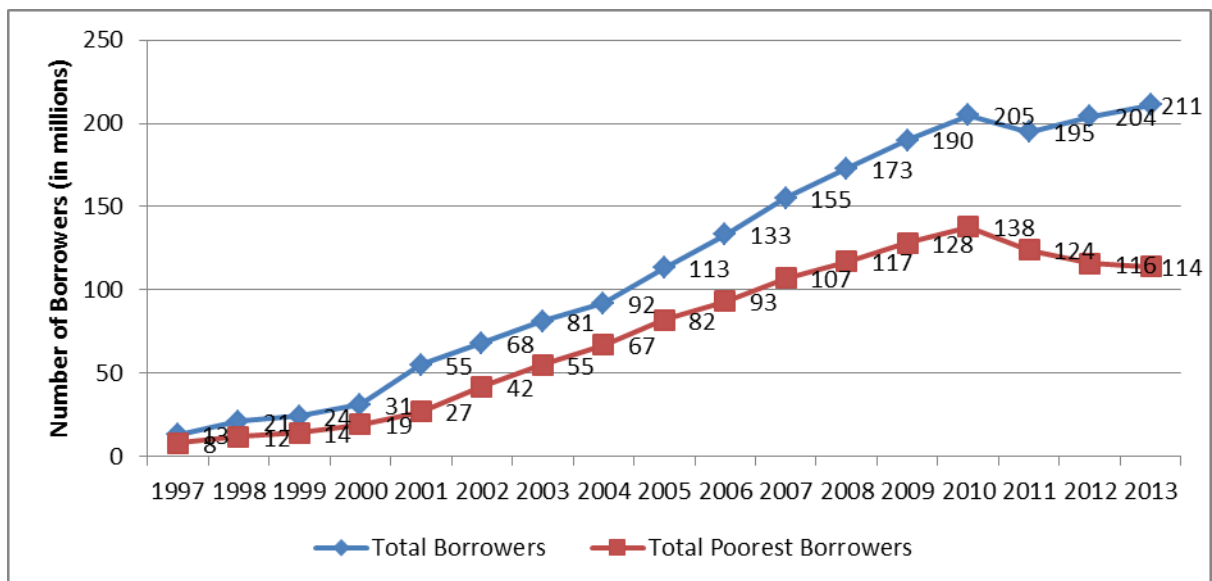


Figure 1.1: Global Outreach of MFIs from 1997-2013

Source: Microfinance Summit Campaign Report (2014)

Figure 1.1 shows a steady growth in both the total number of borrowers and poorest borrowers at an annual rate of 14 percent between the periods 2002 to 2007. For the last five years, the total number of borrowers grew by 2 percent per annum while the number of poorest clients declined by the same margin (2 percent per annum). The peak outreach of institutions was during the year 2010, shortly after the global financial crisis of 2008. The microfinance crisis appears not to have had adverse effects on the outreach goal of MFIs. In Andhra Pradesh, India and the case of Ghana, multiple borrowing and unethical behaviour of MFI staff led to the collapse of several microfinance institutions. This led to government intervention in some microfinance markets such as Andhra Pradesh where big MFIs dominated the market. In view of the burgeoning outreach of the MFI model, recent concern has centered on the sustainability and efficiency of microfinance programmes.

Despite the impressive outreach, up to 80 percent of the population in developing nations still lack access to financial services and the unmet demand is greater in Sub-Saharan Africa (SSA) (Firpo, 2005; African Union, 2009; Cull, Demirguc-Kunt & Morduch, 2009b). Mia (2005) reported that about half the population of Bangladesh still did not have access to financial services offered by the major MFIs even after years of innovative lending being available. What accounts for this and which factors drive MFIs outreach still remains anecdotal with limited empirical evidence. The evolving microfinance landscape in SSA and across the globe has been characterised by numerous transformations. The initial focus was on credit (microcredit) but this has changed to include savings, microinsurance and other valued products and services. Furthermore, some NGOs are transforming their status into banks (upscaling) while at the same time some traditional banks are moving into microfinance (downscaling). Another common feature is the setting up of village banks and the restructuring of state-owned banks across countries (Dunford, 2003). This process has been described variously in the literature as the “microfinance schism” (Morduch, 2000) and the “microfinance paradigm shift” (Mayoux, 2002).

MFIs are reported to be facing serious problems in the market in terms of performance, observed malpractices, poor governance, inefficient service delivery, low productivity

and diminishing subsidy levels. The Centre for the Study of Financial Innovation (CSFI) has consistently identified poor governance as one of the major challenges facing MFIs in SSA (CSFI, 2011, 2012, 2014). The need to reformulate governance and regulation has therefore become a topical issue which policy makers are grappling with. Failures in the formal financial system and development projects in the 1980s have created more doubts about public support for the unregulated microfinance industry. Effective and mature financial markets are necessary for development and the state is best placed to provide a stable macroeconomic and regulatory environment. Inadequate regulation and supervision of the microfinance system are widely recognized as a potential problem for the industry. Improving MFI sustainability requires the mobilisation of savings, but the protection of savers becomes an issue when unregulated MFIs begin to mobilise savings in large quantities. Fierce competition among MFIs may undermine careful institutional approaches with negative consequences for the entire microfinance sector.

In addition, high-interest rates charged by MFIs remain another critical area of debate with some proponents calling for total commercialisation of the industry. Industry commercialisation has undoubtedly become one of the most contentious issues in microfinance in recent times because of the dual goals of poverty reduction and attaining sustainability (Armendàriz & Morduch, 2010). Empirical evidence so far, however, shows that the issues raised about commercialisation are nothing to worry about. For instance, Mersland and Strom (2009) find that the commercialisation of microfinance has not led to mission drift³ since the search for profits seem to have been accomplished by a drive to cut down costs. Hudon and Traca (2011) find that, despite commercialisation, a vast majority of MFIs still rely on subsidies and these seem to improve efficiency up to a certain threshold. From the perspective of the suppliers of microfinance services, high-interest rates are necessary to cover the high fixed expenses associated with administering small individual loans (Robert, 2013). The commercialisation of microfinance which attracted private investors to enter the sector during the 1990s contributed to the rapid expansion of the microfinance market. MFI assets grew on average by 35 percent per

³ The tendency of MFIs to give larger loans to successful borrowers at the expense of new, possibly poorer clients because of credit worthiness.

year, and microfinance was seen by many as a secure and profitable investment opportunity between 2003 and 2008 (Lutzenkirchen & Weistroffer, 2012). In effect, the global demand for microcredit funds has become too high to be met by NGOs and public funded institutions alone.

Furthermore, the fast-growing, unregulated microfinance industry has further caused some serious problems to surface over time arising from national and regional crises that culminated in the inability of increasing numbers of borrowers to repay their loans. This caused the average portfolio quality of MFIs to deteriorate and some MFIs recorded write-offs, which affected their profitability levels. The overall growth rate of assets declined from a peak of 45 percent in 2007 to 15 percent in 2008 (Lutzenkirchen & Weistroffer, 2012). These developments led to serious problems in major microfinance markets bringing into sharp focus questions about the effectiveness of the microfinance industry (Bateman, 2011). This led to over-indebtedness in the microfinance sector in a number of countries, and in response, some MFIs began to charge higher interest rates and also compel borrowers to repay loans (Mitra, 2012).

1.1.1 OVERVIEW OF THE STRUCTURE OF THE MICROFINANCE INDUSTRY

The microfinance industry is made up of various players and is very service-intensive. It has been described as a ‘newly vulnerable market’ due to the dynamic nature of competition, large size in the global economy and the increasing role of information and communication technology (ICT) in its functioning (Baumol & Willig, 1981; Clemons, Gu, & Lang, 2003; Granados, Kauffman, & King, 2008). Non-profit organisations which pioneered the microfinance sector still currently dominate the industry particularly in SSA where member-based schemes constitute over 45 percent. New entrants typically work to leverage overhead costs, new technologies, alternate distribution channels, and target profitable clients in a market which is now maturing. Regulatory enforcements and policies aimed at strengthening fair practices and transparency are central issues. Mathison (2005) noted that both for-profit and not-for-profit MFIs are compelled to adopt formal governance mechanisms and modern information systems due to increased

financial services regulatory requirements, outreach expansion to clients, and financial stability and to attract capital from donors and commercial investors. Figure 1.2 shows the structure of the microfinance industry and the key actors and institutions involved.

In the developing world, MFIs typically exist to provide financial services (microloans, savings, microinsurance etc.) to poor clients. Information asymmetries inherent in microfinance usually arise from limited or no credit history of clients which compounds efforts to decide the feasibility of loan repayments (Yum & Lee, 2012). Distortions arising out of moral hazards have often led to inefficient outcomes in the industry. Delivery of financial services to clients could be made either directly by the MFIs or through third-party bank correspondence based on the use of local agents.

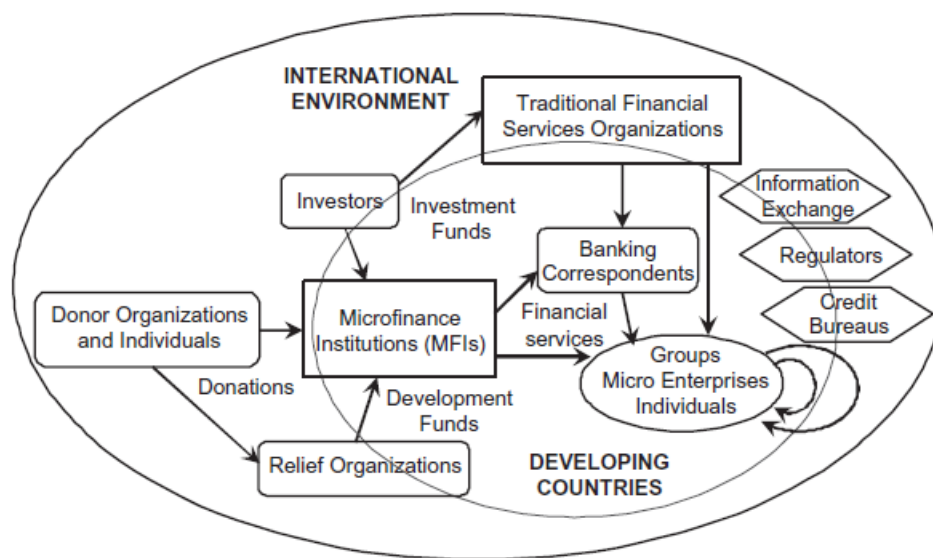


Figure 1.2: Structure of the Microfinance Industry

Source: Consultative Group to Assist the Poor (CGAP, 2012)

MFIs constantly search for new sources of funding to augment their outreach drive with the necessary products and services. Attracting funding from donors is yet another critical challenge due to the considerable level of risk faced by donors in terms of low visibility in the target project locations. International investors seeking higher returns may also split their funding between MFIs and traditional financial institutions. However, through

the use of savings mobilised as a source of funding, many MFIs now strive to attain self-sustainability (Yunus, 2007).

The dynamic nature of intermediaries influences the performance of MFIs in various ways. Intermediaries such as group lenders, banking correspondents, traditional financial service institutions, relief organisations, regulators, credit bureaus and information exchanges all mediate in the funds value chain of providing and receiving funding. At all levels of this value chain, ICT is critical in attaining greater outreach, sustainability, and efficiency in operations.

However, the observed performance of MFIs in SSA in terms of institutional sustainability, outreach and efficiency do not appear to be encouraging. The industry is currently faced with numerous challenges including tensions regarding the future focus of the sector. Over-indebtedness of MFIs clients (Schicks, 2013), high credit risks (CSFI, 2014), high rates of interest and other fees charged, proliferation of unregulated MFIs with greater drive to take deposits (Tulchin, 2004), and unmet demand for microfinance services by the poor coupled with limited access to financial services (Cull, Demirguc-Kunt, & Morduch, 2007; World Bank, 2008) are among the critical concerns hindering the growth of the industry. For example, Schicks (2013) analysed over-indebtedness from a consumer protection perspective in Ghana and concluded that 30 percent of clients in the sample were over-indebted. The fast expansion of the microfinance market has left behind a large share of risky borrowers culminating in multiple borrowing and over-indebtedness to MFIs. The global financial crises of 2008/9 are said to have contributed negatively to this state of indebtedness, leading to deterioration in MFIs average portfolio quality and an overall decline in assets growth. As noted by Bogan (2012), Africa has the highest percentage of unsustainable MFIs (38.02), the highest percentage of the portfolio at risk (7.03) and the lowest average return on assets (0.38). It would be useful to have a better understanding of these changing trends for policy support and better governance of the institutions.

Moreover, the delivery of financial services to the poor has changed significantly over the recent past with a move towards commercialisation⁴. This has generated concerns on the policy front regarding mission drift⁵ and the high-interest rates being charged by some MFIs relative to the loan products and services offered. These high-interest rates may not only be excluding the poor but have led to competition and observed multiple borrowing by clients from different sources. With the interest rate on loans being one measure of efficiency, many have questioned the efficiency of MFIs. The failure of some MFIs to live up to this challenge has further revealed weaknesses in their capacity to manage risks suggesting inefficiency. Again, the over-indebtedness of most microfinance clients in recent years in Africa and other parts of the world (particularly India where there are allegations of suicide⁶ cases due to over-indebtedness to MFIs) raises critical concerns over the efficiency and sustainability of MFIs. While it is obvious that MFIs are not efficient in their operations, the exact level of inefficiency and ways to improve the system remain a matter to be researched.

Therefore, in the light of these developments, it is relevant to establish how far MFIs in Sub-Saharan African have fared in their performance. Relevant policy questions to improve the overall performance of MFIs and accelerate the pace of financial inclusion within the continent remain to be explored: Does commercialisation of microfinance impair the depth of outreach? What are the key determinants of MFIs outreach and sustainability in Sub-Saharan Africa? Are MFIs technically and allocatively efficient in their intermediation role and what factors influence their performance? Do the financial regulations of MFIs have any effect on their social and financial performance? Is there a trade-off between MFIs outreach and sustainability in SSA?

Research in SSA on these relevant issues is very limited and often with mixed findings. The few studies that have looked at the issue of sustainability, outreach or efficiency have been largely based on country-level case studies focusing on sustainability strategies adopted by projects (see Kimando, Kihoro, & Njogu, 2012). Other studies in this area

⁴ The application of market-based principles in microfinance lending activities. See Armendariz and Morduch (2010)

⁵ The tendency of MFIs to serve wealthier clients at the expense of poor customers due to higher transaction costs involved in administering small loans (Mersland & Strom, 2009)

⁶ See Reddy (2010); Bayar (2013); and Hossain (2013) on microfinance and suicides in Andhra Pradesh.

have been global in nature and compare microfinance performance across continents and regions. Meanwhile, experience has shown that microfinance works differently in different geographic settings. This study is thus timely and important as it provides comprehensive evidence on the performance of microfinance from cross-country analyses using panel data.

While it is true that microfinance may not solve all the problems of the poor, it does offer opportunities that drive economic growth. Expanding the outreach of formalised institutions is thus an important element of development. Indeed, microfinance is an important strategy in countering institutional failings at the grassroots level even though macro level policies remain necessary to improve development.

1.2 NEED FOR THE STUDY

Various reasons underpin the need for this study. Its prime relevance relates to the banking industry and the importance of MFIs to the economy especially given the substantial changes in banking markets and the increasing role played by microfinance institutions in the socio-economic development of nations. Analysing the efficiency levels of MFIs and their determinants is vital not only for policy considerations at the national level but also for managers of these institutions. For instance, the existence of inefficiency among MFIs is of interest for policy makers and managers to take appropriate steps and ensure that they become economically viable and are not driven out of the informal market. Also, policy makers and regulators who are concerned about whether inefficient MFIs pose additional risks to the banking system and its safety nets are now in a better position to make appropriate decisions on how to manage these risks. The factors that influence inefficiency are now known and bank regulators whose function it is to ensure limited systemic risk and protect money supply and the payment system from being severely disrupted can utilise this information.

Secondly, the study will contribute to the microfinance literature by providing cross-country evidence on the relations between microfinance sustainability and outreach in the context of SSA. This is important as different microfinance models work differently across various geographic locations, with significant implications for outreach and

sustainability. From the literature search, studies on these themes are mainly based on case studies which are country-specific or global in nature. Trade-off relations between the two main dimensions of outreach (depth and breadth) as well as that between outreach and sustainability are relevant for managers and policy makers in order to optimise their decisions. Breadth of outreach is the number of poor clients served by an MFI while depth of outreach is concerned with the number of relatively poor people reached out of the target population. It will add new evidence to the double bottom line⁷ debate on sustainability versus outreach by providing more evidence on the SSA perspective which is currently limited in the microfinance literature. This will broaden the understanding of various stakeholders of the trade-off relations between sustainability and outreach and its implications for development.

Thirdly, through the analysis of the determinants of outreach and sustainability, key factors that affect the outreach and sustainability drive of MFIs in SSA will be revealed. This will be useful in supporting the decisions of MFI managers and policy makers as to which factors to control to help improve financial inclusion, and generate profits for the institutions to enable them provide services on a continuous basis. Firm-level factors that influence microfinance outreach are currently scanty in the literature. To be able to tackle the issue of limited access to financial services, knowing the key drivers of MFIs' outreach and sustainability is vital. Furthermore, the microfinance industry in Africa, though relatively small, is still concentrated in only a few countries. This is attributed to the uneven spread and access to funding sources across the region as the bulk of microfinance funds received are currently limited to just six countries. The research findings are of interest to both local and foreign investors who intend undertaking investments in the continent especially against the backdrop that the sub-region offers the fastest growing market for Microfinance Investment Vehicles (MIVs). This can potentially lead to the spread of microfinance funding across countries through stimulation of interest of investors in less developed microfinance markets. This will likely result in the equitable distribution of donor funding across countries and MFIs in pursuit of the goals of microfinance.

⁷ The view that MFIs should focus on serving poor people against the view that the institutions need to become sustainable first before pursuing the outreach goal.

Fourthly, the findings from the study will contribute to enhancing knowledge on how to improve governance of MFIs both at the national and unit levels. Through the analysis of the factors that influences the regulation and its impacts on MFI sustainability and outreach, regulatory agencies will get to know which factors need to be controlled to bring sanity to the microfinance sector. In the face of unregulation, the findings will be relevant to managers and boards of MFIs in deciding whether to become regulated entities or to remain unregulated. If regulation is found to have significant impacts on MFIs' sustainability and outreach performance, then many more MFIs will be willing to transform to become deposit accepting institutions. This will largely impact on the funding structure of the institutions as they would be able to mobilise deposits from the public and also increased their level of transparency within the MFI funding community. The findings will be relevant in strengthening existing MFIs and will provide useful information to new service providers in the industry regarding which key factors to focus on in order to reap the full benefit of regulation. The key findings from the study will show that regulation status impacts on the outreach and sustainability performance of MFIs. This is valuable in supporting decision-making by various actors in the microfinance industry including regulators, investors, policy makers, researchers and managers of MFIs.

Finally, the study will add new insights into the methodological application of the stochastic frontier analysis approach to efficiency studies as well as the Generalised Method of Moment (GMM) estimation which are currently little-used in empirical studies of microfinance. Many of the existing studies on efficiency have either used the accounting ratios or Data Envelopment Analysis (DEA) approach. Application of the stochastic frontier analysis will, therefore, extend the empirical methodological literature to be used by researchers in the microfinance sector and beyond. The current contemporary approach to dynamic panel data modeling is the use of GMM which will extend the microfinance literature. The joint analysis of sustainability, outreach, efficiency and regulation relations in the context of SSA, is, therefore, timely and relevant.

1.3 AIMS AND OBJECTIVES OF THE RESEARCH

The overall aim of this research is to conduct a cross-country analysis of microfinance institutions in Sub-Saharan Africa (SSA) in terms of sustainability, outreach, efficiency and regulation. Specifically, the study is intended to:

1. Conduct a general institutional review of the performance of microfinance institutions in SSA.
2. Analyse the determinants and extent of outreach and sustainability of microfinance institutions in SSA.
3. Investigate the level of operational efficiency of microfinance institutions in SSA and analyse the factors influencing their efficiency.
4. Analyse the effects of financial regulation of MFIs on their sustainability and outreach performance.

1.4 SCOPE AND LIMITATIONS OF THE STUDY

This study examines the performance of microfinance institutions in SSA from 2003 to 2013. It focuses on the themes of sustainability, outreach, efficiency and regulation which currently define the problems faced and the possible trade-offs that exist. The determinants of outreach, sustainability and efficiency are also analysed to help inform policy and support in the proper management of the institutions.

The main constraint encountered by the study is the poor nature of the reported data obtained from the microfinance information exchange (MIX) market database, due to gaps in the data sets. While some institutions from the region consistently reported their data covering the study period, others did not report for some years. A strict sampling of institutions based on the quality and completeness of the data available had to be applied in order to overcome this observed weakness in the datasets.

1.5 STRUCTURE OF THE THESIS

This study is structured into seven chapters. Contrary to the traditional format of a thesis, this study adopts a thematic approach to addressing the key objectives of the study. The approach used helps to give more clarity to the issues being addressed in the study. The organisation of the thesis, therefore, can be likened to that of an essay format. Apart from the initial two chapters that cover the introduction and brief review of the microfinance sector, the subsequent four chapters each present and discusses one of the major identified problems facing the microfinance industry in SSA. Each of these four chapters contains an introduction, a literature review, methodology, and a results section. This unifies thoughts on the key issues explored with better coherence and simplicity.

The rest of the thesis is therefore organised as follows. A general review of the microfinance industry is provided in chapter two for the accomplishment of objective one of the study. Objective two (*To analyse the determinants and extent of outreach and sustainability of microfinance institutions in SSA*) is accomplished in chapter three and chapter four. Objective three (*To investigate the level of operational efficiency of MFIs in SSA and analyse the factors influencing their efficiency*) is addressed in chapter five. Objective four (*To analyse the effects of financial regulation of MFIs on their sustainability and outreach performance*) is presented in chapter six. Finally, the summary of the main findings, conclusions and policy prescriptions of the study are presented in chapter seven.

1.6 SPECIAL TERMINOLOGY USED IN THE THESIS

A number of specialist terms have been used in this thesis which needs particular attention to facilitate understanding. Prominent among them are the ones listed and explained below:

Breadth of Outreach: The ability of MFIs to serve a large number of poor clients irrespective of their relative poverty level.

Depth of Outreach: The ability of MFIs to extend financial services to the relatively poor clients within a poor population. It is related to how deep within the poor population an MFI is able to reach with financial products and services.

Depth of Outreach Index (DOI): Using readily available variables relating to clients who have traditionally been excluded from formal finance to examine (measure) the depth of outreach of MFIs. It includes demographic variables (women, illiterates and the poor people, and rural inhabitants to sum up the differences between MFIs average outreach and the country averages for categories of people excluded from formal finance.

Double line goal/ Double Bottom Line: The ability of an MFI to achieve both sustainability and outreach goals at the same time. MFIs are perceived to have dual goals of reaching out to the poor and being sustainable in their operations.

Financial Self-Sustainability (FSS): The ability of an MFI to cover all its costs from the revenue generated without on-going subsidies. Adjustments are made for inflation and subsidy levels received by MFIs.

Institutional level/ Firm-level: Refers to the MFIs in this study.

Mission Drift: The tendency for MFIs, in order to become more profitable, to serve the rich (with larger loans) at the expense of the poor (who demand smaller loans) due to the high administration costs associated with making small loans.

Operational Self-Sustainability (OSS): The ability of an MFI to cover all its operating costs from revenue generated from its operation with on-going subsidies. Calculations usually do not take into consideration adjustments for inflation and subsidy levels received by MFIs.

Panel Data; Unbalanced Panel; and Balance Panel: The use of data having both cross-sectional and time series dimensions. A data set with some MFIs having incomplete entries for some variables measured over the study time period is termed unbalanced panel. Thus, each entity in a data set has different numbers of observations and some cells in the contingency table have zero frequency. A data set with all MFI entries having

measurements in all time periods covering all variables under study is termed balanced panel.

Portfolio at Risk (PAR): The proportion of the loan portfolio at risk of being repaid after a certain period of time (usually after 30 days, 60 days or 90 days). In this study PAR is based on a 30-day period since the repayment periods for MFI loans are typically short-term in nature.

Subsidy Dependent Index (SDI): Is a comprehensive indicator for sustainability that measures the percentage by which interest rates charged to clients would have to be raised hypothetically in order to cover programme costs and eliminate subsidies.

CHAPTER 2

GENERAL REVIEW OF MICROFINANCE PERFORMANCE IN SUB-SAHARAN AFRICA

This chapter addresses objective one of the study (*To conduct a general institutional review of the performance of microfinance institutions in SSA*). The chapter is grouped into five sections. Section one focuses briefly on the four main thematic problem areas that constitute the microfinance performance issues in SSA and which form the core of the entire study. A general review of the microfinance literature with a focus on SSA is presented in section two. The discussion on the literature review covers the characteristics of the microfinance industry, products and services, the macroeconomic environment, MFI performance dimensions and trends, and data sources. The performance of MFIs in SSA is presented in section three. The extensive discussion covers social and financial performance, risk management, funding/liquidity, information systems performance, consumer protection, and performance of MFIs in economic development. This is aimed at identifying policy lessons from microfinance intervention implementation across countries and regions. The main data sourced is presented in section four. The chapter concludes with a brief summary of the review in section five.

2.1 THE MICROFINANCE PERFORMANCE PROBLEM IN SUB-SAHARAN AFRICA

The performance of every institution is critical in determining the accomplishment of its stated mission, goals, and objectives and the microfinance industry is no exception. Microfinance Institutions have a dual goal of extending financial services to the poor and the underserved populations while at the same time needing to achieve a high level of sustainability in their operations so that long-term service delivery to target clients can be guaranteed. However, these institutions are found to operate under constrained environments of information asymmetries, funding and issues of liquidity and fierce competition. As a result, various trade-offs have been reported in the achievement of the two goals.

Brau and Woller (2004) in their comprehensive analysis of over three hundred and fifty microfinance papers, categorise them into six thematic areas of focus that define the microfinance field: financial sustainability, products and services offered, management and development, client targeting, policy and regulation, and social impact. The authors considered these as the core elements of microfinance and reported that microfinance was yet to break into the mainstream finance literature, although the elements were the same. Following this study, the current research further grouped these themes into four main fields which currently characterise the microfinance industry in SSA, and explored them in greater detail. The four main domains of the microfinance performance problem in SSA are illustrated in Figure 2.1. These dimensions are interrelated even though they appear to be independent. For example, the sustainability level of a microfinance institution (MFI) is linked to its efficiency in operation. These four themes which cover the entire scope of this thesis are briefly presented in the sub-sections that follow here. However, chapters 3 to 6 describes in detail each performance issue.

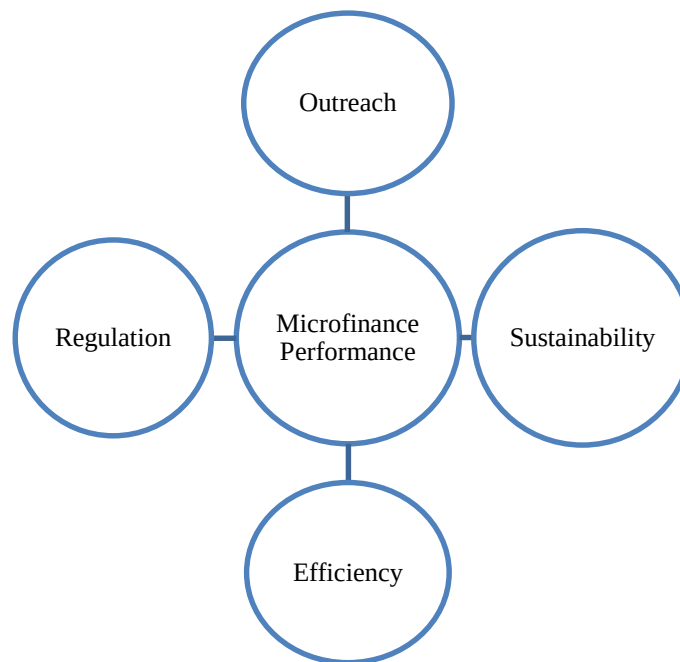


Figure 2.1 Microfinance Performance Issues in Sub-Saharan Africa

Source: Author's own illustration based on Brau and Woller (2004)

The four areas outlined directly affect the performance of MFIs. The relationship among these themes is also directly related. For instance, the level of outreach could directly impact on the sustainability status of the MFI.

2.1.1 OUTREACH PERFORMANCE

Outreach is seen as the efforts made by MFIs to reach out to the poor and unbanked populations with financial services and products needed for enterprise development and consumption purposes (Conning, 1999). The exponential growth of the microfinance industry both globally and in SSA has contributed tremendously to improved social welfare, job creation, enterprise development and the general financial health of most economies. The number of reporting institutions and the total number of clients served in SSA have increased dramatically, reaching over 1009 MFIs and 12.6 million clients as at the end of December 2010 (Maes & Reed, 2012; CGAP, 2012). The proportion of females served by these institutions has remained very high over the years (over 75 percent of the total number of clients served). The continuing interest in the sector by various stakeholders (investors, donors, academicians, governments, MFIs, and the poor people themselves) explains the unprecedented growth patterns.

However, issues of multiple borrowing, over-indebtedness of clients, limited innovative product development, the high cost of service delivery to remote locations have come to the fore in recent times as delimiting factors for outreach efforts (Schicks & Rosenberg, 2011; Guha & Chowdhury, 2013). Also, dwindling donor support in the form of grants that have characterised the microfinance sector since its inception has led to competition among MFIs to raise capital both on domestic and international markets. This follows the setting up of large commercial microfinance funds in 2009 known as Microfinance Investment Vehicles (MIVs) which provide private capital for microfinance investments. According to responsAbility⁸ reports for 2015, out of the over 10,000 MFIs globally that matured for investible microfinance funds, only 500 met equity criteria for investments.

⁸ A global microfinance fund that manages MIVs and currently controls over 17 percent of the global market share with investments in over 349 carefully selected institutions. See Microfinance Outlook (2016)

The report also noted that Ghana and Kenya were among the World's 15 largest microfinance markets and recipients of these funds. Competition among MFIs and the skewed distribution of funding suggest increased interest rates in some market segments to cover the cost of funds as well as operating costs. These interest rates are passed on to poor consumers which many argue go against the poverty alleviation goal being pursued by the institutions. Contextualizing these issues with more rigorous analysis could yield useful information to support policy formulation and management of the institutions.

Despite the exponential growth, research in microfinance outreach still lags behind other financial intermediations, largely due to its descriptive focus. Existing research has documented the existence of profits and the positive contributions of microfinance to macroeconomic conditions (Ahlin & Lin, 2006; Cull et al., 2007; Ahlin, Lin, & Maio, 2011). Another strand of research has used randomised experiments to unearth the real impacts of microfinance on the livelihoods of poor people (Kaboski & Townsend, 2008; Karlan & Zinman, 2010). These studies are centered on information asymmetries and credit-rationing, based on small borrowers who constitute MFIs' clientele base rather than the MFIs themselves. Issues of what institutional level factors drive MFIs' outreach and which funding mechanisms are appropriate for sustained outreach remain unexplained.

2.1.2 SUSTAINABILITY PERFORMANCE

The main goal of microfinance is to ensure a massive reduction in poverty globally through institutions that are sustainable (Conning, 1999; Cull, Demircuc-Kunt, & Morduch, 2007). Thus, successful microfinance institutions should satisfy both the social goal of reaching out to many more poor people and sustaining their business operations financially over time. Reaching out to poorer clients on a sustainable base is possible and some MFIs, such as Bancosol in Bolivia, have demonstrated this in the past. However, attainment of this double line goal has been a challenge to most MFIs in recent times, and several studies that have analysed the relationship between outreach, sustainability and

efficiency have reported the existence of various trade-offs (Paxton, 2002; Cull et al., 2007, 2009; Zerai & Rani, 2011; Quayes, 2012).

MFIs sustainability is central to the long-term viability of the industry and better economic growth. Sustainability is the ability of a programme to cover its costs from operating revenues. Implicit in this view is the non-reliance of MFIs on grants and other forms of subsidised funding to implement their planned activities. In SSA, where the majority of MFIs still exists as member-based organisations, analysing the sustainability level of institutions is critical in helping shape the future direction of the industry. Observed competition among MFIs to attract funding from capital markets has led to the evolution of microfinance investments funds known as Microfinance Investment Vehicles (MIVs). Since the primary aim of investors is to generate a return, MFIs now have to borrow at an interest rate and lend out to their clients with margins sufficient to cover the cost of funds and their operating costs. High-interest rates on microfinance loans are now one of the most hotly debated issues in the industry. While institutionists believe that these higher interest rates are justified for reasons of sustainability, the welfarists argue that it is not in tandem with the poverty reduction goal, as it stands to exclude many more poor people from accessing financial services. These viewpoints are even more complicated in the case of SSA where operating costs of MFIs are too high and a large number of unsustainable institutions exist (Bogan, 2012; Lafourcade, Isern, Mwangi, & Brown, 2005).

2.1.3 EFFICIENCY PERFORMANCE

Efficiency is a performance criterion that relates quantities and costs of inputs and outputs. The microfinance consensus guidelines of 2003 proposed nine ratios⁹ for the measurement of efficiency and productivity but this was reduced to five indicators¹⁰ in 2005. Since then, efficiency measurement has been growing in the microfinance

⁹ Borrower per staff member; Loans per staff member; Borrowers per loan officer; Loans per loan officer; savings accounts per staff member; Voluntary savings per staff member; Cost per Borrower; Cost per loan; and Average salary/GNI per Capita

¹⁰ Operating expense/loan portfolio; Personnel expense/Loan portfolio; Average salary/GNI per capita; Cost per borrower; and Cost per Loan (MicroBanking Bulletin, 2005).

literature, though the same cannot be said of the industry in SSA. The way efficiency is defined and efficiency ratios are constructed have direct implications for the performance measurement of MFIs. Gutierrez-Nieto, Serrano-Cinca, and Molinero (2004) studied 30 MFIs in Latin America to show that the level of efficiency achieved by MFIs depends on the specification of the input and output variables chosen. They found that no MFI is efficient under all specifications and that no single path to MFIs efficiency exists.

Efficiency encompasses both financial and social dimensions of microfinance and it is applicable to institutions that are commercially viable and not yet financially self-sustainable. Balkenhol (2007) argues that it is fair to base the performance measurement of MFIs on their efficiency relative to other MFIs with the same mission and operating in similar environments. Microfinance uses best practice concepts to determine how close a given firm comes to the efficient frontier (Berger & Humphrey, 1997). The performance of an average firm is expressed as the economies in input use that it could achieve if it produced on the efficient frontier instead of inside the frontier.

Efficiency and financial sustainability are distinct dimensions of institutional performance. In a market where most operators are not profit-maximisers, financial sustainability often fails to fully capture performance for two reasons: (i) MFIs operate in environments that constrains scaling up and leads to high-interest rates and (ii) financially self-sufficient MFIs that continue to receive grants could be technically inefficient compared to their peers (Balkenhol, 2007). Efficiency is increasingly being acknowledged as a key condition for public sector support and performance evaluations that employ multiple efficiency criteria are needed to assess both the social and financial efficiency aspects of MFIs. Yet, efficiency assessment of MFIs in Sub-Saharan Africa remains very low.

Efficiency assessment is vital for a variety of reasons. First, donors and governments are able to make informed decisions on whether or not to subsidise MFIs that are not yet self-financing but efficient or to cut off support to other MFIs that are not yet self-financing but inefficient. Efficiency scores are useful in determining whether the analysed MFI performs better or worse than the industry's average institution and this comparison facilitates better understanding of the reasons for over-performance or under-

performance. However, Balkenhol (2007) argues that peer group is not the best reference in any given country or region, but of efficient MFIs only. Inefficient institutions are offered the opportunity to learn best management practices and to know what best performing institutions do differently from the least efficient ones. The amount of savings channeled by intermediaries to the most deserving borrowers is not the only item of interest to decision makers, there is also the efficiency with which this happens. As MFIs are not purely profit-maximising entities, ratio analysis alone does not reveal the drivers of efficiency as employed by most previous studies on efficiency. This, therefore, calls for more rigorous analysis using recent econometric approaches.

Interest rate spread,¹¹ which is one common measure of efficiency is a growing concern in the industry. Laeven and Majnoni (2005) observed that while interest spread for developed financial systems varies between 2 and 4 percent, the rates often reach 10 percent in developing countries and even up to 30 percent in Brazil. This could be attributed to various institutional and environmental factors that impact on efficient operations. Intermediation costs not only drive a wedge between savings and lending rates but also lead to credit rationing of borrowers who demand small loans. The analysis of interest rate spread can be useful in determining the factors that influence inefficiency and intermediation costs in the microfinance sector. The efficiency with which MFIs can reduce market frictions determines the depth, breadth, and efficiency of the financial system. The changing operational environment points to the need for more cost control and adoption of efficiency measures. Furthermore, greater competition and increased interest of the private sector in microfinance have created greater demand for cost control and efficiency gains (Louis, Seret, & Baesens, 2013).

The inability of the industry to effectively deal with the problem of lending risks through diversification remains one key challenge facing MFIs. Agency problems of adverse selection and the moral hazards inherent in microfinance continue to have adverse effects on the efficient operation of these institutions. The difficulty in ascertaining the riskiness of a borrower results in the use of high-interest rate as a screening device to help lower

¹¹ The difference between lending rate and deposit rate.

risk in the market (Stiglitz & Weiss, 1981). The high costs involved in monitoring loans and enforcing loan contracts also have implications on efficiency.

2.1.3 REGULATION AND PERFORMANCE

Regulation is viewed sometimes as more of a burden than a booster of microfinance (Adams & Fitchett, 1992). The form of a regulation adopted in any microfinance market must be critically evaluated since it has the potential to either promote or impede development. Regulating MFIs takes various forms: interest rate ceiling, foreign exchange controls, limiting new entrants into the market, and establishing reasonable capital requirements. It is often undertaken either by government regulatory institutions or self-regulation by the institutions themselves through associations, networks and apex bodies (Chavez & Gonzalez-Vega, 1993). Regulation is the preliminary step in the transformation process of institutions to qualify them to be able to accept deposits from the general public. With the increased scale of MFIs, management and governance challenges become more important and must be addressed in order to guarantee the long-term operations in the industry (Mersland & Strom, 2009). On-going reforms in most developing countries have also made regulation topical. Yet, analysing the impact of regulation on MFIs performances has received little attention from research.

The role of government in regulation is significant because it has the legal power to influence economic agents to conform to regulations. In Bangladesh, many poor people lost their savings due to the incompetence or fraud of unregulated and little-known institutions (Wright, 2000). However, enforcing normal banking regulations in the microfinance sector often comes with challenges. Sector-specific regulation is, therefore, necessary for facilitating an enabling environment for MFIs. The importance of an appropriate regulatory framework to support sustainable delivery of diversified microfinance services is advocated (Arun, 2004). Hoxhaj (2010), in analysing the regulation and supervision of microfinance in Albania, underscores the need for regulation and the development of a regulatory framework to induce commercial banks to integrate downwards into the microfinance market and help informal start-up institutions to develop and gain formalisation.

Bayar (2013) analysed microfinance crises in major markets in the phase of unregulation and predicted that expansion of microfinance markets in the world will continue due to new regulations and the unsaturated demand of about 250 million clients. The crises which led to over-indebtedness is attributed to four main issues: (i) inadequate regulation in fast expanding markets; (ii) high priority placed on profits by MFIs through commercialisation; (iii) competition in saturated markets which enabled easy access to loans from various sources and (iv) failure of MFIs to monitor credit and manage risk (Bayar, 2013). In response to the crises, governments formulated new regulations for the industry to re-organise institutions for their sustainability and imposed stricter regulations. For instance, in Bangladesh, this led to the establishment of the Microcredit Regulatory Authority (MRA) in 2006 with a mandate to regulate the microfinance market. Also, some MFIs began to charge higher interest rates and use force to recover loans from their clients. In Bosnia and Herzegovina, increased competition among MFIs culminated in multiple borrowing and about 40 percent of borrowers had loans from multiple sources (Lutzenkirchen & Weisroffer, 2012). These developments were followed by suicides in some places like India, Bangladesh, and Japan (Mitra, 2009; Chen, Choi, & Sawada, 2010; Taylor, 2012; Mader, 2013). The post crises recovery period of the microfinance sector is the result of new regulations, better risk management, and corporate governance mechanisms being designed and implemented in various countries.

The benefits associated with regulation have been documented by various studies. Prudential regulation increases public confidence in the financial system (Arun, 2005; CGAP, 2003). Meagher (2002) argues that regulated institutions are viewed as trustworthy investment channels (because they promote transparency) and that donors prefer to allocate funds to licensed and supervised institutions where fraud and issues of money laundering are prohibited and strictly monitored. Regulation of MFIs has been found to strengthen their financial sustainability and ensures a sound equity base (Satta, 2006; LOGOTRI, 2006). However, empirical evidence on the effects of regulation on MFI social and financial performance remains limited, particularly in SSA. The only known study is that of Hartarska and Nadolnyak (2007). But this was a global study with no regional focus. However, MFI regulation varies significantly across countries. Using

longer panel data with dynamic panel analysis, which is known to result in more efficiency gains, could yield much richer results for policy considerations.

2.2 CHARACTERISTICS OF THE MICROFINANCE INDUSTRY

This section briefly discusses the historical structure and development of microfinance in SSA and the various delivery methodologies applied. The most well-known and prominent methodologies are the individual and group-based models.

2.2.1 HISTORY AND STRUCTURE

Microfinance has existed for centuries in SSA in various forms (small-scale, rotating savings-and-loan clubs, and tontines) but only gained recognition as part of the formal financial sector in the late 1990s. In Africa, the industry evolved from two interlinked factors: (i) exclusion of the poor from the formal financial sector as a colonial legacy where the focus was on providing financial services to urban areas and large scale export-led projects at the expense of rural locations where the majority of poor people reside and (ii) donor support in the form of concessionary loans received which were managed by corrupt government officials with a focus on specific political colonies and/or cash crops (Richardson & Lennon, 2001). Such programmes were characterised by unsustainable and externally dependent strategies with limited product diversification. The programmes were mainly focused on credit without savings and this contributed to the insolvency of a number of institutions following the implementation of the structural adjustment policy when external funds were withdrawn (Richardson & Lennon, 2001). The policy was meant to bring efficiency to the operations of government programme implementation for greater public benefits. However, the focus of microfinance has changed in recent years. The range of services delivered by institutions has been expanded, with more focus on serving the rural poor. Though this is seen as beneficial in extending microfinance services to more poor people, competition among institutions for clients remains a challenge, with some negative effects.

2.2.2 DELIVERY CHANNELS/ METHODOLOGY

This section discusses the various forms of MFI that operate in the microfinance industry and the various delivery methodologies adopted in the delivery of their services. The implications of these methodologies on MFI performance, based on empirical studies, are also presented. The sub-section that follows discusses the various forms of MFIs and their influence on the poor.

(a) FORMS OF MICROFINANCE INSTITUTIONS

Globally, various types of financial service provider¹² exist in microfinance markets globally and SSA is no different. MFIs however, differ in their mission and policy orientation and it is therefore important that a distinction is made between for-profit and not-for-profit entities (Elahi & Rahman, 2006). Non-governmental organisations (NGOs) and Commercial Banks delivering microfinance services operate in different markets and in ways likely to influence their social and financial performance (Cull, Demirguc-Kunt, & Morduch, 2011). Microcredit institutions in their early days of operation were in general made up of NGOs, which by status were not profit oriented. Famous microcredit organisations such as the Accion International, Grameen Bank, and Bank Rakyat Indonesia played leading roles in expanding the concept of microfinance. Most non-profit MFIs are still reliant on subsidies from donors for survival. However, this trend is gradually changing following the example of Campatomos in 2007 which went public and raised funds through an initial public offering (IPO). Following this and other numerous examples microfinance became known as a profitable venture. Cull et al. (2009b) in their global analysis of microfinance institutions reported that 54 percent of NGOs and 73 percent of banks were profitable but that banks had a higher return on equity. For-profit MFIs are now a dominant force in most microfinance markets following calls for industry commercialisation and the setting up of microfinance banks.

In Sub-Saharan Africa, the concentration of the various types of microfinance institution has been found to be region-specific and influenced largely by historical patterns.

¹² Financial service providers include Credit Unions (cooperatives), Banks, Nonbank Financial Institutions, Savings and Loans Companies, Savings Groups, Postal Savings Banks, Non-Governmental Organisations, and Mobile Network Operators.

Member-based MFIs such as financial cooperatives and credit unions form the backbone of microfinance in SSA and are predominant in the sub-regions of West Africa and the East Africa. Experience in the development of microfinance in Africa shows that MFIs have been built on pre-existing informal sector mechanisms (such as the susu, and tontines) to create viable channels for capital infusions from formal sector banks, donors, and governments (Armendariz & Morduch, 2003). Traditionally, community-based cooperatives have functioned in the form of local clubs, village savings and loan associations (VSLA), and savings and loans companies, and have been instrumental in savings mobilisation at the local level and expanding access to microfinance services to members in Africa. For instance, in Ghana, the Rural and Community Banks, which are unit banks owned by members of the community (through the purchase of shares) are the largest providers of microfinance services. Efforts made by these MFIs to operate through group schemes have been beneficial in leveraging the importance of local communities which has helped ensure their sustainability. However, these institutions are reported to be weaker in risk management such as portfolio-at-risk and write-offs (CGAP & MIX, 2011) and are generally not supervised but self-regulated through their apex bodies. As such, investors regard these institutions as posing greater risks. Capital investments are thus a challenge, and sometimes even impossible, due to their ownership structure (community-based). Though they impact positively on the financial needs of communities and are sustainable, their outreach performance remains limited due to funding constraints.

Moreover, formal financial institutions (banks and non-bank financial institutions), which are the biggest and oldest players in the financial service delivery landscape continue to play leading roles. Their focus on the poor gained more prominence following implementation of the structural adjustment programmes in most countries when banks began to downscale their operations to serve poor people. Non-Bank Financial Institutions (NBFIs) are noted as having larger scale and greater outreach and are more dominant in East Africa. The microfinance market in Southern Africa is smaller with banks accounting for the majority of the services delivered to debtors and creditors. While Commercial Banks focus more on individual entrepreneurs with larger loan sizes, NGOs generally tend to be effective in targeting poor clients with small sized loans.

Historically, NGOs have been founded based on their social mission of reducing poverty and are financed through donations and grants. Female empowerment has been a key goal in most NGO operations and Cull et al. (2011) observed that NGOs cover more female clients than Commercial Banks (85 percent as against 50 percent), suggesting a greater impact on female empowerment and poverty reduction. The ownership structure of most of these institutions, therefore, precludes investor participation. However, these trends are fast changing following the dynamics in most microfinance markets described in this section.

(b) DELIVERY MECHANISMS

Microfinance institutions (MFIs) exist to create products and services that meet the needs of clients. Bridging the gap between institutions that generate these products and services and the intended recipients of these products and services constitutes the delivery mechanism. Without this process customers will not have access to the products created and the institutions will equally not have the market to sell their products and services. This has far-reaching consequences for both the institutions and the consuming public.

Various studies have identified and discussed a number of delivery mechanisms in the past which are worth pointing out. Otero and Rhyne (1994: 117) discussed four main methodologies used by micro-enterprises in their service provision: solidarity group lending, village banking, credit unions, and transformational lending. In addition, Ledgerwood (1999) identified individual and group-based lending as the two main methodologies used. Cull et al. (2007) and Conning (1999) identified three lending methodologies: individual, group based and village banking. A thorough evaluation of all these methodologies reveals that village banks and credit unions can best be seen as institutions rather than as methodologies. Besides, the village banking concept uses larger groups and is also based on the principle of joint liability. Transformational lending appears to have had limited application in the literature and is less prominent (Reed & Befus, 1993). As such, the sub-discussions that follow focus on individual and group-based lending methodologies and their implications for MFI performance.

(i) GROUP-BASED LENDING

Various studies have widely documented the failure of formal financial institutions in meeting the demand of low-income populations with the necessary financial products and services, due largely to information asymmetries, high cost of gathering information and the absence of physical collateral (Gine & Karlan, 2007; Schreiner & Woller, 2003; Morduch, 1999; Stiglitz, 1990). Microfinance, through its innovative lending approaches, provides a platform to effectively deal with these problems of adverse selection, moral hazards and transaction costs.

Group lending is based on self-constituted groups by clients who assume joint liability for the repayment of loans granted to group members. The methodology relies on local social networks, the behaviour of members and dynamic incentives for efficient operation. Variants of the methodological forms exist in the literature but are largely based on the principle of joint liability¹³. Essentially, groups commit themselves to take over the monitoring, and enforcement of loan contracts from the lending institutions (Wenner, 1995). In principle, joint liability contracts have been found useful in mitigating moral hazard and adverse selection problems through the use of local information and enforcement mechanisms which are made available for use by the institutions (Cassar, Crowley, & Wydick, 2007; Ahlin & Townsend, 2007). Group lending has advantages in overcoming information asymmetries, promoting screening, peer-monitoring, sequential lending, auditing as well as enforcements (Ghatak & Guinnane, 1999; Chowdhury, 2005; Hermes & Lensink, 2007; Paal & Wiseman, 2011). However, Cason, Gangadhara and Maitra (2012) reported that group lending only works better than individual lending in situations where the cost incurred in peer monitoring does not exceed that of the lenders' monitoring costs. Also, overcoming strategic default is heavily dependent on the ability of community members to monitor the behaviour of group members, which is sometimes difficult to achieve (Bolton & Sharfstein, 1990).

Studies have shown that the repayment performance of groups improves when written internal rules and regulations that moderate the behaviour and conduct of members are in

¹³ Each group member is held liable for non-payment by the others in case of default, hence it is in the interest of all members to ensure repayment.

place (Wenner, 1995; Zeller, 1998). Sharma and Zeller (1997) analysed group lending in Bangladesh using data from 128 groups across four programmes with interesting findings: (i) credit rationing among borrowers improves repayment performance, (ii) groups formed on the basis of a self-selection (screening) process have better repayment performance and (iii) repayment problems worsen when more relatives are members of the group (because the probability of collusion for non-payment increases). Supportive evidence for this last finding is provided by Paxton, Graham and Thraen (2000) who found group homogeneity to lower the incentives for members to screen, monitor and enforce repayment contracts. Analysing 140 group-based lending schemes in Burkina Faso the authors further reported that group homogeneity (in terms of occupation, ethnicity, and income) negatively drives repayment rates while the quality of the group leader positively affects the loan repayment rate.

The role of groups in strengthening social ties has also been documented as having strong impacts on repayment outcomes (Ahlin & Townsend, 2007; Karlan, 2007; Cassar et al., 2007; Hermes et al., 2006, 2005; Wydick, 1999; Zeller, 1998). Zeller (1998) found that strong social ties improved loan repayment rates in Madagascar. Wydick (1999) reported that because of social ties, little pressure is put on members to repay their loans. Hermes, Lensink, and Mehrteab (2005) investigated the role of group leaders in reducing moral hazard behaviour using data from Eritrea. Empirical results showed that monitoring and social ties of the group leader reduced moral hazard behaviour. In a subsequent study, Hermes, Lensink, and Mehrteab (2006) provided more evidence in support of the vital role of group leaders in achieving improved repayment performance.

The evidence presented here sheds more light on the workings of joint group liability models. However, some weaknesses exist. Firstly, in most of the studies, the link between theory and empirics is not very explicit. The variables used to characterise screening, monitoring and enforcement relate only indirectly to the concepts from a theoretical perspective. Using a one-dimensional measure as a proxy for complex relations like social ties may underestimate the true nature of the situation. Finally, the empirical analysis may suffer from endogeneity problems, particularly those focusing on social ties analysis.

Ahlin and Townsend (2007) empirically tested four theoretical models¹⁴ of joint liability using data on 262 groups in Thailand. The authors found that social ties between group members are not necessarily positive in promoting group repayments. Similarly, Karlan (2007) in investigating the role of social ties in group-lending, using natural experiments, tested whether groups with strong social connections perform better than those with weaker connections. He created random groups with a total of over 2000 individual members in Peru and found strong supportive evidence that monitoring and enforcement positively influence group performance and that social connections play a role in adhering to group norms. Cassar et al. (2007) examined the role of social ties (social capital) in explaining group repayment performance using microfinance experiments in South Africa. The approach enables a distinction to be made regarding the different aspects of social capital within groups and their effects on group performance. The authors argue that repayment by individual members is underpinned by the belief that other members will do the same. With a sample of 36 microfinance groups (498 individual members) spread over two different locations in South Africa, the study found that different aspects of social capital impact differently on group performance. Specifically, the results showed that trust between group members and group homogeneity (social, cultural) improves group performance. The authors concluded that the fact that there is trust in society and people tend to know each other does not help to improve group performance.

Cull et al. (2007) compared the performance of village banks, individual based lenders and group based lenders to show that: (i) individual based lenders earn higher average profits but perform poorly in their social outreach and (ii) village banks charge the highest average interest rates and face the highest average costs. Various studies have also documented the positive impacts of social group pressure and trust on the loan repayment performance of institutions (Al-Azzam, Hill & Sarangi, 2012; Feigenberg, Field, & Panda, 2010; Das & Shams, 2012).

¹⁴ See Stiglitz (1990), Banerjee et al. (1994), Besley and Coate (1995) and Ghatak (1999) on joint liability models.

(ii) INDIVIDUAL LENDING

The individual lending methodology is based on the conventional banking practice of establishing standard bilateral contractual relations between the MFIs and individual clients. Individual lending becomes important as the groups grow and mature. The loan needs of members begin to diversify and the standard loan size offered by the group becomes irrelevant in meeting the loan needs of some members. In such situations, individual lending becomes the acceptable pathway of ensuring that the loan needs of all members can be satisfied. In most instances, MFIs have to make a deliberate choice to lend to individuals as a way of reducing their transaction costs.

Individual lending differs from group lending in terms of the speed of the loan approval process, terms of repayment, interest rates, and other programme-specific terms. Dellien, Burnett, Gincheman, & Lynch (2005), in discussing the differences between group lending and individual lending noted two differences: (i) loan decisions (screening, monitoring) are placed in the hands of loan officers, unlike in group lending where the group takes responsibility, and (ii) a variety of incentives (co-signers, collateral, guarantors) are used to ensure repayment with strict enforcement of contracts. Interestingly, a large number of MFIs now favour individual lending over group schemes, mainly due to the size of loan offered. Kota (2007) and Harper (2007) note that MFIs offer individual contracts to clients who require large loans to meet their needs. However, the literature on individual lending has so far remained descriptive with more focus on monitoring borrowers. The importance of monitoring borrowers under individual lending to avoid diversion of loans from agreed investment plans have been documented in various empirical studies (Armendariz & Morduch, 2005; Dellient et al., 2005; Navajas, Conning, & Gonzalez-Vega, 2003). In a theoretical analysis of individual lending schemes, Gangopadhyay, Ghatak and Lensink (2005) found the monitoring of borrowers by informal lenders to be critical in ensuring repayments. Other documented benefits associated with individual lending are that it exonerates borrowers from going through the negative effects of groupings (time-wasting meetings, loss of privacy) and the tendency to lose their project or investment ideas to others through group discussions (Maria, 2009; Gine & Karlan, 2010). This could hamper the development of individuals.

Also, the use of guarantees in individual lending exerts social pressure on borrowers to repay loans (Armendariz & Morduch, 2000). However, Laure and Baptiste (2007) argue that the guarantee mechanism only works if borrowers pledged assets as surety which are illiquid and the institutional framework allows asset transfer under such conditions. Madajewicz (2011) show that very low levels of borrower wealth are associated with larger group loans than individual loans and that businesses funded by individual loans have better growth than those funded from group loans. This suggests that group-based loan schemes favour poor people.

In recent years, the interest among researchers in comparing individual and group lending schemes has increased. Kodongo and Kendi (2013) compared individual and group lending programmes in Kenya using a structured questionnaire to collect data from 35 institutions in 2012. Their results show that MFIs prefer individual lending over group lending, even though a higher default rate was associated with the individual methodology. Higher interest rate and loan size were found to significantly influence loan delinquency. Similarly, Gine and Karlan (2007) from their field experiments in the Philippines reported the possibility of MFIs attracting relatively new clients by offering individual loans, though repayment rates did not differ between group and individual lending schemes. Maria (2009) investigated the choice of lending technology by MFIs and reported that they tend to prefer individual loans over group loans when the size of the loan is small, refinancing costs are low, and competition is fierce. In another experimental study, Ahlin and Townsend (2007) found higher correlations across projects and concluded that group lending contracts have greater promise relative to individual lending.

To conclude, the form of MFI largely influences its performance. The main forms of MFIs discussed are banks, non-bank financial institutions, non-governmental organisations, cooperatives and credit unions. The structure of these institutions involved in microfinance service delivery differs and this impacts on their performance. Banks are shown to be more efficient in their operations in the Southern Africa sub-region while cooperatives predominate in the West Africa sub-region. Furthermore, two main delivery methodologies are employed by these institutions in delivering microfinance services as

discussed here- group lending and individual lending. The review shows that both individual and group lending schemes have their own merits but loan size appears to be a key determinant in the choice of lending methodology adopted by MFIs. Though contract enforcements and repayment rate are central pillars in both lending approaches, little is known about their influence on MFI outreach or financial performance. The structure of the MFIs also influences the choice of delivery mechanism. In general, borrowers prefer individual loans to group loans.

2.2.3 PRODUCTS AND SERVICES OFFERED

This section discusses the main types of microfinance products and services that have so far been developed and rolled out by MFIs for the benefit of their clients. The available products and services offered are microcredit (loans), micro insurance, savings, payment services and integrated services. Each is presented and discussed in detail. The variety of products and services offered by MFIs to their clients is similar to that provided by conventional formal financial institutions, though the scale and delivery methodology differs.

Microcredit has remained the dominant product offered by MFIs since their inception (Nourse, 2001; Woller 2002). Microcredit is characterised by two main features: (i) the average size of the loan is small and they are made either with little or without collateral, and (ii) repayment schedules are flexible, which minimises default rates (Morduch, 1999; Morduch & Johnston, 2008). The size of the loan is very dependent on the lending methodology. Small-sized loans are typically granted through group lending approaches, even though individuals do take small loans based on their needs. However, the evidence of which approach is superior to the other in ensuring loan repayments remains mixed in the literature. For instance, empirical evidence provided by Gine and Karlan (2008) suggests that standard individual lending is more effective in reducing default rates. However, recent evidence provided by Kodongo and Kendi (2013) found group lending to be more effective in minimising default rate in Kenya.

Access to finance is a major challenge, especially in the informal sector, and the provision of small loans (microcredit) by MFIs for microentrepreneurs, is aimed at enabling investment in micro businesses. Supported micro enterprises have been found to engage in small-scale retail business such as food vending, light manufacturing, repair services and agriculture production (Ssendi & Anderson, 2009). This has the potential to create employment, increases the income of the poor, and improves their well-being. Besides enterprise development, microcredit has been found useful for direct consumption purposes. Individuals often receive loans for direct consumption which enables them to purchase durable items, pay fees for the education of family members, and pay for general maintenance of their homes (McIntosh, Villaran, & Wydick, 2008). Woller (2002) argues that consumption and emergency loans satisfies unfulfilled needs of poor households since they serve as a coping strategy and helps mitigate risk. Supportive evidence shows that the demand for credit by clients now extends beyond business development to cover emergencies faced by households. Even in situations where customers secured loans that were labelled business loans, empirical evidence shows that they were used for purposes unrelated to business (Morduch & Johnston, 2008; Rutherford, 2006). The financing of small businesses as well as meeting the consumption needs of households are thus central in microfinance and are complementary, but their relative importance varies depending on the needs of the household (Morduch & Johnston, 2008).

Another important product which has gained popularity in recent times is microinsurance, which seeks to protect poor borrowers against shocks and poor weather conditions. The call for institutions to provide tailored lending services for the poor instead of rigid loan products has long been expressed by clients. The demand for microinsurance exists, though the product is still in its early stages of development, and with limited research (Churchill, 2002). Empirical evidence on the real effects of insurance products has been mixed. While some positive benefits exist, low uptake of available microinsurance products remains. Mishra (1994) analysed crop insurance in Gujarat in India and found a significant increase in credit flow to insured farmers, with a positive impact on loan repayments due to the availability of the insurance product. Gine, Townsend, and Vickery (2007) analysed barriers to the uptake of microinsurance at the household level

in Southern India, taking into account the contractual design features of the weather insurance product. They found increased correlations between insurance pay-offs and the risk being insured. More specifically, insurance uptake decreases the risk of getting insurance benefits, income fluctuation, and credit constraints. However, insurance uptake increases with household wealth and familiarity with the insurance vender. Thus, risk-averse households were found less likely to patronise the insurance product. Similarly, Gine and Yang (2008) in their study of farmers in Malawi reported that farmers were more likely to take up a credit-only product than a credit-with-insurance product which would cover them from repayment in case of drought or flooding. Nourse (2001) emphasised the need for MFIs to go beyond microcredit and provide insurance and savings services for the poor. Similarly, Woller (2002), Cohen (2002) and Dunn (2002) argue the need for MFIs to be more client-focused and supply a mix of financial products tailored to meet the varied needs of poor consumers. However, one key challenge hindering the uptake of micro insurance products is the limited specialised knowledge of MFIs in setting up and efficiently running insurance schemes. To date, MFIs with strong insurance products are limited, and collaborations between MFIs and real insurance companies remain weak.

In addition to the lending function of MFIs, a market for savings exists for the poor. This is termed savings product. Initial assumptions that the poor could not save because they do not have any permanent stream of income have been expelled through their participation in microfinance programmes. The availability of savings services enables poor people to mobilise large sums of money for critical investment purposes, which otherwise would have been impossible for households to undertake. Savings constitute the first line of defence for the household when faced with emergencies and play a crucial role in taking advantage of investment opportunities (Grosh & Somolekae, 1996). Savings services are of two categories: forced savings and voluntary savings. Forced savings appear dominant, and in most NGO programmes participants are required to make a minimum amount of savings within a set time period on a regular basis. One advantage of this approach is that it instils the culture of financial discipline in members and gives better client information to the MFIs. However, it is practically cash collateral and the rules governing withdrawal can be very restrictive. On the contrary, voluntary

savings are flexible (Nourse, 2002; Montgomery, 1996). While a great majority of the poor do not operate enterprises, they do save small amounts in various forms at intervals for their own benefits (Beverly & Sherraden, 1999).

Empirical evidence shows that the demand for savings services far exceeds that for enterprise loans. Christen (2001) reported that over a million deposit accounts were opened by retail banks in Latin America within a space of 2-3 years while MFIs added fewer than 200,000 loan clients to their portfolio. For MFIs offering both services, the number of savers typically exceeds borrowers by large magnitudes. Supportive evidence for SSA is provided by Lafuorcade et al. (2005) who found the number of savers in the region to be in far excess of the number of borrowers. This suggests that savings products might be more valuable to poor people than microcredit.

Recent studies have highlighted the benefits of savings products, which makes them more attractive to the poor. According to these studies, savings enables access to savings accounts which impacts positively on savings mobilisation, increased household expenditure, stimulates female business investments, empowers women, and enabled people to cope with health emergencies (Ashraf, Karlan, & Wesley, 2006, 2010; Brune, Gine, Goldberg, & Yang, 2013; Dupas & Robinson, 2013a, 2013b). However, using field experiments, Karlan, Ratan and Zinman (2014) provided some theoretical constraints likely to hinder the supply, adoption and effective usage of savings products and services by the poor. The constraint factors identified were higher transaction costs, limited trust, regulatory barriers, information and knowledge gaps, behavioural biases and social issues. Furthermore, Cozarenco, Hudon, and Szafarz (2016) compared the characteristics of MFIs that supply savings deposits to those that do not using a sample of 722 MFIs over the period 2005-2010. The results showed that MFIs collecting voluntary savings receive fewer subsidies than those that only provide credit. Thus, subsidies were found to crowd out micro savings products suggesting negative externalities for donors on product diversification. Subsidies to MFIs can crowd out the collection of voluntary savings leading to perverse incentives.

Savings mobilisation is not just vital for the individual, but for societal welfare. At the macro level, the rate of savings helps predict future economic growth which aids in

national planning. Efficient savings mobilisation depends on a number of factors such as technology used, location of clients, dedicated MFI staff, income and commitment level of the client, and availability of savings facilities. Ashraf, Karlan, and Wesley (2006) found that the innovativeness of savings collection methods such as direct collection of deposits from customers, and commitment to clients influences the level of savings mobilisation. Similarly, geographic distance has been found to be a key impediment to the use of formal savings services by the poor (Aportela, 1999).

Moreover, the single utilisation of the available financial products and services discussed here has been found to be inefficient in addressing some of the other social dimensions of clients' behaviour such as using loans to pay school fees or health insurance. As a result, the integration of financial services with other non-financial services such as health, education, and other development services has emerged as a critical product aimed at consolidating benefits from the array of services that currently exists. Research in this area is still relatively limited. Smith (2002) compared MFIs that integrated financial services with health education in Ecuador and Honduras to those offering minimalist services. The study found that beneficiaries of the integrated programme experienced a greater improvement in family health than did those of the minimalist programme. However, the study found no significant difference in performance between institutions offering minimalist services and the banks that supported the integrated programme. Similarly, Edgcomb (2002) and Dumas (2001) provide supportive evidence for the integrative approach, drawing on case studies where MFIs integrated business development training into financial service delivery. These studies reported significant improvements in the performance of micro enterprises and micro entrepreneurs as a result of the business development training.

Finally, payment services in the form of remittances have increased in recent times both at the domestic and international levels and MFIs are largely involved in it. This is known as shadow banking. Migration continues to drive remittances at the international level. According to the World Bank (2005), international remittances constitute the second largest source of external finance in developing countries, only next to foreign direct investment. These payment services help in connecting migrants with their families back

home in resolving critical financial needs. Empirical evidence shows that remittance flows can potentially attract new customers into the formal banking sector (Aggarwal, Kearney, & Lucey, 2012; Demircuc-Kunt, Klapper, & Panos, 2007). However, lack of competition and limited information on available delivery options to remitters make payment services costly at the international level. At in-country level, branchless banking and government-to-person payment systems are rapidly connecting millions of poor people, especially those in rural areas, for easy fund transfers. For instance, in South Africa and Kenya, electronic networks using mobile phones to connect financial service providers to poor clients who previously had no access to formal financial services has gained momentum. Many governments now use these electronic payment systems to disburse social welfare funds to poor people. It has been found useful in reducing transaction costs and dealing with corrupt practices that often characterise the disbursement of government funds to poor people.

From this review, it is clear that MFIs are making efforts to develop products that meet the needs of clients. However, a knowledge gap exists in the areas of microinsurance product development, pointing to the observed inefficiency in product development and low uptake by clients. There is high demand for savings services, which now outstrip the demand for microcredit. This has policy implications as there is the need for regulation to help protect depositors. However, research has focused very little attention on the issue of microinsurance and the effects likely to be created by regulation on client sustainability and outreach.

2.3.4 THE MACROECONOMIC ENVIRONMENT

Economic growth has been found to have an impact on extreme poverty reduction and the macro environment is critical in achieving the positive growth of economies. In Africa, the persistent population growth rate of 2.7 percent per annum is said to have caused an increase to over 100 million¹⁵ of the number of people living in extreme poverty. Such expansions in population growth could lead to insignificant impacts of economic growth

¹⁵ The number of people living in extreme poverty in Africa in 1990 was 288 million and this had increased to 389 million in 2012 (Africa Poverty Report, 2015).

on poverty reduction efforts (Conning, Raja, & Yazbeck, 2015). Creating the enabling economic, social and political environment is thus critical since microfinance takes a central role in the fight against poverty.

The level of macroeconomic and political instability affects the level of investment in developing countries. While conflicts have declined, investments in post-conflict countries such as Sudan are yet to be realised. Sub-Saharan Africa has gained some level of stability in terms of economic growth with minimal banking crises and fewer conflicts (Beck, Maimbo, Faye, & Triki, 2011). The sub-continent had witnessed more inflows in foreign direct investments (FDIs)¹⁶ in recent years due to consistent growth in GDP, increased political stability, a growing middle class, and reforms that reduce barriers to entry (World Bank, 2011). These favourable macroeconomic conditions are expected to trickle down to the microfinance sector through investments in pro-poor policies that will make working capital available to people.

However, the overall business environment has remained largely unfavourable in several countries (Niger, Chad, and Burundi) and issues of corruption continue to hamper investments in some countries. A recent study shows that most investors in the microfinance sector have a country risk threshold for SSA but are prepared to invest in the region despite these challenges (CGAP, 2012). This is not only good for the microfinance sector but a clear demonstration of investors' commitment to achieving their development mission and also help develop the region. This is likely to impact on the outreach mission of MFIs and enhance their efficient operation.

Several empirical studies have revealed positive effects of macroeconomic factors on MFI performance. Ahlin and Lin (2006) examined whether MFI performance is affected by the macroeconomy using data from 112 MFIs across 48 countries. The study found that MFI success is largely determined by MFI-specific factors and that the macroeconomic environment matters in MFI performance. Similarly, Gonzalez (2007), in analysing whether changes in domestic GNI per capita significantly affect MFI portfolio risk, reported a statistically significant relationship between changes in GNI per capita

¹⁶ According to UNCTAD (2012), FDIs to the region grew from \$23 billion in 2006 to \$38 billion in 2010.

and portfolio at risk of MFIs. However, no relationship was found between MFI asset quality and changes in GNI per capita, indicating that microfinance portfolios have high resilience to macroeconomic shocks. Kraus and Walter (2008) show that MFIs are uncorrelated with global market movements, whereas significant correlations exist between MFIs and the domestic macroeconomy.

Barry (2012) analysed the emerging trends in microfinance new technology, the rise in the number of for-profit MFIs and individual lending. The study reported that different types of MFIs have unique characteristics that influence political development in different ways, including democratisation, social capital, and economic and political empowerment.

2.3 THE PERFORMANCE OF MICROFINANCE INSTITUTIONS IN SUB-SAHARAN AFRICA

The performance of MFIs is influenced by several factors. This section discusses briefly the performance as it relates to outreach, financial, risk management, funding, information management, consumer protection, and economic development. These components are related to the framework elements currently used by most rating agencies in assessing the performance of MFIs.

2.3.1 SOCIAL PERFORMANCE OF MICROFINANCE INSTITUTIONS

The social performance of institutions is often analysed in terms of the overall number of people reached with financial services as well as the targeting of marginalised and disadvantaged groups such as rural coverage and women clients. Microfinance is viewed largely as women's business although male participation has increased in recent times. Nonetheless, female borrowers still account for a large share of the MFI market, and lending to women has been widely acknowledged as one of the main reasons for microfinance success (Armendariz & Morduch, 2010).

A number of studies have analysed the link between female MFIs membership and institutional performance, with mixed results. While studies by D'Espallier, Guerin and Mersland (2011), Mersland and Strom (2010) and Sharma and Zeller (1997) reported positive impacts of female participation in microfinance programmes on MFI performance, negative impacts have been reported by Godquin (2004), Bhatt and Tang (2002) and Wydick (1999). Aterido, Beck and Iacovone (2013) examined access to finance and gender, using key characteristics and a potential selection bias to show the existence of an unconditional gender gap in SSA. The study assessed the gender gap in enterprise use of formal finance using enterprise survey data from the World Bank with a sample of 11,382 formal firms covering 37 African countries for the period 2005-2009. By using multivariate regression analysis, the study found some evidence of an unconditional gender gap but the gap disappears when individual or enterprise characteristics are controlled for. The key drivers for gender gap are firm size, age, and foreign ownership participation, and evidence of selection bias emerges. Similarly, Boehe and Cruz (2013) tested the hypothesis that female membership in MFIs improves their institutional performance through enhanced debt repayments. The authors employed both qualitative and quantitative data covering 26 microfinance projects across 22 countries. The evidence shows that female MFI membership improves loan repayments under adverse environmental conditions and that entrepreneurial capability matters. The study also revealed that MFIs' institutional environment shapes women's socio-economic opportunities and creates opportunities for women to acquire managerial and relationship capabilities.

Furthermore, Hail, Bock, and Folmer (2012) compared the performance of two microfinance projects in Ethiopia aimed at exploring if variation in the socio-cultural, economic and microfinance organisational context explains why some programmes are more successful than others. They found that variations in formal and informal rules matter in MFIs performance. The results further show that while women's participation in microfinance programmes enable them to generate extra income and improve their asset base, the perpetuation of inequalities and the gender-specific division of labour could result.

In general, inclusive financial services in Africa are blooming. Between 1997 and 2011, the number of African MFIs reporting to the MIX market increased from 58 to 397. Also, the number of borrowers served by MFIs is said to have increased from 1.6 million to 8.5 million between 2003 and 2009 (CGAP, 2012). This shows that the microfinance industry is on a growth trajectory and efforts must be made to sustain it. However, a majority of institutions in the region still do not report to any microfinance database. This suggests that the outreach estimates recorded may have underestimated the true outreach performance of the institutions operating in SSA. The microfinance industry, notwithstanding its impressive growth prospects, can be described as underdeveloped. The sector is also beset by numerous operational problems such as sparse human capital, poor governance, and minimal external commercial interest which adversely hamper the outreach efforts of institutions. Yet, research on which institutional factors drive outreach remains limited. Comparative analysis of microfinance outreach across the various continents revealed greater prospects for SSA and the Asia and the Pacific regions. Table 2.1 shows the compound annual growth rates in total borrowers and the poorest borrowers reached in all regions for the past two 5-year periods.

Table 2.1: Annual Growth Rates in Outreach

Region	2003-2007		2009-2013		2016
	Total (%)	Poorest (%)	Total (%)	Poorest (%)	Projected growth rate (%)
Asia and the Pacific (AP)	12.6	14.6	0.5	-3.6	Around 30
Sub-Saharan Africa (SSA)	7.4	6.2	8.5	6.9	15-20
Middle East and North Africa (MENA)	98.9	84.0	3.0	-3.5	10-15
Latin America and the Caribbean (LAC)	25.3	14.5	7.3	-0.6	5-10
Eastern Europe and Central Asia (ECA)	97.2	30.5	-2.0	-15.9	Around 10
Total	13.9	14.2	1.5	-3.0	10-15

Source: Reed, Marsden, Ortega, Rivera, and Rogers (2014); Microfinance Outlook (2016)

It shows that only SSA has seen significant growth in the number of poorest borrowers served in recent years. These estimates should be understood in the larger context of an overall decline in levels of extreme poverty, especially in the Asia and the Pacific region. While the level of opportunities and challenges vary substantially across regions, prospects are stronger in Asia and the Pacific and SSA which are projected to grow above the global average rate of 10-15 percent (Microfinance Outlook, 2016). Many experts believe that sound regulatory and supervisory environment, technology application and international funding through microfinance investment vehicles will remain key drivers in the outreach performance of MFIs. However, the concentration of markets and funding received continue to remain skewed in favour of a few countries. For instance, in 2012, Kenya alone received 22 percent of the funding that came into SSA.

2.3.2 FINANCIAL PERFORMANCE (SUSTAINABILITY/PROFITABILITY)

Strong and well-performing MFIs exist in SSA. However, on the average, MFIs financial performance lags behind other regions. This is explained largely by higher portfolio at risk (PAR), lower loan loss reserves (poor assets quality) coupled with higher operating cost structures. In the year 2010, SSA recorded the highest PAR 30 days past due (5 percent), with average operating costs of 32.6 percent of the loan portfolio, well above that of other regions (CGAP and MIX, 2012). Some selected financial performance indicators across various regions are presented in Table 2.2.

Table 2.2 Financial Performance Indicators for Various Regions

Ratio	Africa	Middle East and North Africa	Eastern Europe and Central Asia	Latin America and Caribbean	Asia Pacific	India
Total yield	38	31	32	47	31	28
Operating expense ratio	45	27	19	45	23	10
Return on assets (%)	-3	1	-0.5	0.5	-1	3.6

Source: Micro Banking Bulletin (2009).

Table 2.2 shows that, among all continents, investing in MFIs in Africa is the least lucrative, with the greatest negative returns on investments. Except for Latin America and the Caribbean (LAC), operating expenses also rank highest among the regions and this obviously brings down the profitability level of the industry. The low profitability is partly linked to the small size of institutions that dominate the industry in SSA as they operate without economies of scale (Micro Banking Bulletin, 2009). Thus, the region is dominated by Tier 3 MFIs with fewer Tier 1 and Tier 2 institutions¹⁷. For instance, while only 25 Tier 1 MFIs operate in the SSA region, 105 operate in Latin America and the Caribbean region with 62 in Europe and Central Asia (ECA). This has implications for scale economies and hence profitability levels. The small-sized average loans offered, the nature of the operating environment, limited access to capital, and dispersed capital markets naturally explain the low profitability level of the microfinance industry in SSA. As at December 2010, MFIs in SSA reached out to 4.5 million active borrowers with a gross loan portfolio of US\$14.9 billion (CGAP, 2012). Though the gross loan portfolio has been growing over the years, profitability remains low. This certainly has implications for MFI sustainability and efficient operations.

To overcome the challenge of higher MFIs operating costs, investors must be prepared to accept low returns or pursue business models that lower the cost of handling a larger number of smaller transactions (CGAP, 2012). Also, the opening up of field offices may facilitate a better understanding of the local context, and thereby lower outreach cost and increase market penetration. Mersland and Strom (2009) reported that the presence of an internal auditor improves financial performance as it helps strengthens governance structure.

2.3.3 RISK MANAGEMENT PERFORMANCE

This section discusses the issue of risk in microfinance operations, which has become a growing concern to both clients and policy makers. It presents the various types of risk (both internal and external) that impact on microfinance and ways to deal with the issue.

¹⁷ CGAP (2010) defines Tier 1 as MFIs with assets greater than \$30 million; Tier 2 as those with assets between \$5-30 million and Tier 3 as those with assets below \$5 million.

It is a performance criterion used by rating agencies in assessing microfinance institutions which donors increasingly rely on in making their funding decisions.

MFIs by their nature are subject to various types of risk (credit risk, interest rate risk, liquidity risk, market risk) just like formal financial institutions. Risk is defined as the combined effects of uncertainty and potential losses resulting from adverse scenarios (Bessis, 2010, p. 7). The risk of losses due to borrowers' defaults (credit risk) has remained one of the major risk areas confronting MFIs, despite the use of innovative lending methodologies. According to the CSFI Survey Report (2014) on microfinance, credit risk remains high in SSA due to poor governance, and political and economic uncertainties which confront many countries. Weak management and governance and demand-side factors expose the risk level of most MFIs. Adverse movement of interest rates, particularly when the cost of debts increases, can create potential losses. To cover, these losses, some argue that interest rates charged by MFIs must be raised. Closely related to this is the risk of MFIs not being able to raise funds at a reasonable cost (liquidity risk) as they turn to capital markets to raise funds. Beyond these categories of risk, environmental risk factors such as political risk and regulatory risk do have profound effects on the outreach, sustainability and efficient operation of MFIs in the region.

Poor portfolio management continues to pose a great risk for MFIs in the region. According to the MIX Market Benchmarking Report (2010) for SSA, Portfolio at risk 30 days past due averaged 5.9 percent, higher than the previous year's figure of 5 percent. Meanwhile, regional distribution of risk levels remains variable. For instance, in 2008, the PAR value for Central Africa was 8.7 percent, which was well above the World average. The Consultative Group to Assist the Poor (CGAP) recommends that the standard range for PAR 30 days past due should be between 3-5 percent. A sizeable percentage of PAR values indicates the cost burden of MFIs which tends to constrain enterprise finance, outreach, and efficient operations.

Weak internal control systems are yet another risk area faced by MFIs in their operations. This is particularly acute with cooperatives which operate in rural areas. Computerised information management systems to help detect misappropriations on a timely basis are

limited and audit systems remain ineffective. The difficulty in closely monitoring activities has also been identified as a major weakness. This is attributed to the high cost involved in recruiting and retaining competent human resource with specialised skills and experience in these areas, which most MFIs are unable to meet.

Other factors that contribute to risk at the MFI level are a deficient human capital base and limited transparency in pricing and reporting. The cost of attracting qualified staff with the right expertise in key skilled areas such as finance, accounting, auditing, knowledge management and documentation is very high. Lack of transparency and insufficient reporting have also been identified by donors as key factors that hinder business development in SSA (CGAP, 2012). Maintaining transparency and meeting high-quality reporting standards can pose real challenges, especially to new and small-sized firms. Fierce competition among MFIs is an increasing risk area. However, competition is also necessary for stimulating innovation in the industry.

Modern risk management began with the ‘capital adequacy’ principle, which requires translating risks into monetary terms (Bessis, 2010). To prevent failures in individual MFIs, risk regulations are designed by imposing minimum standards to the capital base that are risk driven. Risk regulation is based on the principle of ‘capital adequacy’ which imposes a capital base that commensurates with MFIs’ risk exposure level. This is considered sound practice in view of the fact that MFIs need to have enough capital to sustain their risk. The idea is to define the minimum capital that allows a bank to sustain the potential losses arising from all risks while complying with an acceptable solvency level. However, determination of potential losses in line with current risk levels remains a key challenge to both regulators and the MFIs.

Risk management objectives have been found to influence the capital structure of lending institutions (Cebenoyan & Strahan, 2004, Bogan, 2012). To overcome capital constraints arising from risks, Bogan (2012) suggested the use of ‘Smart subsidies’ or innovative financing instruments by large institutions. Khan and Ashta (2013) provide a literature review of risk management in microfinance and recommended criteria for management based on a case study in Bangladesh. Milana and Ashta (2012) in their survey of the microfinance literature observed that social responsibility and sound governance

practices could help MFIs operate effectively and efficiently. The authors emphasised the need for joint value creation through cooperation among stakeholders, self-governance and regulation of all MFIs, and co-existence of both commercial and non-profit microlenders as a way to minimise risk and expand outreach.

Furthermore, recent concerns about consumer protection have made risk coverage in credit delivery mechanisms central in microfinance business and the financial system as a whole (Sahoo, Sena, & Thomas, 2012; Banerjee, Chandrasekhar, & Jackson, 2012). The introduction of insurance-type products to help households manage risk is imperative. However, the availability and acceptance of microinsurance products still remain very low in SSA and more research and consumer awareness is needed to create effective demand. Also, policy makers need to de-politicise critical issues that affect consumers of microfinance products and put in place the right policies with appropriate enforcement and regulatory structures. Favourable policies on interest rate controls need to be given priority. Yet, most MFIs have remained largely unregulated. How this impacts on consumers through the outreach and sustainability efforts of MFIs has received little attention in research.

In sum, various types of risks affect the sustainability, outreach and efficiency performance of MFIs and there is increasingly the need to control risk. The most common variable used to determine the risk performance of MFIs is the portfolio-at-risk. Evidently, the portfolio quality of MFIs has been deteriorating over the years and to help contain the situation, MFIs are now focussing more on improving their internal governance. In addition, regulation through capital adequacy requirements has been introduced in microfinance as a policy measure to help minimise risk and ensure the financial soundness of the industry.

2.3.4 FUNDING/LIQUIDITY PERFORMANCE

Access to sustainable sources of financing remains a hindrance to most MFIs with likely impacts on their outreach and sustainability efforts. This section highlights the funding situation of MFIs in SSA with a focus on the changing dynamics in the funding structure.

The life cycle approach to MFI funding is discussed, with some empirical insights. Finally, the main funding instruments available to MFIs are presented and relative comparisons in performance made in the global context.

Lack of funding has been typical of MFIs in Africa with significant impact on their scale of operations. Traditionally, since the 1970s, MFIs have been funded through donations and subsidies received from charitable organisations. The microfinance market has, however, evolved globally with a shift in funding sources from donations and subsidies to funding from bilateral agencies and commercial capital markets. The current focus of most donors in the microfinance sector is to help build viable institutions for financial sustainability. Funding from international and commercial sources is therefore seen by many as necessary to trigger growth in the sector. Swanson (2008) has argued that the estimated US\$200 billion required to meet the demand for microfinance services globally is only attainable through international capital markets. Yet, the performance of most MFIs in the region has remained mixed, making it difficult for these institutions to attract the necessary funding.

The main funding instruments used in microfinance are grants, deposits, equity, debts and local government budgetary support for pro-poor interventions which are aimed at bridging gaps in income inequality and increasing client access to investable funds. Africa continues to remain vulnerable to shocks despite the need for growth to overcome rising inequalities in the region (World Bank, 2010). The continent's reliance on trade finance makes it more vulnerable to banking crises in its trade partners (Berman & Martin, 2012). Aid and investment in infrastructure can help improve growth and promote equality. However, Addison, Singhal, and Tarp (2013) argue that official development assistance will need to evolve in order for aid to remain useful. In the eyes of many, aid as a source of funding has failed consistently in helping attain the needed growth in the developing world. For instance, Boone (1996) found that aid had no impact on investment, infant mortality and other human development indicators. Burnside and Dollar (2000) however argued that aid works, but only in the presence of good policies. Bogan (2012) found evidence in support of the assertion that the use of grants decreases operational self-sufficiency. This supports the view that long-term dependence on grants

connotes inefficient operations since there is no pressure on the institutions to seek funds from competitive markets. Grants could, therefore, hinder the development of MFIs. This means that the right policies need to be pursued to make aid inflows in the form of grants more meaningful to the microfinance sector in the fight against poverty.

The life cycle theory has been found to be useful in explaining micro financing and several authors have argued that the funding structure of MFIs should follow it (Kooi, 2001; Van Maanen, 2005; Bogan, 2008). That is, in the early years of its establishment, MFIs funding should be done using subsidies since they are not profitable or sustainable to enable them to attract commercial funding. In the growth phase, retained earnings together with subsidies should constitute the funding base. MFIs are expected to transit from non-profit status to become regulated entities to enable them to mobilise deposits and have access to commercial funding. However, this process is costly and MFIs will require subsidised funding (Bogan, 2008). The last stage is when MFIs are fully regulated with a clearly defined capital structure just like banks, and can mobilise deposits and capital from both local and international commercial sources to fund their operations without subsidy (Bogan, 2008). Although the life cycle theory provides useful links between MFIs' capital structure and performance, it has little explanatory power on the actual financing mechanism. Other economic and financial variables, therefore, may be more appropriate in explaining the financing situation of MFIs.

Moreover, the funding situation of MFIs is rapidly changing, with a strong orientation towards commercialisation. Commercial Banks are now central players in providing funding to MFIs to help expand access to financial services to poor and remote areas in most developing economies. The ability of MFIs to attract funding from local and international commercial sources is now linked to their financial performance. Mersland and Urgeghe (2013) examined the profile of MFIs that receive loans from Microfinance Investment Vehicles (MIVs) using data from 319 MFIs in 68 developing countries. The study focused on the relationship between MFIs' access to international debt and their social and financial performance. The results showed that access to commercial debt is related to strong financial performance, a high level of professionalisation, and outreach to relatively poorer customers. However, targeting of women is reported not to be a

priority for MFIs accessing funding from commercial sources. Similarly, Oehri and Fausch (2008) studied the portfolios of MIVs and found low volatility and low correlations to other asset classes, which potentially makes microfinance an interesting asset to include in a portfolio for commercial investors.

Contrary to initial assumptions of low profitability of the microfinance sector, investing in microfinance has been found attractive and lucrative for investors seeking a better risk-return profile (Galema, Lensink, & Spierdijk, 2009). However, investing in MFIs in SSA is reported to yield less efficient portfolios compared to those in Latin America and other regions. At the same time, investing in microfinance and rural banks tends to yield more efficient portfolios than microfinance NGOs. This may be one reason for the unattractiveness of MFIs in SSA to investors since member based institutional types currently dominate in the region.

Equity as a source of funding to microfinance is very important and growing. The first private equity fund to invest exclusively in the microfinance industry in African was AfriCap. MIVs have been a key growth factor in the capitalisation of MFIs but as of recently also provide technical assistance and training. This interest though relatively new, led to significant portfolio growth (36 percent per annum) in Africa's MIVs between 2006 and 2013 (Soursourian, Dashi, & Dokle, 2015). This growth rate compares favourably with investments in the Latin America and Caribbean region (38 percent) and both the Middle East and North Africa (MENA) and South East Asia regions (8 percent). Cull, Harten, Nishida, Rusu, and Bull (2015a) also noted the strong links between MIV financing and growth of the microfinance sector in a recent paper that explains the relevance of Greenfield MFIs in Africa in promoting financial inclusion in undeveloped markets.

Both public and private investors have debt and equity investments in microfinance in SSA. Equity and debt continue to be an important source of capital in providing access to financial services for low-income populations in the developing world. For instance, in the year 2010, debt constituted a large proportion of total direct investments in Africa (38 percent of direct foreign investments and 70 percent for MIVs). However, these two sources remain limited in the local context in most countries, though funding in local

currency is said to be growing¹⁸. For some direct foreign investors, equity dominates their portfolios (over 50 percent) in SSA. The high proportion of equity investments is explained by two factors: (i) the push to make capital available for institutional sustainability and growth and (ii) the need to meet the equity capital needs of new institutions known as ‘Greenfields’ (Glisovic, Mesfin, & Moretto, 2012). International investors in SSA hold only a small part of the global microfinance portfolio despite their reported high growth rates. Investments in the region account for 9 percent foreign direct investments (FDIs) and 5 percent MIVs globally (Funder Survey, 2011). However, the distribution of FDIs in the region has been uneven and the bulk of investment volumes (56 percent) are skewed in favour of the East Africa region, with a concentration in a few (5) countries¹⁹ and institutions. Figure 2.2 shows the funding commitments of both public and private investments for equity and debt during the period 2011 to 2013.

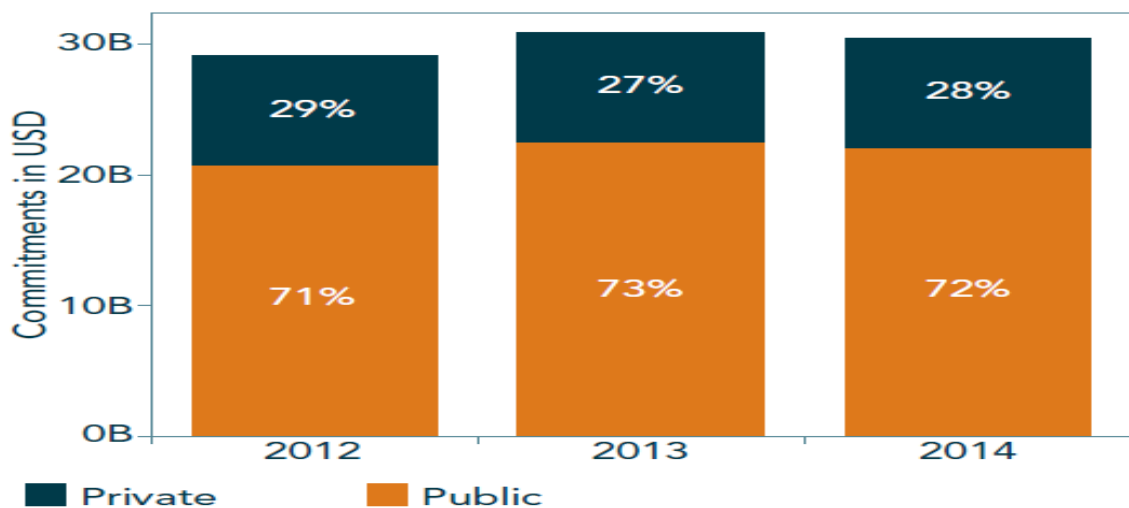


Figure 2.2: Estimated Cross Border Commitments to Financial Inclusion (in USD billions)

Sources: 2012-2015 CGAP Cross-Border Funder Survey and Symbiotics MIV Survey

¹⁸ 49 percent of all direct foreign investments were in local currency in 2010 and the estimate is expected to rise. Also, most MIVs in SSA have over 50 percent of their portfolios in local currency compared to the global average of 30 percent with a strategy to increase funding by 100 percent.

¹⁹ In 2010, Kenya alone received 22 percent of the total FDIs and 40 percent of MIV investments that came into Africa. See Consultative Group to Assist the Poor MIV Survey (2010) and Funder Survey (2010) reports for details.

The figure shows that the ratio of public to private funding remained largely unchanged during the period while growth in commitment grew by 3 percent in 2013, far less than in the previous years, due to the closure of some large projects.

Figure 2.3 shows trends in the funding structure for various instruments in the microfinance sector. Clearly, debt constitutes the bulk of the financing in real terms in 2014 as it continues to dominate the other funding instruments. Commitments in equity and grants each accounts for one-fifth of the amount of commitments in debts. Equity was primarily channeled through microfinance investment intermediaries while grants were mostly targeted at service providers and market facilitators. Basically, grants support the capacity building of service providers and market facilitators.

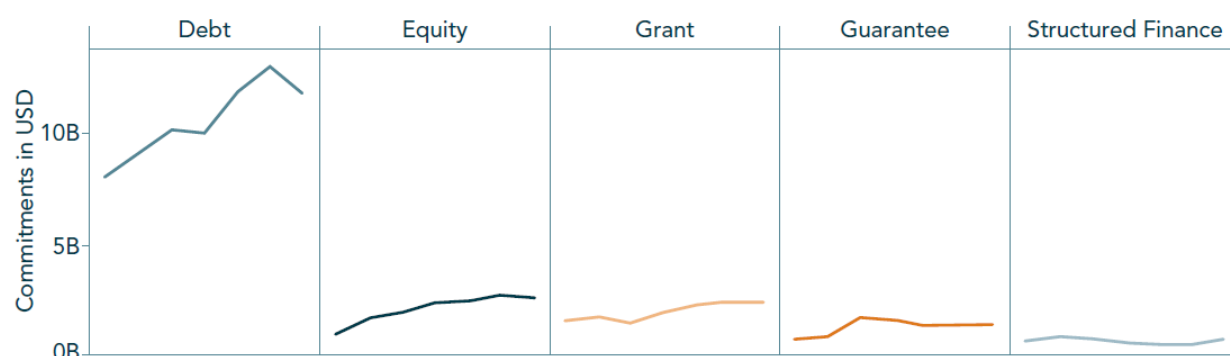


Figure 2.3: Trends in Cross Border Commitments by Instruments (in USD billions) 2008-2014

Source: CGAP Cross-Border Funder Survey (2015)

Regional distribution of all funding commitments also varies during the period. Figure 2.4 shows that Eastern Europe and Central Asia (ECA) received the bulk (31 percent) of funding in 2014. At the same time, funding volumes across all continents witnessed a decline which the survey report attributed to the fall in the exchange rate of the Euro to the dollar and the closure of most large projects. However, a larger number of the projects are concentrated in SSA. With the shift in strategy of funders towards small projects, SSA is better placed to receive greater funding in the coming years.

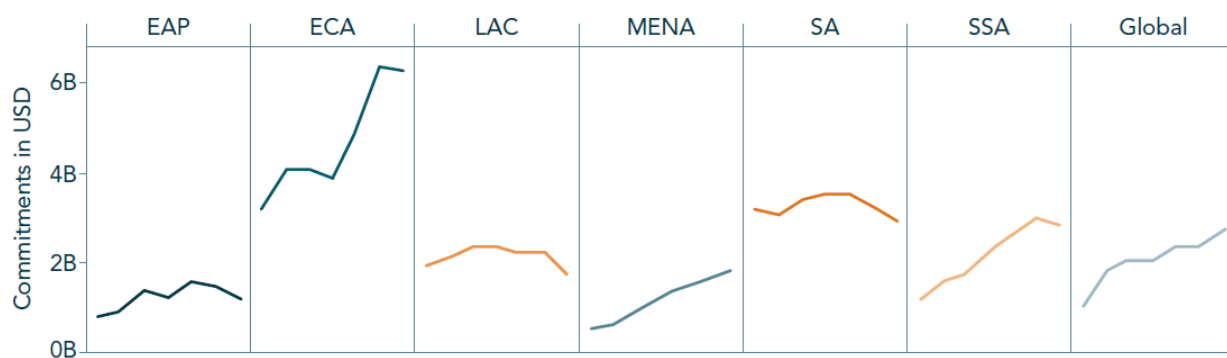


Figure 2.4: Trends in Cross-Border Commitments by Region (in USD billion), 2008-2014

Source: CGAP Cross-Border Funder Survey (2015)

Figure 2.4 shows that Latin America and the Caribbean (LAC), South Asia (SA) and witnessed a decline in funding due to fluctuations in the exchange rate and closure of some major projects to intermediaries. However, the number of projects in ECA and SA are still growing. This suggest that the strategic focus of funders is now more on greater number of projects with smaller amounts. The Middle East and North Africa (MENA) region shows a boast in growth in funding and this together with the growth in SSA has helped to sustain the global increase in funding trend.

Furthermore, deposits, which serve as local funds play a dominant role in the funding structure of MFIs (CGAP & MIX, 2012). MFIs in SSA rely heavily on deposit mobilisation as a source of capital. Most deposits are short-term in nature and small-sized institutions, especially those that are not regulated, are unable to attract and use deposits to finance their growth. One challenge faced by MFIs is the high transaction cost involved in mobilising small deposits, which is partly attributed to the geographical distance and the high cost of prudential regulation. Adoption of new technologies holds the promise of reducing higher transaction costs and enhancing the quality of service delivery particularly in remote areas (Kapoor, Ravi, & Morduch, 2007).

Finally, in most countries, local government funding is also available and often operates as funds (such as the National Fund for Microfinance in Benin) or as registered companies with majority share ownership from governments. For instance, in Rwanda,

the government remains a key player in the ownership structure and boards of financial institutions.

To conclude, the performance of MFIs in SSA has largely remained mixed, with greater implications for their funding structure as they struggle to attract commercial funding. Commercialisation in microfinance is a reality and hence the shift in focus away from donor funding which is not always given. Evidently, the ability of MFIs to attract and use equity and debt, which are key funding instruments, is linked to strong financial and social performance. This means that the observed inefficiencies experienced by many MFIs in SSA will likely impact negatively on their ability to compete for commercial funds to support the growth of the microfinance sector. However, the opportunity and the market to invest exists in SSA. Although portfolio yields are currently low for investors, the right enabling environment is being created across countries and this could boost the industry. Besides equity, other funding instruments exist for MFIs in the region which they would hopefully tap into for their own growth.

2.3.5 INFORMATION SYSTEMS PERFORMANCE

Information systems management in MFIs gained grounds in Africa in 1997 following a pilot study initiated by Isern and Helms (1997) based on the observed weakness in management capacity and the constraints it poses to microfinance development in the region. The aim of the pilot training was to improve the institutional viability and enhance the human resource base of MFIs. Since then, a number of MFIs have adopted and integrated information systems into their operations. This section discusses the main structure of microfinance information systems, the importance, and challenges faced by MFIs in their adoption and usage in ensuring sustainable and efficient operations.

Microfinance, which was previously seen as a low technology industry has now turned into a sophisticated market with the development and application of both new hardware and software tools following fierce competition from new entrants. As the industry matures, new sustainable business models and clients are being sought by MFIs and it is now difficult to distinguish clear boundaries between traditional firms and MFIs.

Sophistication arising out of technology use in the market has led to ethical and moral issues being raised regarding attainment of the dual goal of poverty reduction and industry sustainability (Cull et al., 2009).

An information system can be defined as all the processes involved in data capture, data processing into a usable form, data storage, and dissemination to end users in the desired form (Churchill, Barres, & Nagarajan, 2001). Figure 2.5 illustrates the basic elements of an information system for MFIs with three key components: (i) the institutions (MFIs) which looks at the customer information, the human resources, and the reporting systems; (ii) the core software system that covers the accounting, portfolio management, and deposit tracking systems; and (iii) the delivery mechanisms that are in place to reach clients and other stakeholders. The delivery mechanism, though seen as peripheral to the system, facilitates constant interaction among various stakeholders in microfinance. For instance, through this system, donors can directly monitor their investments.

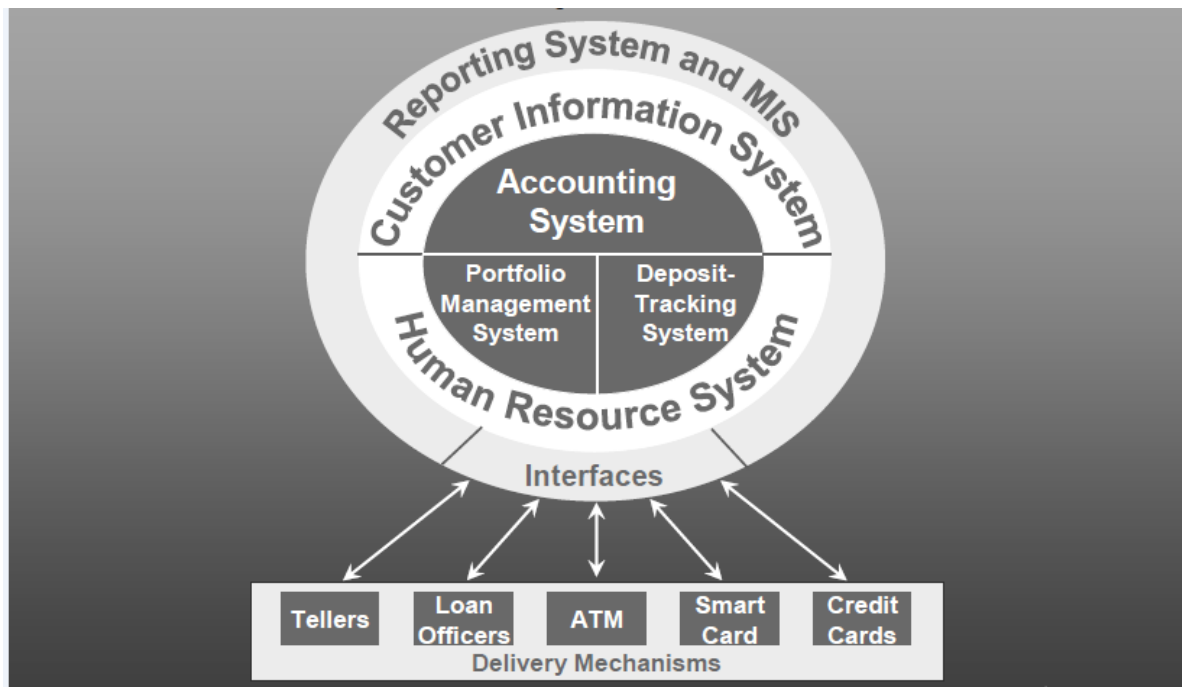


Figure 2.5: Basic Information System for Microfinance Institutions

Source: CGAP/World Bank (2009)

Management Information System (MIS) has been found to be a useful tool for MFIs. A good management information system (technology) can reduce MFIs' operating costs, improve organisational efficiency and increased their outreach. Also, easy cash-flow management and forecasting, simplified external reporting, timely information on portfolio risk and performance updates have been cited as some of the compelling advantages associated with its use for organisational success (Clemons & Row, 1991). Information technology (IT) support and standardisation have been found useful in enhancing the competitiveness of microfinance models (Iyerger, Quadri, & Singh, 2010). Evidence also shows that technology has been used by some banks which are downscaling and opening up subsidiaries in rural areas as a way to increase profits (Iyerger et al., 2010). This suggests that some direct benefits exist for MFIs which are able to adopt technology in their operations. MFIs, therefore, need to invest more in technology to augment their operations.

Additionally, Information and Communication Technology (ICT) has been reported as being useful in attracting capital investments into the microfinance and financial services sector. The use of ICT in microfinance has promoted transparency in reporting to donors, which is critical in attracting the investments required by MFIs to reach a larger scale. Mia (2005) reported that increased adoption of ICT by MFIs in Bangladesh led to operational efficiency as MFIs became able to meet the demands of large clients with microfinance services. Investing in ICT is currently on the increase among MFIs due to the need to meet various criteria set by funding agencies and to operate more efficiently in the competitive business environment. However, Dewan and Kraemer (2000) reported that capital investments in ICT at the macro level are less productive in developing countries, due to the absence of complementary capabilities. The authors pointed out that without the necessary infrastructure, investments in ICT by MFIs using aid monies will remain an illusion. Meanwhile, increased visibility for MFIs through the use of third-party websites creates competition among MFIs for donor funding. Kauffman and Riggins (2012) argue that the scramble to attract funding is one push factor for MFIs to search for efficient business-operating models for profitable performance. Previously, Mathison (2005) suggested that ICT-enabled banking services could trigger economic development and increase its adoption in developing countries. Firpo (2005) noted that

for microfinance to reach scale, three things need consideration: (i) business processes must be re-designed with investment in technology (ii) innovative use of appropriate technology in new markets to support service delivery and transaction volumes, and (iii) priority must be given to infrastructure development to support investments in new information technologies. This requires the cooperation and support of various stakeholders (MFIs, donors, investors, and partners).

MFIs have thrived largely due to donor funding support (Basu, Blavy, & Yulek, 2004). Most donors are external to the project communities that they support and therefore are unable to ascertain accurately issues of client targeting. Also, donors tend to have limited information on the internal dynamics of MFIs operations due to information asymmetries. This makes it difficult for donors to guarantee that their funds will be used as intended. Information systems that increase the level of transparency in MFIs operations reduce donor risk, and pave the way for greater competition among MFIs for donor funding are therefore desired in microfinance. However, Basu et al. (2004) cautioned against heavy reliance on donor funding by MFIs, noting that it has the potential to curtail deposit mobilisation efforts. Additionally, some projects with critical local economic value may not be undertaken in case donors fail to release funds. This means that ICT promotes transparency and induces donors to continue to commit funds to local initiatives.

The adoption of technology has also led to increased risk analysis and control at the MFI level. Analytical ICT- based tools helps facilitate understanding of the market risk faced by MFIs due to information asymmetries and moral hazard problems for efficient and effective service delivery to clients. The use of a credit scoring system on mobile devices has been found an enabler for targeting large populations with financial services by MFIs (Silva, 2002). Overcoming distance barriers in MFI service delivery, and enhanced monitoring of activities in remote areas that circumvent moral hazard and trigger better loan repayments have been reported as direct outcomes of the application of ICT in microfinance. This has contributed to enhanced organisational efficiency and attainment of outreach goals by MFIs. Information systems have undoubtedly impacted positively on the outreach performance of MFIs. Nonetheless, research on the role and impact of ICT on microfinance remains limited in SSA. Empirical studies on how ICT adoption

influences MFIs' performance are however well documented for other regions (Dewan et al., 2005, Chinn & Fairlie, 2007).

Adapting to a new technology/information system comes with some challenges and the microfinance sector is no exception. Technology remains a global challenge for MFIs as many institutions still lack the well-functioning information systems needed for their growth (CGAP, 2009). The limited utilisation of such technologies in MFIs is attributed to the prohibitively high cost associated with their implementation and management. The CGAP (2009) survey report found that the majority of MFIs still use either customer-built or off-the-shelf systems to track their portfolios. The high cost of purchasing and maintaining software adds another layer to the constraints faced by smaller MFIs. Some MFIs, therefore, prefer to go along with their historical ways of making intuitive decisions instead of relying on modern information technologies. Nonetheless, management information systems remain absolutely useful in customer relationship management, shares management, tracking of loans and deposits, and payroll processing.

Linked to the issue of high cost is the knowledge gap that currently exists in the utilisation of ICT-related technologies. Few trained ICT personnel are available in the market. The low skills level of facilitators/agents is a major area of growing concern. As such, data capture from microfinance agents through business correspondence and facilitators remains a hindrance. Mia (2005) pointed out that some MFIs in Bangladesh were hesitant to adopt ICT for lack of information on the real benefits, limited ICT experts in the labour market, and conservative accounting practices. Concerns over staffing management information systems (MIS) operations remain a challenge to most MFIs due to insufficiently skilled ICT personnel in most developing countries. The diversity of software²⁰ currently available in microfinance markets also creates challenges for MFI managers regarding which product to adopt for organisational success. While most microfinance networks at the global level are said to be using the same software, MFIs largely have limited control over it. Failure of MFIs to use MISs for effective strategic planning may be an indication that the microfinance industry is yet to mature in ICT usage (Ahmed, 2005).

²⁰ See Behl and Singh (2013) for a discussion on the various types used in the microfinance industry.

Furthermore, limited infrastructure particularly in rural areas, to support the disbursement and recovery of loans and other MFI activities remains. Parikh (2005) discusses the challenges encountered in extending financial services to rural populations, including: (i) difficulty in collecting client information which has led to the use of group and village banking methodologies, (ii) insufficient internal ICT capabilities which hinder MFIs operational efficiency, (iii) practical difficulty in the execution of financial transactions in rural areas, and (iv) insecurity in moving funds to and from communities, which makes financial operations intractable. Overcoming these barriers through innovation and adoption of low-cost delivery channels is imperative (Singhal & Duggal, 2005). Mobile and internet banking offer some solutions to these barriers even though some challenges still persist in their application (Kauffman & Techatassanasoontorn, 2005; Ashta, 2009). For instance, the successful integration of fingerprint identity into microfinance in Bolivia by Prodem²¹ is reported to have overcome problems of illiteracy, lowered the risk incurred by the MFI, and enhanced organisational safety (Silva, 2002).

The adoption of information systems by MFIs can be attributed to a number of factors. Improvements in product design, distribution, and payment systems are driven by new technology. Accessing a wide range of financial products has led to promising business opportunities for poor people. Increased adoption and reliance on ICT by MFIs stimulates new research in information systems (Mohamed, 2010; Weber, 2012). Mobile banking which offers the enormous potential of widening access to financial services is driven by technology and provides a cost-effective service delivery channel to clients in rural areas (Ashta, 2009; Bhavnani et al., 2008). Regulations governing the operations of these units overcome some of the new risks that arose from general technology implementation (Ashta, 2009). Online banking has also been found to boost clients demand for low-cost banking (Abu Shanab, 2005). However, the risk covered and the nature of regulations varies across countries with limited transaction sizes. Behl and Singh (2013) examined the current structure of management information systems of MFIs and reported great diversity in the services and packages offered by microfinance vendors who deliver similar services.

²¹ www.prodemff.com

Furthermore, the push to achieve economic efficiency and cost savings for long-term sustainability has created high demand for electronic payments. A proper accounting information system is vital in determining loan approvals for existing and potential clients (Kauffman & Riggins, 2012). In discussing the role and impact of ICT in the microfinance industry, Kauffman and Riggins (2012) expressed the need to differentiate these impacts at various levels (clients, MFIs, donors and the microfinance industry) and to draw key lessons on the impact and transformations occurring in ICT regarding microfinance sustainability.

Another important factor which influences the adoption of ICT in microfinance is the fundamental shift in MFIs' lending purposes to clients. Cull et al. (2009) reported that loans were granted to farmers, handicrafters, livestock farmers and small shop operators as entrepreneurs at the initial years of microfinance. However, in recent times, the lending focus has been on small businesses that take advantage of the demand for ICT services, such as mobile phone service providers (Kauffman & Riggins, 2012). Furthermore, both mobile and internet banking has gained wide acceptance among clients with individual benefits. While mobile banking has been found to be useful in reaching more customers, internet banking offers more flexible services. The use of hand-held computer devices by loan officers in the field has been reported as useful in linking microfinance field staff to their main offices for quick authorisation of loans requested by clients (Silva, 2002). This not only boosts client confidence in the system but also builds the capacity of the loan officers in the application of ICT tools in business.

The type of lending methodology employed by MFIs also influences their ICT adoption decisions. ICT is said to delimit group-based banking practices, which partly explains the recent move to an individual-based microfinance delivery approach. Kauffman and Riggins (2012) assert that individual members of a group receiving microloans increase their access to ICT, which could promote social networking, increase interaction and facilitate good financial management practices. However, Armendariz and Morduch (2010) maintain that group lending brings peer pressure to bear on members, which enhances repayment rates.

At the level of MFIs, market competition, client sustainability and efficiency in operation are key drivers for ICT adoption. The use of emerging models such as branch office franchises (Mathison, 2005) and bank correspondence (Ivatury, 2005) has widened the application and adoption of ICT in microfinance service delivery. The use of ICT access device services by local partner agents has leveraged the cost of reaching remote customers. Information transparency is increasing in the industry due to regulation and third-party intermediary requirements (Mersland & Strom, 2009). Regulators enforce their policies both at the local and international levels. The impact of ICT on MFIs' outreach performance is therefore crucial. However, the cost involved in adopting ICT is high and this poses a challenge to the growth of small-sized MFIs. As regulatory frameworks vary with countries, their impact on microfinance may not be uniform.

To conclude, the role of information systems in microfinance is rapidly expanding through mobile and internet banking, branch office franchises, bank correspondence and the application of many other ICT-related models. MIS has undoubtedly promoted transparency, which is critical in the funding allocation decisions of donors. The benefits associated with technology adoption in microfinance are numerous. However, research on these technologies remains low, particularly in SSA. Furthermore, the high cost associated with MIS adoption has compelled many small-sized MFIs to shy away from their adoption.

2.3.6 CLIENT/CONSUMER PROTECTION PERFORMANCE

Client protection refers to the obligations of microfinance service providers to prevent their clients from being hurt or experiencing undue suffering by behaving appropriately towards them. Consumer protection is much broader in definition than client protection and it encompasses the responsibility that other stakeholders have to ensure transparency and fair treatment across the entire microfinance market. In the analysis here, the two terms are taken to mean the same thing since both are aimed at protecting clients against unethical practices and to ensure that dignity, fairness, and sound market practices prevail. Client/consumer protection is therefore seen as the measures put in place by

MFIs, regulatory agencies or government to ensure that the interest and investments of consumers are protected in the event of any adverse situation that may arise in the sector. This section discusses the principles of client protection, complemented by some empirical evidence on their implementation, its importance, implementation challenges and the way forward.

Consumer protection arises from the imbalance of power, information, and resources between customers and microfinance service providers, which often places consumers at a disadvantage. Client protection gained much prominence in microfinance in 2008 when the portfolio quality of MFIs began to worsen and most micro-borrowers could not repay their loans (Mader, 2013). In response, some governments (particularly India) intervened by imposing regulations. In addition, key stakeholders in the microfinance industry led by the Consultative Group to Assist the Poor (CGAP) started broad consultations and discussions which culminated in the development and implementation of client protection principles (CPPs) and guidelines. These CPPs are universally accepted in the microfinance sector globally and are meant to ensure that providers of financial services to the poor take active steps to protect their clients from harmful financial products and also accord them fair treatment. Figure 2.6 illustrates the six key CPPs. The smart campaign²² is a global effort to help protect customers and is aimed at putting the interest of clients first to ensure sound and focussed performance of the sector both socially and financially. Client protection, therefore, is a key tenet of microfinance.

²² A global campaign launched in 2009 to seek support for the adoption and implementation of client protection principles and guidelines in the microfinance sector.



Figure 2.6 Client Protection Principles in Microfinance

Source: Adapted from Forster, Lahaye, and McKeen (2009)

Over-indebtedness is a serious risk in microfinance, with adverse impacts on clients' welfare and MFIs financial sustainability, and could damage the reputation of governments, donors and investors if not tackled. The risk in microfinance is ranked highest (i.e. credit risk, reputational risk and competition) and is related to over-indebtedness (CSFI, 2011). Schicks (2013) defined over-indebtedness from a consumer perspective as 'clients that continuously struggle to meet repayment deadlines and structurally have to make unduly high sacrifices to meet their loan obligations'. This means that clients have to forgo other basic necessities of life such as food and education for a long time just to enable them to repay their loans. Client over-indebtedness has two dimensions: (i) poor borrowers take credit and are unable to repay, and (ii) market competition makes lenders supply more credit than borrowers are able to repay (Arun & Murinde, 2008). This means that lenders increase the risk of over-indebtedness. Loan utilisation and competition for clients, therefore, contributes to over-indebtedness.

Empirical evidence shows that over-indebtedness is directly related to economic, social and personal factors. Schicks (2013) found that low return on loan investments, partial or total loan use for non-productive purposes, adverse shocks to borrowers' financial situation (e.g. a sudden drop in income) and lack of assets are significant economic factors that contribute to clients over-indebtedness in Ghana. Personal factors such as borrowers' financial literacy have been reported to be related to the risk of over-indebtedness (Schicks, 2013; Godquin, 2004). Over-indebtedness is also reported to be linked to multiple borrowing (McIntosh & Wydick, 2005; Reille, 2009). Schicks, (2013) in analysing the repayment behaviours of 531 urban micro-borrowers in Ghana from a consumer protection perspective found that 30 percent of the clients were over-indebted.

To address the issue of over-indebtedness, there is the need for MFIs to observe careful lending practices. Simply pushing out loans to clients in an effort to make a profit without assessing the repayment potential of clients could lead to industry collapse. Strict adherence to MFI lending rules and guidelines must be implemented. Also, there is the need for product adaptations to meet the needs of borrowers.

Transparent pricing and ensuring appropriate product design and delivery is another area of focus for client protection. One key function of MFIs is to satisfy clients' needs by ensuring that appropriate products are designed and delivered to them. Appropriate pricing, and terms and conditions regarding products and services must be made known and affordable to clients. MFIs are also expected to provide a real positive return on client deposits. As such, MFIs need to continuously work on their ability to listen to clients concerns and factor them into their operations to ensure adequate protection (Forster et al., 2009). At the same time, clients must be well-informed of the specific features of the products available in the market in order for them to make informed choices. This can be done through financial education and consumer protection awareness creation. MFIs are therefore expected to designed products with clients' characteristics in mind and not to hurt them in the process of developing and delivering these products.

Malra, Mathur, and Rajeev (2015) developed a microfinance client awareness index (MCAI) aimed at evaluating the impact of financial education on development goals. The

authors proposed the use of MCAI to determine the level of financial awareness of clients. They also established benchmarking targets to support MFIs in setting clear targets. They found MCAI useful in analysing clients' awareness of financial issues and called for its adoption. Previously, Cole and Fernando (2008) found financial literacy very important for poor people with respect to insurance contracts. However, using meta-analysis of 168 papers, Fernando et al (2013) concluded that financial education does not typically result in a behavioural change in any substantial way. This suggests that pursuing financial education may not lead to improvements in the choices made by clients on financial products. More recently, Foelster, Pierantozzi, and Pistelli (2016) analysed client satisfaction and consumer protection in Peru based on a pilot project that offers mobile technology services to clients. The authors collected data covering five consumer protection principles from 3,767 clients across four MFIs in 2015. The findings show a high level of satisfaction among clients on MFI products and services. The majority of clients (67 percent) rated their interaction with loan officers as positive (good relationship). This suggests that MFIs are increasingly taking issues of consumer protection more seriously in designing products and managing relationships. Previously, Gbate (2007) reported that the unattractive features (cap on loan size, and long loan cycles) of the self-help group (SHG) model of credit delivery contributed to the microfinance crises in Krishna, India. Cull et al. (2015), in analysing MFI performance reported that client protection and transparent pricing were strongly associated with larger MFI portfolios and average loan size. These studies suggest that the loan size of MFIs influences clients' protection.

In addition, ethical behaviour and appropriate collection practices need to be given serious consideration for the attainment of client protection goals. The moral conduct and behaviour of MFI staff and their agents are critical in ensuring that clients are well protected from any form of abuse and malpractice. Appropriate loan collection methods need to be employed so that the rights of clients are not violated. However, the available evidence shows that MFIs are challenged in ensuring that the conduct and behaviour of their staff or agents are in line with these principles and the organisation's code of conduct. MFIs must treat clients fairly and respectfully and avoid all forms of discrimination. In addition, they must ensure adequate safeguards to detect and deal with

corrupt, aggressive, and abusive treatment by staff or their agents during loan sales and debt collection processes.

Ghate (2007) analysed a case study in Krishna district, India amid the state closure of MFIs aimed at understanding the kind of consumer protection issues relevant to microfinance. The author examined the code of conduct that was promulgated by the Indian MFI network (self-regulation) and the draft microfinance Bill that would allow MFIs to provide savings services (external regulation). Findings revealed that the underlying causes of the crisis (over-indebtedness) were the drive for MFIs to increase outreach and profitability, high-interest rates, coercive collection practices employed by MFIs, and over-lending. This coercive loan collection, which has been described as 'abusive', did not only manifest itself in the intimidation and language used by MFI staff but also led to the migration of some clients from their homes. These unethical practices clearly undermine client protection principles, hence the need for regulation.

The next client protection principle is the mechanisms that address clients' grievances. MFIs need to have dedicated units set up within their offices to respond to the concerns of clients. Over the years, however, little attention has been paid to this call. Rutledge (2010) observed that the absence of designated units within financial institutions poses a challenge in addressing customer complaints. He expressed the need for financial institutions to pursue fast and inexpensive legal procedures in resolving legal disputes over customer financial services. Microfinance customers typically have limited options for getting their grievances addressed. No protective approach exists on the part of supervisory authorities to establish and enforce fair standards for the benefit of consumers. MFIs should be mandated to put timely and responsive mechanisms in place through which client complaints and problems can be resolved. Such mechanisms can be used to address individual problems, improve product and service quality and enhance the reputational image of MFIs in the market.

Finally, ensuring the privacy of client data is central to client protection. MFIs are encouraged to respect and maintain confidentiality with individual client data collected, based on the available laws and regulations. This suggests that the right to receive and

use client data must be legally binding on MFIs to prevent abuse and financial malpractices.

The importance of consumer protection has been highlighted by various studies in microfinance (Arun & Murinde, 2008; Rutledge, 2010). Strong consumer protection is vital in boosting public confidence in the financial system, especially in countries that have moved from centralised planning to market economies. According to Rutledge (2010), a consumer protection regime must address three issues: (i) consumers should receive accurate, simple, and comparable information of a financial service or product before and after paying for it (ii) consumers should have access to fast, inexpensive and efficient mechanisms for dispute resolution with financial institutions and (iii) consumers should be able to receive financial education when and how they want it. However, consumer protection has remained weak in both developing and developed countries. New consumers are more concentrated in developing countries where consumer protection and financial literacy are still in their infancy. There is, therefore, the need to do more and ensure that the rights of consumers are protected and promoted.

Furthermore, the nature of financial contracts also makes client protection central in microfinance. Financial service contracts are difficult to understand and in most households low literacy levels have impeded meaningful negotiations with financial institutions. Nair, Postmus and Pradhan (2009) critically reviewed microfinance social responsibility in India using stakeholder and social contract theories. They argued that pro-poor social change through financial service business and microfinance initiatives must take into account their responsibility and responsiveness towards the communities that they serve. Thus, MFIs must see clients as key stakeholders and engage them meaningfully in social contracts through inclusive participation. Client protection principles (CPPs) can improve the engagement of MFIs with their clients, thereby making them more socially responsible. Nair et al (2009) pointed out that since MFIs business decisions largely revolve around clients welfare, there is a need for MFIs to align their decisions with the needs, priorities, and aspirations of clients. This must be done morally and ethically. There is a need for socially responsible MFIs to acknowledge the central role of clients in designing social contracts. This will ensure patronage of

investors and fund providers, but may not necessarily lead to desired development outcomes by communities.

Consumer protection improves MFI governance as it helps to build demand and strengthen business standards. Some level of regulation is necessary to help protect the rights of consumers. The role of regulation in ensuring the proper and efficient functioning of markets has been emphasised by various studies as critical in protecting client investments and compensating losers (Benston, 1999; Arun & Murinde, 2008). This is very relevant in microfinance due to the vulnerable nature of most clients. Arun and Murinde (2008) explored the relationship between regulation and MFI outreach in 10 Africa countries using a newly constructed Social Protection Index (SPI) which is based on the framework of consumer protection principles (CPPs). They found that regulation affects the outreach and social protection effectiveness of MFI performance. Finally, client protection is vital in MFIs sustainability and outreach efforts. Client outreach and client sustainability are direct outcomes of better client protection practices employed by MFIs.

Despite their importance, a number of challenges are said to hinder the successful implementation of CPPs. The institutional structure of most MFIs remains a challenge in ensuring the financial protection of their clients (Rutledge 2010). The setting up of dedicated units to oversee consumer protection issues remain a challenge within the organisational structure of MFIs and efforts to do so are minimal. This suggests that even having an informed clientele is meaningless if the necessary structures to help them demand their rights do not exist. In some countries, the financial supervisory agencies take on consumer protection while in some other places it is the general consumer protection agency that provides oversight responsibility (Armstrong, 2008). Rutledge (2010) suggests that irrespective of the structure, the need for a single agency to address consumer complaints and inquiries is paramount. The inability of MFIs to effectively deal with customer complaints can limit the use of financial services as consumers are more likely to shy away. Customer complaints about financial services must be consolidated and statistics published with detailed analysis.

In addition, the policies on competition are inefficient in addressing consumer protection issues. In most competitive markets, policies on competition are sufficient to ensure that firms succeed in their consumer protection efforts by providing the needed products and services required (Armstrong, 2008). However, in most microfinance markets, though competition is fierce and growing, more needs to be done in retail financial markets to ensure efficiency. Comparable information, increased awareness of market conditions, reduced consumer search costs, and cost clarifications (hidden costs) are all critical issues in microfinance markets that require policy support. Policies that prevent misleading and fraudulent marketing activities by MFIs aimed at consumers need to be lobbied for by consumer protection agencies.

Furthermore, there is a challenge in evaluating the implementation of some of the client protection principles (for instance over-indebtedness) due to limited clarity and standard measurement. They, therefore, appear to be market specific and have limited practical application and evaluation at the industry level.

Key lessons from the review of CPP implementation and the challenges that come with it provides a firm basis for discussing the way forward. To ensure client protection, a number of proposals and suggestions have been made, based on empirical studies, which are worth considering. Responsible finance is seen as a shift in focus by MFIs to take client protection and social performance management seriously in their operations. Mckeen, Lahaye and Koning (2011) discuss three ways in which client protection can be advanced: (i) developing client-focused codes of conduct and industry standards, (ii) implementing consumer protection regulation and supervision, and (iii) making efforts to improve consumer awareness and financial capability. This suggests the need for the involvement of various stakeholders including consumers themselves.

At the level of MFIs, more attention should be paid beyond portfolio quality management to inclusion of the experiences of micro-borrowers and the sacrifices that they make to help minimise internal risk on debts (Schicks, 2013). Previously, Schicks and Rosenberg (2011) argued that the continuous demand for loans and strong repayment statistics relied upon by MFIs do not guarantee that consumers are well protected. This suggests that

other mechanisms to ensure client protection need to be put in place by MFIs to ensure that consumer protection issues are addressed.

Furthermore, regulation of microfinance could help determine the nature of social protection provided to clients. Social protection is reportedly useful in assisting poor clients to survive in adverse conditions and in promoting a better lifestyle for consumers (Arun & Murinde, 2008). Arun and Murinde (2008) point out the need for close engagement between government and MFIs in developing the required regulatory legislation. However, a balance must be created between government regulation and market competition, since excess regulation can stifle financial innovation. As Bernanke (2009) notes, regulation should “strive for the highest standards of consumer protection without eliminating the beneficial effects of responsible innovation on consumer choice and access to credit”. Cost-benefit analysis is needed to ensure the effectiveness and efficiency of regulations. Figure 2.7 shows that the setting up of regulatory units to oversee consumer protection issues appears better in SSA as compared to other developing countries. In spite of this, more needs to be done to ensure compliance.

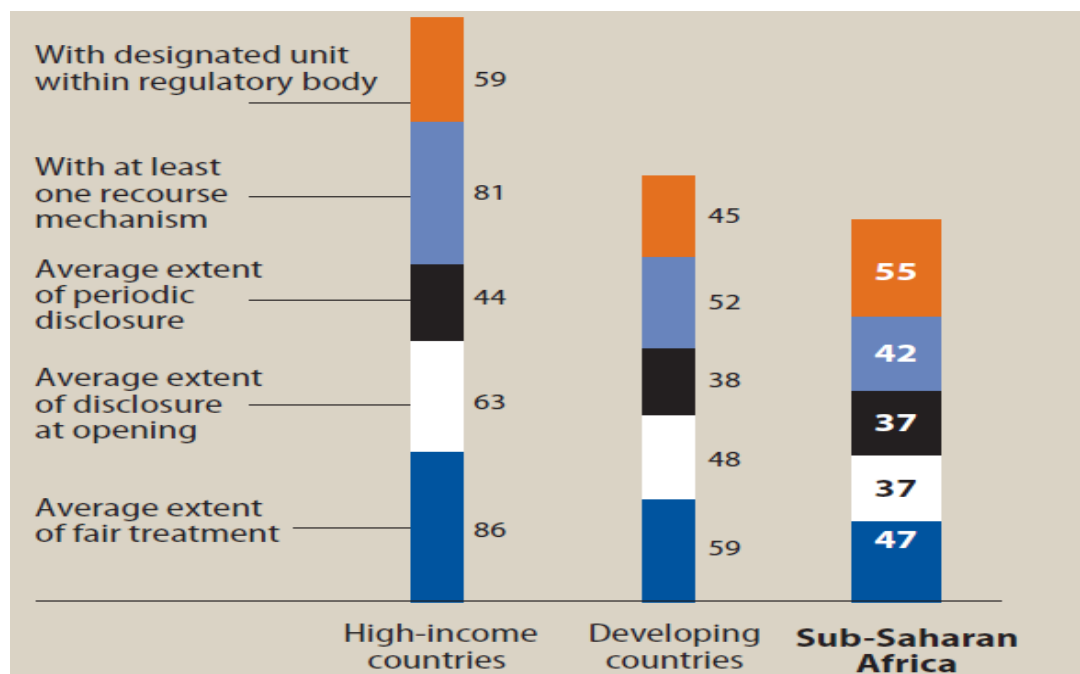


Figure 2.7: Consumer Protection Legislation and Implementation (% of economies)

Source: CGAP Financial Access Report (2010)

In addition, major consumer protection issues such as fair treatment, the disclosure of information and dispute resolution mechanisms in the region fall below the performance in other regions (both developing and developed countries). This, therefore, needs serious consideration if the performance of MFIs is to be improved in the area of client protection.

In sum, protecting the interest and welfare of clients should be part of the core business of MFIs and they must approach it as such. Pro-consumer protection policies have been developed and implemented by individual MFIs and their associated networks until it has become a global industry initiative. Regulation is indispensable in ensuring the adoption and full implementation of the consumer protection principles that form the framework for MFIs to put clients at the centre of their operations.

2.3.7 PERFORMANCE OF MICROFINANCE IN CONTRIBUTING TO THE ECONOMIC DEVELOPMENT

Microfinance plays a key role in promoting economic development, both at the micro and macro levels. This section discusses the progress and contributions made by microfinance for improved wellbeing of the poor.

At the micro level, microfinance contributes to economic development through poverty alleviation, women empowerment, financial inclusion, development of skills, and mobilisation of savings. It therefore contributes to financial stability of the economy and global poverty reduction. However, various impact studies have shown mixed effects of microfinance on economic development. Initial studies by Khandkar (1998), Littlefield, Morduch and Heshemi (2003), and Goldberg (2005) found positive impacts of microfinance on incomes and poverty through the evaluation of various microfinance programmes. However, the level of rigour and validity of these evaluations, which were mostly done by independent consultants, was challenged on the grounds of data and methodological flaws (Morduch, 1998; Coleman, 1999). The subsequent adoption of randomised control trials in the evaluation process, which is assumed to be a more

rigorous approach, did not yield very different results as the literature points to limited or no impact of microfinance on development outcomes. For instance, Straut (2010) reported the negative and insignificant effects of microfinance on consumption, with no impact on education, women's empowerment and new business development. Similarly, Roodman and Morduch (2009: 4) could not find evidence in support of the claim that microfinance plays any meaningful role in poverty reduction, and concluded that 'after 30 years of innovative lending, little solid evidence exists that microfinance improves the lives of clients in any measurable way'.

MFIs are expected to promote 'bottom up' development in national economies. Robinson (2001) argues that microfinance facilitates the creation of thriving hubs for entrepreneurial activities which enable many poor people to escape poverty through microenterprise development. However, numerous studies have reported high failure rates of micro enterprises a few years after their establishment and have argued that such failures can worsen poverty levels of the poor (Demirguc-Kunt et al., 2007; George, 2005; Davis, 2007). Those engaged in failed micro enterprises can easily lose all their assets due to the social pressure associated with loan repayments. In support of this, Bateman (2010) argues that significant funds are flowing out of poor communities rather than being retained and recycled in productive investments as a precursor to enabling the poor to overpower poverty.

Beyond the debates on the effectiveness of the microfinance model as a useful tool in fighting poverty, microfinance has also been seen as a useful strategy in post-conflict reconstruction efforts. Microfinance is seen as a tool towards managing humanitarian relief, which is critical in propelling post-conflict countries towards economic reestablishment and sustainable development (Seibel, 2006; Hudon & Seibel, 2007). Ahmeti (2014) analysed the role of microfinance in post-conflict reconstruction in Kosovo after the 1999 War which led to the collapse of the banking sector. Following the recognition of Yunus and the Grameen Bank by the Nobel Peace Prize in 2006 for their efforts in promoting social and economic development, the nation incorporated microfinance into their reconstruction strategy. The results show that MFIs contributed positively to developing the nation by making funds easily accessible to local

populations. Furthermore, MFIs recorded significant transformation in their funds acquisition process, moving from total reliance on donations and gifts to becoming self-sustainable institutions during the transition period. Thus, MFIs have affected broader economic and legal aspects of development and seem to have had a positive impact on the overall economic situation of Kosovo. Tewari and Sharma (2014) assessed the needs and prospects of MFIs in economic growth in India and argue that building microfinance institution networks could help mitigate the effects of financial exclusion and stimulate economic growth in rural areas.

To conclude, the literature on the impact of microfinance at the aggregate level is difficult to isolate, and the review shows mixed evidence of impacts. At the micro level, however, real impacts can be determined based on case studies. The review shows that microfinance has impacted positively in the reconstruction efforts of war-torn countries and those hit by disasters. This is remarkable. In general, microfinance creates positive impacts in the economy through improving the wellbeing of clients.

2.4 DATA SOURCES AND METHODOLOGY

This study used data assembled from four different sources in the accomplishment of the stated objectives set out in this study, namely, the World Development Indicators (WDI), the World Governance Indicators (WGI), the Heritage Foundation, and the Microfinance Information Exchange (MIX) Market database. The data source that anchors this study is the MIX market. The main variables drawn from these sources, as well as the detailed description and measurement are discussed in the various chapters. Data used in this study spans the period 2003 to 2013 with a panel structure. It is a multi-country study with data drawn from ten countries (Benin, Burkina Faso, Cameroon, Ethiopia, Ghana, Nigeria, Kenya, South Africa, Tanzania, and Uganda) in SSA. These countries were selected based purely on the number of MFIs that reported to the database and the completeness of the information supplied. The total of 71 MFIs which constituted the sample was purposively selected from 387 institutions that reported to the database, and

based on the quality of data as rated by rating agencies using diamonds²³, and the completeness of the data.

The MIX Market provides information about microfinance institutions covering standard financial performance indicators, and audited financial statements from MFIs in all regions of the developing world and is reliable, comparable and publicly available²⁴. All data posted to the site are reviewed and validated against a set of business and audit rules (Microfinance Information Exchange, 2010). Previous studies on microfinance that used this dataset include; Ahlin et al. (2011), Arun and Annim (2010), Ayayi and Sene (2010), Cull, Demirguc-Kunt and Morduch (2011), Cull et al. (2007), Gutierrez-Nieto et al (2009), Hermes et al. (2011), Muriu (2011), and Quayes (2012). However, one common criticism of this data source is that it does not capture the activities of all MFIs, as reporting is considered voluntary for the institutions. Outreach and other performance figures reported are therefore limited to the reporting institutions, which may underestimate the actual state of the microfinance industry. Also, issues of selection bias may arise. Nonetheless, it remains the best microfinance data source globally.

Complimentary business environment measures were obtained from the Heritage Foundation²⁵. A core components of the data is the economic freedom index which covers ten (10) freedoms in the area of trade policy, fiscal burden of government, government intervention in the economy, monetary policy, capital flows and foreign investment, banking and finance, wages and prices, property rights, regulation, and informal market activity. Countries are measured in all ten areas and given a score of 1 to 5 and the ratings are averaged to give an overall level of economic freedom. Previous studies that used this data source include: Chortareas et al. (2013), Hartarska and Nadolnyak (2007), Mersland and Strom (2009). The Heritage Foundation Index of freedom reflects primary policy variables which are under government control

²³ Diamonds are used to rate the quality of financial statements and reports submitted by MFIs. The values range from 1 – 5 with five being the highest. A MFI rated 5 implies that its data set is complete with audited financial statements.

²⁴ MIX market data is available online at www.mixmarket.org. As of the year 2015, the data became available on sale and is no longer free.

²⁵ www.heritage.org.

(Heckelman & Stroup, 2000). Their indicators evaluate the economic success of 183 countries, which are ranked consistently. This study made use of two of these indices: business freedom and the index of property rights.

The World Development Indicators (WDIs) obtained from the World Bank is a collection of development-based indicators across 209 countries. The data source is very comprehensive and covers global, national, and regional level macroeconomic variables and is publicly available. Previous studies that used this dataset include: Ahlin et al. (2011); Cull, Demirguc-Kunt, and Morduch (2011, 2009b).

The World Governing Indicators (WGIs) provides aggregate and individual governing indicators covering 213 countries and are publicly available²⁶. The data compiled covers six (6) key measures: governance effectiveness, the rule of law, control of corruption, voice and accountability, regulatory quality, and political stability. This study incorporated three of these variables (regulatory quality, governance effectiveness, and the rule of law) into the analysis. Previous studies that used this dataset include: Ahlin et al. (2011), Arun and Annim (2010) and Cull et al. (2011, 2009b). Finally, the study utilised the Human Development Index (HDI) compiled by the UNDP as a country control variable. The HDI is a composite index that measures three basic dimensions of human development: a long and healthy life, knowledge, and decent standard of living (UNDP, 2014).

The study used unbalanced panel data with complete reliance on econometric methodologies to establish quantitatively the important relationships that underpin sustainability, outreach, efficiency and regulation of MFIs in the industry. The trade-off between outreach and sustainability, as well as determinants of both outreach and sustainability, are explored using the fixed effects and random effects static framework. All estimations began with a simple specification of the linear model. One key novelty in this work is the application of the stochastic frontier approach to efficiency analysis using the one-step approach recommended by Battese and Coelli (1995). Though this approach

²⁶ www.worldbank.org/governance/wgi/index/

is not new in banking efficiency analysis, its application in the microfinance industry remains limited. Finally, in establishing the impact of financial regulation on MFI sustainability and outreach performance, the dynamic Generalised Method of Moment (GMM) using the two-step system approach proposed by Arenallo, Bond, and Bover (1998) was applied. This enables the researcher to circumvent the possible endogeneity problem that characterises most macro and firm-level variables. Detailed expositions of the various methodologies used are contained in the methodology sections of the respective chapters that follow.

2.5 CHAPTER SUMMARY

This chapter provided a general review of microfinance performance, with particular focus on SSA. It briefly described the four main performance problem dimensions that currently characterise the microfinance industry in Sub-Saharan Africa (SSA). These four performance problems (themes) are developed into complete chapters with each chapter focusing on one theme. The review addressed objective one of the study (*To review the general performance of MFIs in SSA*). The review adopted some elements of the strategic management and reporting technique (SMART) framework used by rating agencies in assessing the performance of MFIs. The key elements discussed include MFI social and financial performance, client protection, microfinance products and services, and funding sources. Discussions in the chapter concluded with a general overview of the main data sources used in the study which is annual in nature with a panel format drawn from four main publicly available sources. Chapter three presents and discusses the first performance problem (microfinance outreach) of MFIs in SSA in detail.

CHAPTER 3

FIRM LEVEL DETERMINANTS OF OUTREACH OF MICROFINANCE INSTITUTIONS IN SUB-SAHARAN AFRICA

This chapter contributes to addressing objective two of the study (*To analyse the determinants and extent of outreach and sustainability of MFIs in SSA*). It responds to the first theme of the microfinance problem (outreach) outlined in chapter two that confronts the performance of MFIs. The chapter is divided into five sections. It begins with a brief overview of microfinance outreach. A review of empirical literature on microfinance institutions' outreach is presented in section two. The discussion covers the concept and theoretical framework for outreach, determinants of outreach at the firm level, and macro level factors that affect the outreach performance of MFIs. The main theoretical and empirical models used and the estimation methodology employed are presented in section three. Discussed in detail are the variables used and their measurement, data sources, the design of models and estimation. The empirical results obtained from the analysis are presented in section four. The discussion on key findings covers the descriptive statistics, correlation analysis and the regression results on the determinants of outreach. The chapter concludes with a summary in section five.

3.1 BRIEF OVERVIEW OF OUTREACH

The main goal of microfinance is to ensure a massive reduction in poverty globally through institutions that are sustainable (Conning, 1999; Cull, Demirguc-Kunt, & Morduch, 2007). Thus, successful microfinance institutions should satisfy both the social goal of reaching out to many more poor people and be able to sustain their business operations over a longer period of time financially. Reaching out to poorer clients on a sustainable base is possible and some MFIs such as Bancosol in Bolivia have demonstrated this in the past. However, attainment of this double line goal has been a challenge to most MFIs in recent times, and several studies that have analysed the

relationship between outreach, sustainability and efficiency have reported various trade-offs (Paxton, 2002; Cull et al., 2007, 2009; Zerai & Rani, 2011, Quayes, 2012).

Extension of microfinance services to more clients has received much attention in recent times following the liberalisation of financial policies, adoption of better lending techniques, mobilisation of deposits and the application of communication technologies that reduce transaction costs in the microfinance sector. The exponential growth of the industry has contributed significantly to improved social welfare, job creation, enterprise development and the general financial health of most economies. Improvements in service delivery through the adoption of easy banking practices, for example, ATMs, internet banking, and mobile banking have made MFIs more efficient and sustainable (Hermes, Lensink, & Meesters, 2009). The value of loan portfolios, and the numbers of savers and borrowers have also recorded dramatic increases. For instance, between 2004 and 2010 the number of MFIs in SSA rose from 163 to 259 while the total number of clients shot up from 8.7 million to 12.6 million respectively (Consultative Group to Assist the Poor (CGAP), 2005, 2012).

However, despite these achievements in outreach, up to 80 percent of the population in the continent, as well as in most developing nations in other parts of the world, still do not have access to basic financial services (Cull, Demirguc-Kunt, & Morduch, 2009; African Union, 2009). The continent continues to wallow in the mire of financial underdevelopment (Honohan & Beck, 2007). Microfinance, which is seen as a poverty reduction tool, has come under criticism in recent years both for limited evidence of impact on clients' lives and its scale, despite its claims to be a fast-expanding industry. For instance, Bateman (2014, p. 5) argues that "evidence of the microcredit model in South Africa is one of the most calamitous policy and programme interventions in the post-apartheid era as it threatens the foundations of the country's financial system". Yet, few studies have analysed the factors that influence microfinance outreach. Most of the existing studies that have examined this subject matter approach it from the macroeconomic perspective (Vanroose, 2008; Ahlin et al., 2011; Hudak, 2012). The only exception is the work of Osotimehin, Jegede and Akinlabi (2011), which examines the determinants of MFIs in South Western Nigeria using firm level variables. Analysing the

factors that drive MFI outreach comprehensively is relevant as it would support both firm level and macro level policy decisions that affect the industrial operations of MFIs. This chapter, therefore, addresses two key questions: (i) Is there a trade-off between depth of outreach and breadth of outreach? (ii) Which firm level factors influence MFI outreach in SSA? Understanding these dimensions of outreach and the determinants of outreach is important in tackling the challenge of financial inclusion which is being pursued across continents. This chapter, therefore, provides comprehensive empirical evidence that sheds new light on the key drivers of MFI outreach in SSA.

3.2 EVIDENCE ON MICROFINANCE INSTITUTIONS' OUTREACH

This section discusses related works relevant to microfinance institutions' outreach efforts. The concept of outreach and its framework, which are factors that influence MFIs' outreach both at the firm and macro levels are presented and discussed in this section.

3.2.1 THEORETICAL FRAMEWORK AND CONCEPT OF OUTREACH

Microfinance has been a topic of much interest, particularly in the light of doubts about whether MFIs can help poor clients and still remain financially sustainable. Existing literature suggests, however, that MFIs are financially resilient to downturns in the domestic marketplace. Not only does this suggest that MFIs may be good investments for reducing portfolio volatility, but they may also be able to weather financial storms to effectively serve poor clients in unstable areas of the world (John, 2008). In addition, there are concerns among practitioners and academics that the rapid growth of the microfinance sector has led to its focussing on profitability and proliferation of MFIs rather than transformation of clients' lives. In this regard, there is criticism that losing sight of this mission may lead microfinance into becoming another example of poorly managed development finance, inattentive to the actual needs of vulnerable populations (Dichter, 2007). The Consultative Group to Assist the Poor (CGAP) believes that the future of microfinance lies in establishing forward the poverty outreach and sustainability frontiers.

Theoretically, the performance of microfinance organisations has been judged on the concept of outreach and sustainability (Yaron, 1994). These two concepts are expressed in terms of social welfare. The theory of outreach posits that the poorer the borrowers served by an MFI, the better the outreach. In this regard, institutions²⁷ that provide small loans to clients augment outreach since their primary target market are those living in poverty (Schreiner, 2002; Jegede, Kehinde, & Akinlabi, 2012). The concept of outreach though vague (Okumu, 2007), is now clear in terms of the variables that measure it. However, consensus on conceptual definitions of outreach is far from achieved in the literature.

Outreach is the social value of the outputs of a microfinance organisation in terms of depth, worth of uses, the cost of users, breadth, length, and scope. These six aspects of outreach are useful because direct measures of the social value of microfinance are expensive. Recognising the heterogeneity of the poor and designing products that meet their needs is critical in attaining MFI outreach goals. Yaron (1997) defines outreach as the extent to which a rural-focused financial institution succeeds in reaching out to its target clients with desired financial products and services. Okumu (2007) describes outreach as the extension of microfinance services by institutions to underserved locations for the benefit of the poor. He, however, notes the difficulty involved in measuring outreach due to the numerous dimensions of the concept. While these two definitions highlight the need to reach poor people in deprived areas with financial products and services that meet their needs, little is said about cost implications and actual measurements. For instance, Conning (1999, p. 75) argues that “reaching the poorest of the poor is more costly than reaching other segments of the market even when there are no fixed lending costs, and leverage may be much harder to achieve for microfinance organizations that target the ‘low-end’ of the market”.

The literature provides several measures of outreach. Outreach is commonly proxied by the sex or number of borrowers, the size or terms of the loan contract, the price and

²⁷ In this study, the word ‘institutions’ is used to mean the MFIs. The two words therefore mean the same thing and are used interchangeably.

transaction costs borne by users, the number of users, the financial and organisational strength of the lender and the number of products offered including deposits (Navajas, Schreiner, Meye, Gonzalez-Vega, & Rodriguez-Meza, 2000). Navajas et al. (2000) constructed a theoretical framework that defines the social wealth of an MFI in terms of the depth, worth to users, cost to users, breadth, length and scope of its outputs. Schreiner (2002) extended the discussion on the six main dimensions of outreach and their measures with a detailed elaboration of the concepts. The worth of outreach reflects clients' willingness-to-pay for MFI services. The cost of outreach is proxied by the expenses incurred in producing and delivering MFI services. The length of outreach is a service quality indicator for MFI financial performance and various indicators (age of institution, operational self-sufficiency, loan loss rate) have been used as proxies (Quayes, 2012). The scope of outreach reflects the varied financial services (product type and lines) offered to clients by MFIs. The depth of outreach is how deep within the target population MFIs are able to reach based on their poverty level and average loan size served as a proxy in the literature. Thus, it is related to serving the poorest of the poor clients (Cull et al., 2009; Lensink & Mersland, 2009). Finally, breadth of outreach reflects the width of coverage by the MFI and is measured using the number of active borrowers and the percentage of female borrowers reached.

In theory, a perpetual source of support can allow an MFI to achieve a length of outreach without sustainability (Morduch, 1998; Woller, Dunford, & Woodworth, 1999). However, in practice, longer outreach through sustainability usually strengthens the structures of incentives that serve to maximise expected social value less social cost discounted through time. MFIs with the best outreach are those that both produce small loans and attract small deposits. The depth and breadth are the most commonly explored dimensions of outreach in the most empirical analysis (Quayes, 2012; Adhikary & Papachristou, 2014). This is due to the rapid expansion in the sector which has led to increased breadth of outreach both at the firm and individual levels. This has generated more concern for the depth of outreach among policy makers and practitioners regarding the overall social mission of MFIs. Furthermore, the unavailability of data on the other dimensions of outreach limits their usefulness in most empirical studies. Limited information gathering on income and wealth of clients by MFIs still places a limitation on

the accurate measurement of the depth of outreach since the average loan balance per borrower proxy widely used in the literature has been found to be an imperfect measure of the poverty level.

However, Paxton (2002) notes that outreach measures such as average loan size only reflect the lending methodology rather than exclusion of individuals, and are therefore unsatisfactory as a measure of outreach. He proposed the use of a depth of outreach index which incorporates clients' socioeconomic characteristics (literacy level, income level, gender and rurality of location) as a more appropriate measure of depth. However, the breadth logic is supported by Navajas et al. (2000) since many poor people compete for the few dollars available in aid.

Yaron (1992) also proposed measures of outreach based on accessibility to financial services for low-income groups to include the amount saved, the value of loan portfolio, the number of village posts, annual growth in MFI assets, women's participation, percentage coverage of rural population, and the variety of financial services offered. Beck et al (2007) argue that financial access is important as a measure of financial depth and also shows how easily people can make use of financial services. Furthermore, Ledgerwood (1999) proposed three dimensions for measuring outreach: loan outreach, clients and staff outreach, and savings outreach. In all these proposals, the central theme is to ensure that microfinance interventions are reaching the core poor.

The depth of outreach is the ability of an MFI to extend loans and financial services to the poorest of the poor (Conning, 1999). The value of the average loan size has been used as a proxy for depth since the poor are assumed to demand smaller loans to finance their investments and to meet other needs. This has however been criticised on the grounds that average loan size does not reflect the poverty profile of clients. This led to a modification in the definition to reflect the per capita income of countries. The average loan size as a percentage of per capita GNI (ALS) has therefore been used by numerous studies as a proxy for depth of outreach (Cull et al., 2007; Hermes et al., 2011; Zerai & Rani, 2011). This measure provides a useful comparative measure of the size of the microfinance market across countries. The Consultative Group to Assist the Poor (CGAP) classifies lenders as being MFIs if their average outstanding loan balance is

below 250 percent of per capita GNI. Rosenberg (2009) argues that the average loan size, when taken as a percentage of GNI, enables comparison to be made across countries on how deep MFIs perform in outreach based on the national income distribution of those countries. Empirical evidence on the depth of outreach is still mixed. Zeller and Johansson (2008) found that in Peru and Bangladesh MFIs are able to reach the poor, but a large share of their clients belongs to the non-poor populations. This suggests the occurrence of mission drift. Furthermore, Sagamba, Shchetinin, and Nurmukhammed (2013) in their case study of Burundi found that the allocation of microloans between non-profit and profit-seeking MFIs was almost the same and loans advanced were slightly in favour of the less advantaged. The main determinant for loans was the quality of the projects funded rather than the poverty level of the client. However, Zerai and Rani (2011) found no evidence of a trade-off between depth of outreach and the operational sustainability of MFIs in India. Similarly, Annim (2012) reported that MFIs were serving the relatively poor in Ghana.

Breadth of outreach reflects the number of active clients reached by MFIs with financial products and services at a given point in time (Rosenberg, 2009). The number of clients served or the number of active accounts that are operational have been used as indicators for the breadth of outreach. Recent studies have used the number of active borrowers (NAB) as a proxy for the breadth of outreach, and with valuable results (Hermes et al., 2011; Zerai & Rani, 2011; Cull et al., 2015a). Zerai and Rani (2011) analysed the trade-off relations between breadth of outreach and sustainability using 2009 data that covered 85 MFIs in India. The study used the number of active borrowers (NAB) as a proxy for the breadth of outreach and operational self-sufficiency (OSS) for sustainability. By applying correlation analysis, the authors found a strong positive correlation between breadth of outreach and operational sustainability. However, the correlation between the number of female borrowers (an alternative proxy to the breadth of outreach) and operational sustainability was very weak.

Various criteria have also been proposed in the literature for judging the outreach performance of MFIs. Yaron (1992) recommended outreach and the Subsidy Dependent Index (SDI) as the two main criteria for the assessment of the overall performance of

MFIs. Outreach assesses the outputs of the intervention to poor customers, given the achievable goal target set out and the funds provided, while SDI measures the level of dependence of MFIs on subsidies for operation. The framework has been successfully applied by a number of researchers (Manos & Yaron, 2009; Schreiner, 1997; Yaron, 1992). Similarly, Rosenberg (2009) recommended five performance criteria that donors use in assessing the performance of MFIs. These are the breadth and depth dimensions of social performance as well as the three financial indicators of portfolio quality, financial sustainability, and efficiency which are universally accepted in the industry (Queyes, 2012; Hermes et al., 2011; Cull et al., 2015a). Mustapha and Saat (2013) provided a comprehensive review of the existing microfinance measurement frameworks and recommended a new multifaceted and integrated performance measurement framework that addresses the shortcomings of existing ones. The study presents new core criteria of performance measurement that enable organisations to identify an appropriate set of measures for their own performance.

Measuring the welfare impact of microfinance interventions requires that a cost-benefit analysis be undertaken where the social cost of the intervention is compared with the social benefits (Manos & Yaron, 2009). The authors suggest that a choice is made between cost-benefit analysis and cost-effective analysis. They recommend subsidy dependence and outreach as criteria for cost-effective analysis and subsidy dependence and welfare impacts as criteria for cost-benefit analysis and argue that any performance assessment should take into account only these two criteria. Hulme (2000), in reviewing various methodologies aimed at enhancing the assessment of microfinance impacts argued for rigour in all studies and best fit between planned objectives and the context for effective impact assessment to be achieved. However, he found that the desire for donors to achieve their objectives and the use of external evaluators in the assessment of project impacts often results in weak monitoring by MFIs.

To conclude, several measures have been proposed in the literature and used to characterise the poverty level of MFI clients. The empirical application of most of these measures has however been limited either by the non-availability of data or by their being too complex and difficult to compute. The depth and breadth dimensions of outreach

have received much wider empirical application among the six areas proposed in theory (length, breadth, depth, cost of users, worth and scope). This reflects the multidimensional nature of poverty and the different ways it has been perceived and defined. Measuring the depth of outreach appears to be more difficult, so the average loan size as a percentage of per capita GNI has largely been used, despite some criticisms. The depth of outreach index, which combines several socio-economic factors that characterise the poverty situation of clients appears more plausible but standardisation remains a challenge due to the different settings and circumstances of poor people. The number of active borrowers (NAB) is the main variable used to measure the breadth of outreach, though the proportion of females covered is also used in the literature. The depth and breadth dimensions of outreach, therefore, remain relevant in assessing the social performance of MFIs and in supporting policy formulation and implementation of pro-poor interventions.

3.2.2 DETERMINANTS OF MICROFINANCE INSTITUTION OUTREACH

Several empirical studies have been conducted on MFI outreach around the globe though much still needs to be done in the context of SSA. A review of the literature points to various factors that influence MFI outreach in different locations. In general, the determinants of outreach include a funding source, governance and ownership structure, macroeconomic and political environment, population density, loan contract terms, the cost of service delivery and delivery mechanism (Ledgerwood, 1999; Jensen, 2003). Navajas et al. (2000) investigated the depth of outreach of MFIs in La Paz, Bolivia, with interesting results. They found that: (i) improved social welfare from microfinance depends on the six dimensions of outreach; (ii) lenders tend to serve those near the poverty line not the poorest; (iii) deeper outreach comes from group lending as opposed to individual lending; and (iv) deeper outreach is more closely associated with rural lenders than with urban lenders. This suggests that lending methodology and client location influence depth of outreach. However, the question of whether lenders have deep outreach in an absolute sense remains since the demand distribution and creditworthiness on supply is unknown.

Kerata (2007) analysed the outreach and performance of MFIs in Ethiopia for the period 2003 to 2007. He found that outreach rose by 22.9 percent on average and noted that, MFI outreach to disadvantaged groups, especially women, was limited (38.4 percent). However, no evidence of a trade-off between outreach and financial sustainability was found. Similarly, Luzzi and Weber (2006) constructed synthetic indices for outreach and sustainability using factor analysis. The outcome of this study neither confirms nor contradicts the existence of a trade-off between the two performance dimensions. Using a clustering technique for the sampled 45 MFIs, the authors found evidence of the existence of a trade-off between sustainability and outreach but it was not the case for each year. They further studied the determinants of MFI performance using the seemingly unrelated regression (SUR) model. The results showed that interest rate ceiling, the number of clients per loan officer, MFI competitiveness and number of days for processing the first loan were significant determinants of financial performance. Previously, Olivares-Polanco (2005) had investigated the factors that influence MFIs outreach in Latin America using data from 28 institutions for the period 1999 to 2001. Following OLS analysis, the study found a trade-off between sustainability and outreach. The shortcoming of this study was the use of less rigorous techniques in analysis and the relatively small dataset which comprised only one observation per institution.

Awusabo-Asare, Annim, Abane and Asare-Minta (2009) analysed the outreach structure of MFIs in Ghana using the microfinance poverty assessment tool. The authors compared data from 1104 non-clients with 1600 clients and computed household level relative poverty scores. They discovered that rural and community banks and financial NGOs had greater outreach to all categories of clients (from extremely poor to the poor) compared to savings and loan companies, susu²⁸ collectors and credit unions. Furthermore, the source of funds, outreach strategy, and mission of the institutions influenced their performance. Similarly, Osotimehin and Jegede (2011) examined the determinants of MFI outreach in South Western Nigeria using panel data obtained from 80 institutions for the period 2005 to 2010. Employing generalised least square (GLS) and ordinary least square (OLS)

²⁸ They are individuals operating in the informal sector who collect savings on a daily or weekly basis from micro entrepreneurs and market vendors for safe keeping. Though not technically involved in mediating the aggregate funds mobilised, they manage withdrawals and are formally recognised in Ghana.

regression analyses, the study found that average loan size, debt to equity ratio, loan repayment rates, and salary were the main positive determinants of outreach.

The presence of social networks has also been found to have an influence on MFI outreach. Wydick, Karp and Hilliker (2011) investigated the factors that influence MFIs outreach focusing on the role of social networks in enabling access to loans. They found that there was a possibility that individuals were imitating choices made by their peers within the same network, for a variety of reasons. By applying this information to 465 households in Guatemala, the study found empirical evidence that households' access to credit is associated with being a member of a church network. Similarly, Piot-Lepetit and Nzongang (2014) analysed the double bottom line of MFIs' sustainability and outreach using a network of village banks in Cameroon. By applying the multi-DEA approach, the study found complementarity for some MCC (*Mutuelles Communautaires de Croissance*), signifying efficient management of the dual goals by these MFIs. While a trade-off existed for 15 percent of the MFIs, 46 percent showed no trade-off, while the remaining 39 percent were found to be inefficient in both financial and social dimensions.

Togba (2012) analysed the Ivorian credit market to understand the determinants of the choice for credit from formal and informal sources. The results show that loan size, agricultural purpose, geographic location of household, and ethnicity are factors influencing the choice of formal services of credit. Furthermore, the study found that low-income households tended to prefer small-sized loans obtained from informal sources rather than formal sources. Previously, Youssoufou (2000) in his assessment of MFI outreach in Burkina Faso found that their outreach was very low in relation to the potential demand due to their inability to mobilise savings services. Furthermore, the study found empirical evidence of non-viability and unsustainability of MFIs due to high dependence on subsidies and low-interest rates charged to clients. This suggests that interest rates and subsidy levels influence MFI outreach.

Kar (2013) explored the impact of profitability on the depth of outreach using panel data from 409 MFIs across 71 countries over a six year period. Using random effects (RE), and error components two stage least squares (EC2SLS) methodology, the study found a significantly positive relation between MFIs size and average loan amount, suggesting

the possibility of mission drift, though not very explicitly. Previously, Hartarska and Nadolnyak (2007) found similar results with regard to the positive significant impact of MFI size and capital ratio in their examination of the determinants of MFI operational self-sufficiency. Mersland and Strom (2016) reported that MFIs with tailored lending to women are less profitable and inefficient. This supports previous evidence by Hermes et al. (2011) who found serving the poor as well as female borrowers to be less efficient.

Adhikary and Papachristou (2014), in analysing the financial performance and outreach of 133 South Asian MFIs found depth of outreach to relate positively to financial performance, suggesting that MFIs on sustained financial expansion paths can reach their social goal at minimised risk. Furthermore, both breadth and depth of outreach were found to be positively related to profitability and efficiency. Similarly, Cull et al. (2007) analysed MFI outreach and performance using data from 124 institutions across 49 countries. They found that serving the poor can be a profitable venture and that larger micro banks have lower measures of outreach. In addition, Bos and Millone (2015) show that some MFIs effectively combine both depth and breadth of outreach and operated efficiently. They, however, note that decreases in efficiency occur as the loan portfolio becomes larger. Previously, Vanroose and D’Espallier (2013) studied the relationship between MFI outreach and performance vis-à-vis formal financial sector development. They found that MFIs were reaching more clients and were operating profitably in countries with low access to banking services. Their findings support the market failure hypothesis which stipulates that MFIs respond to needs not satisfied by banks and flourish where bank failures occur.

Rajbanshi, Huang, and Wydick (2012) explored microcredit impacts on the welfare of rural households in Nepal, with the intention of uncovering the discrepancy between microfinance impact claims made by practitioners and the far smaller impacts reported in experimental studies. Using recall methodology, the authors constructed a back-cast panel data set of fundamental events of the household and found that, three-quarters of the apparent impacts of microfinance observed by practitioners was an illusion driven by correlated unobserved factors. This highlights the possible endogeneity problem involved

in measuring outreach. However, the main drawback of the study was the relatively small sample size of 6 villages with credit newly introduced.

3.2.3 MICROFINANCE IN THE MACRO CONTEXT

The macroeconomic environment within which MFIs operate matters in determining their level of success or failure. The outreach and sustainability of an MFI among other factors hinges on the extent to which unrealised demand exists, the presence of opportunities for innovation, the extent of regulation and access to different forms of finance. Evidently, individual MFIs tend to have little control or influence over changes in these factors. However, the extent, range and quality of the external relations they build with the other profit and not-for-profit entities largely determine their social performance. While MFIs may compete among themselves, the extent of collaboration between these agents is crucial in ensuring performance. Most MFIs also depend on the mainstream financial institutions to make payments and hold deposits, but the tendency for them to face prohibitive increases in bank charges exists, which could limit their outreach.

Sector social performance is not just dependent on the actions of individual MFIs, but also on public policy that governs them, as well as the economy. According to the World Bank (2006), performance management in the financial sector centres on how to improve the growth elasticities of employment creation and poverty reduction through the provision of services that stimulate enterprise growth and protect poor people against economic instability.

The macroeconomic environment is important in helping businesses to thrive as it creates an enabling environment for investment and competition among MFIs. Research on the role of the macro environment in MFIs outreach has had mixed results and is also relatively under-exploited. Few empirical studies have examined the relationship between MFI performance and macroeconomic factors that impact on their operations (Krauss & Walter, 2008; Ahlin et al., 2011; Kai & Hamori, 2009). These studies highlighted the importance of the macro environment as well as firm level factors that influence MFI

outreach. However, the link between MFI outreach variables at the institutional level remains under-investigated in the literature.

Ahlin, Lin and Maio (2011) examined the linkage between macroeconomic and macro-institutional factors on MFI success using data from 373 institutions. They discovered that a country's specific environment is a key factor that influences the performance of MFIs. Also, complementarity exists between microfinance performance and the larger economy. Similarly, Imai, Gaiha, Thepa, Annim and Gupta (2012) investigated microfinance impacts at the macro level on poverty using cross-country panel data from 48 nations. They found that lower levels of poverty indices are associated with higher gross loan portfolio per capita, suggesting that microfinance has positive impacts on poverty reduction at the national level.

Hudak (2012) examined the impact of financial sector development and regulation on microfinance outreach at the national level using data from 30 countries for the period 2006 to 2009 using fixed effects methodology. The results show that microfinance benefits more people in developing countries under favourable business environments. Previously, Vanroose (2008) explored the factors that derive MFIs outreach using macro data for 115 countries. The evidence shows that developing countries with higher income levels derive more benefits from microfinance interventions than those with lower incomes. The density of population was found to positively influence MFI outreach, while the rate of inflation and level of industrialisation do not play a role. On the contrary, Lado (2015) found population density an insignificant factor in economic growth in his analysis of the determinants of economic growth in Sudan. Foreign direct investment and financial sector development were found to be the main drivers. More foreign direct investments (FDI) have also been reported to be associated with higher microfinance outreach and profitability.

Furthermore, Boyd, Levine, and Smith (2001) show that in regions heavily affected by inflation, banking activity tends to be lower. This is corroborated by empirical evidence by Vanroose and D'Espallier (2013) in the case of microfinance. Inflation has negative effects on the total number of borrowers as well as the on MFI profitability. However, Muriu (2011) did not find the macroeconomic environment significant in explaining

microfinance profitability in SSA. Rather, he found political instability and weak enhancement of the rule of law to have greater negative impacts on young MFIs.

Augsburg and Fouillet (2010) discuss the extent of influence by donors and the international organisation on microfinance affected by distancing MFIs from their primary objective of delivering financial services to the poor. They conclude that transparency should be a priority establishing the microfinance environment. Previously, Vanroose (2008) reported that client outreach by the microfinance sectors was higher in countries that receive a higher proportion of international aid. This is relevant in microfinance as donors now view the issue of transparency as a key criterion in the allocation of funding for microfinance interventions.

3.3 EMPIRICAL MODELS AND ESTIMATION

The objective of the chapter is accomplished using the static panel data analysis methodology. The use of panel data offers the advantage of large sample size, enables the analysis of dynamic changes both cross-sectionally and over time, and can address more complicated behaviour models involving time-invariant variables (Gujarati, 2004, p. 289). However, problems of heteroscedasticity, autocorrelation and cross-correlations remain potential problems posed by most panel data sets. To overcome these issues, the most prominent approaches used are the fixed effects (FE) and random effects (RE) methodologies. Extensions of the RE model to cover instrumental variable estimation and the generalised method of the moment also exist in the literature, aimed at overcoming issues of endogeneity satisfactorily. Nonetheless, the underlying assumptions regarding the data generating process which helps in model selection remain unique for the various approaches.

The analysis for this chapter is based on the random effects (RE) methodology, relevant for performance analysis. The approach uses different intercept terms for the firms which are constant over time. The key assumption is that both the dependent and independent variables are the same cross-sectionally and temporally, and heterogeneity across firms occurs via the error term (Brooks, 2008, p. 536). The approach is more relevant when

firms are selected randomly from a large population. The model is said to produce more efficient estimates compared to the fixed effects (FE) approach since within transformations are not required and degree of freedom problems are absent. Also, the RE approach accounts for all unobserved firm-specific residual variation in performance, thus, averting potential bias resulting from omitted variables (Stock & Watson, 2007). Furthermore, the potential to accommodate time-invariant variables compared to the FE model, which simply eliminates them at first difference, have been reported in empirical studies (Hartarska, 2005; Lensink & Mersland, 2007). However, the RE approach is valid only if the assumption of no correlation between the regressors and the individual unobserved effects, u_i holds true. A violation of this assumption, will lead to a reduction in the number of parameters to be estimated and also yield inconsistent estimates (Green, 2008:200-201) if the RE is applied.

The general form of the theoretical model used is specified as:

$$y_{it} = \alpha + \beta X'_{it} + (u_i + v_{it}) \quad (3.1)$$

where y_{it} is the dependent variable, α is the intercept term, β is a $(k \times 1)$ vector of parameters to be estimated on the explanatory variables, and x_{it} is a $(1 \times k)$ vector of observations on the explanatory variables, $t = 1, 2, \dots, T$; $i = 1, 2, \dots, N$; and k represents the number of slope parameters to be estimated. u_i is the unobservable individual-specific effects and v_{it} is the unexplained portion of y_{it} . Also, $u_i \sim IID(0, \sigma_u^2)$, and $v_{it} \sim IID(0, \sigma_v^2)$.

To test for the existence of random effects in the panel data the Breusch and Pagan (1980) Lagrange multiplier (LM) test was conducted. The null hypothesis is that individual-specific or time-specific error variance components are zero: $H_0: \sigma_u^2 = 0$. The test compares the random effects model with OLS. If the null hypothesis of the LM test is rejected a random effects model is better than the pooled OLS regression. The random effects model is estimated by generalised least squares (GLS) where the covariance structure is known. If the covariance structure is unknown, the estimation is done using either the feasible generalised least squares (FGLS) or the estimated generalised least

squares (EGLS). In general, the estimation of random effects models is comparatively more difficult than the fixed effects model.

3.3.1 VARIABLES AND MEASUREMENT

Funders provide indirect support to MFIs through national apex funds, international networks, and other investment vehicles aimed at improving the welfare of clients. They, therefore, seek to track the performance of the MFIs benefiting from their financing. However, non-commercial funders usually find it difficult to track the social benefits of their investments beyond the outreach figures reported. Depth and breadth of outreach are two social dimensions of performance which interest donors, though they often fall short of tracking the ultimate benefits to clients.

Most of the core indicators that have been developed and agreed on for use in the social performance assessment of MFIs are proxies (Rosenberg, 2009). These indicators were developed based on years of field experience working with retail MFIs and extensive consultations with various stakeholders in microfinance. The justification for these proxies is based on the fact that some important aspects of social performance, such as governance quality or depth of outreach, are simply difficult to quantify. The usefulness of these proxies is that they provide well above average information regarding the characteristics and conditions of target clients (poor) and enable proper targeting in outreach efforts by MFIs.

The analysis for this chapter made use of three different proxies which serve as dependent variables for both depth and bread of outreach. The variables selected are the average loan size as a percentage of GNI (ALS), the number of active borrowers (NAB), and the percentage of female borrowers (PFB). Selection of these variables was based on a literature review and previous studies on microfinance outreach which have used them (Cull et al., 2015b; Vanroose & D’Espallier, 2013; Quayes, 2012; Awusabo-Asare et al., 2009). The main variables used in the analysis are summarised in Table 3.1, together with their predicted signs. Measurement of the variables and their definitions is based on those agreed for the industry in 2009 by the consultative group to assist the poor (CGAP).

Table 3.1 Dependent Variables, Measurement and their Predicted Effects on Outreach.

Variable	Measurement	Predicted Sign		Source studies
		Depth	Breadth	
<i>Dependent variables</i>				
Average loan size (ALS)	Adjusted average loan balance per borrower / GNI per capita	negative	positive	Rosenberg, 2009; Quayes, 2012.
Number of active borrowers (NAB)	(Total active borrowers/country’s total population)*1000	positive	positive	Cull et al., 2015; Zerai & Rani, 2013
Percentage of female borrowers (PFB)	Number of active women borrowers /Adjusted number of active borrowers	positive	positive	D’Espallier et al., 2011; Kar, 2013

Source: Based on Review of Literature by Author.

Client poverty level (depth of outreach) is represented using the average loan size as a percentage of per capita GNI (ALS) as the dependent variable in line with recent studies on outreach (Cull et al., 2015a; Mersland and Strom, 2010; Hermes et al., 2011). Studies have shown that poor customers with good credit history tend to benefit from larger loans and that smaller loan sizes reflect outreach to poorer clients by MFIs. The ALS is roughly related to client poverty level because better-off clients tend to not to be interested in small-sized loans. However, the correlation between account balances and poverty is far from precise (Rosenberg, 2009). An average outstanding loan balance below 20 percent of per capita GNI has been regarded by some as a rough indication that clients are very poor. The use of this indicator (ALS) will allow for a comparison of the level of relatively poor clients served by MFIs in different countries, given the distribution of their national income. However, this measure does not escape criticism in the literature. For instance, MFIs could relax their limits on loan size to promote loan size growth and this cannot be interpreted as neglecting poorer clients. Furthermore, other indicators of depth such as the depth of outreach index (DOI) are costly and complex to implement (Rosenberg, 2009). Hence the use of the average loan size as a percentage of per capita GNI (ALS) in this study.

The breadth of outreach of MFIs is evaluated in this study using two main proxies as dependent variables: the number of active borrowers (NAB) and the percentage of female

borrowers (PFB). The breadth of outreach is determined by the number of clients with active loans or savings accounts at a given point in time (Rosenberg, 2009). The number of active borrowers (NAB) gives a good reflection of the clientele base of MFIs and is a universally accepted measure for the breadth of outreach. This study, therefore, used this variable in line with recent studies (Zerai & Rani, 2013; Cull et al., 2015a). One merit of using this measure for outreach is that it is straightforward and MFIs have no difficulty reporting data on it. The indicator is more useful than a cumulative number of loans or the number of savings accounts (alternative measures for breadth). For instance, an individual could hold multiple accounts, and the use of savings accounts as a measure of the breadth of outreach could suffer from double counting problems. Small sized MFIs will naturally have a lesser outreach so NAB should relate positively to outreach.

Women borrowers constitute a high proportion (62 percent) of MFI clients in Africa. This is significant in view of the rapid expansion of the industry and it is important to access whether focusing outreach on females has any implications for MFIs. The study included the percentage of female borrowers (PFB) as a second dependent variable for breadth to help distinguish the general outreach of MFIs from that focussed solely on women. Previous studies on outreach have used this variable with satisfactory results (Cull et al., 2015a; D’Espallier et al., 2011; Kar, 2013). This indicator is valuable in supporting client-targeting decisions by MFIs and funding commitments by donors with a keen interest in social performance. A positive relationship is expected with outreach.

The study also included a number of firm-level variables assumed to have an impact on MFIs outreach as independent variables. The variables included are summarised in Table 3.2.

Table 3.2 Independent Variables, Measurement and their Predicted Effects on Outreach

Variable	Measurement	Predicted Sign		Source Studies
		Depth	Breadth	
Portfolio at risk (PAR)	Outstanding balance, portfolio > 30 days + renegotiated portfolio/ adjusted gross loan portfolio.	negative	negative	Rosenberg, 2009;
Gross loan portfolio (GLP)	Gross loan portfolio, adjusted for standardised write-offs	positive	positive	D’Espallier et al., 2011;
Return on assets (ROA)	Adjusted net operating income, net of taxes / Adjusted average total assets	positive	positive	
Operating expenses to assets ratio (OEA)	Adjusted operating expense / Adjusted average gross loan portfolio	negative	positive	Kar, 2013;
Operational self-sufficiency (OSS)	Total operating financial income/ Fixed cost + Total operating cost + Loan loss provision	indeterminate	indeterminate	Cull et al., 2007; 2015a;
Yield on gross loan portfolio (YLD)	Adjusted financial revenue from loan portfolio/ Adjusted average gross loan portfolio	negative	negative	Zerai & Rani 2013
Return on equity (ROE)	Adjusted net operating income, net of taxes / Adjusted average total equity	positive	positive	
Borrower per staff member (BSM)	Adjusted number of active borrowers / number of personnel	negative	positive	

Source: Based on Review of Literature by Author.

Credit risk has been identified as one key factor that drives down the profitability of MFIs in SSA (CGAP, 2010). In international banking, the standard measure of portfolio quality is the portfolio at risk (PAR) beyond a specified number of days. This study used unpaid loans which are overdue by 30 days (PAR 30 days) to assess the management performance of MFIs in loan recovery. This indicator is more relevant for microfinance compared to other measures of risk (such as loan overdue beyond 60 days or 90 days). Since most MFIs typically give out small loans with shorter repayment periods, PAR 30 days is generally accepted as the best measure and previous studies have used it (Adhikary & Papachristou, 2014; Tehelu, 2013). This indicator is useful in prompting management to take remedial action in their loan recovery efforts since poor loan recovery means fewer loans will be given out by the MFIs to clients demanding loans. Higher PAR values typically reflect management inefficiency in loan collection, hence, deterioration of the loan portfolio quality. The relationship between PAR and MFI outreach is therefore expected to be negative.

The loan portfolio of MFIs represents the biggest asset for these institutions. A higher gross loan portfolio (GLP) reflects the size of the institution which to a large extent determines their level of outreach. It is a standard industry indicator and various studies on MFI outreach have used it as an independent measure (Quayes, 2012; Kipsha & Zhang, 2013). The loan portfolio is expected to have a positive relationship in both depth and breadth models of outreach.

The financial performances of institutions have been found to influence their level of outreach. Return on assets (ROA) is an accepted measure of profitability included in this analysis to capture the influence on outreach performance. The ability of MFIs to generate positive returns would likely impact positively on their social mission through investments in improved technology to enhance cost efficiency in service delivery to poorer clients. At the same time, MFIs can adopt a turnover strategy by serving more clients with smaller loan sizes and in the process achieve high clients-per-employee ratios. This indicator has been used by previous studies (Quayes, 2012; Vanroose & D'Espallier, 2013) and has useful implications for client targeting. Evidently, an MFI that only earns negative returns is unlikely to reach out to many more poor clients who desire loans.

Higher operating expense has been found to plague the operations of MFIs in SSA (CGAP, 2010). The operating expenses to assets ratio (OEA) is a cost side variable which is included in order to capture the cost implications associated with serving poor clients; previous studies have included it as an independent measure (Tehelu, 2013). The operating expenses to assets ratio (OEA) focuses on operating expenses and does not capture interest payments on an MFI's liabilities or loan loss provision expenses. It is a recommended measure of cost effective service delivery by MFIs to clients and it is the most widely used indicator of efficiency. It facilitates quick comparison of MFI portfolio yield with their administrative and personnel expenses (Rosenberg, 2009). However, one drawback is that it gives a bad picture to MFIs giving small loans compared to those offering large loans, even when both are managed efficiently. The best alternative is to use a ratio that is based on clients served, not amount loaned. Studies have shown that MFI operating costs average between 50-60 per cent and this is likely to have an impact

on outreach efforts being pursued by institutions. A negative association between OEA and MFI outreach is therefore anticipated.

A well-sustained MFI can have greater outreach to the poor. Operational self-sufficiency (OSS) measures an MFI's ability to cover operating costs using own revenues generated from operations. The level of subsidies received by MFIs is often left out in its computation and is more useful and applicable to the microfinance sector in SSA since most institutions operate below full financial sustainability levels and are subsidy dependent. The use of OSS is more plausible compared to other measures of sustainability such as financial self-sufficiency (FSS), which is only attained by a few MFIs. Data on FSS is not readily available as most MFIs do not calculate and report on it. However, OSS suffers the criticism of not taking into consideration adjustments for inflation in its computation, which is likely to mask the true financial performance of these MFIs. Nonetheless, it remains useful, and recent studies have used it (Cull et al., 2015a, 2009b). Other sustainability indicators such as the subsidy-dependent index (SDI) and FSS, though technically superior are less frequently used, for reasons of complexity. A positive relationship is expected between operational self-sustainability (OSS) and MFIs outreach efforts.

The interest gained from operations by MFIs is necessary not just to cover the cost of operations and satisfy the interest of shareholders but also to expand infrastructure and improve upon the quality of service delivery. However, the positive role of interest in expanding the frontiers of MFIs, while recognised, has received mixed reactions from the microfinance debates on interest rates. The yield on gross portfolio (YLD) is used to proxy MFIs' lending interest rate to clients, and previous studies have used it (Kar, 2012; Annim, 2012). Market-based interest rates, as argued by the Welfarists, are more likely to limit the economic participation of the poor in microfinance markets as they cannot afford them. As such, the expectation is that rising interest rates would decline with MFIs' outreach.

Return on equity (ROE) is a profitability variable included in the analysis to capture its influence on MFI outreach to the poor. In most MFIs, ROE is a common device employed to measure the returns produced on owners' investments in the sector. It is an

appropriate indicator for subsidy-free institutions. MFIs that receive subsidies, therefore, need to adjust for them in their reporting in order to gauge the real impact on profitability and possibly outreach levels.

Finally, borrower per staff member (BSM) is a measure of productivity that captures staff performance. It reflects the volume of business transactions that generates output from the use of staff as key resources in the process. Similar to previous studies that assessed outreach performance, this study included this variable to assess MFIs' productivity level and how it impacts on outreach efforts (Hudon & Traca, 2011; Cull et al., 2007). A productive MFI should create positive impacts on clients outreach. Thus, better labour productivity performances can result from socially oriented programmes (Morduch et al., 2003).

3.3.2 DATA SOURCE

Data for this chapter analysis was obtained from the Microfinance Information Exchange (MIX) market database for the period 2003-2013. The data source provides standard financial performance indicators and audited financial statements from MFIs covering all regions and is reliable, comparable and publicly available. All data posted to the site are reviewed and validated in line with standard business practices and audit rules; previous studies on microfinance have used this data source (Ahlin et al., 2011; Cull et al., 2007). Out of 387 MFIs that reported to the database during the period for the ten countries considered, 71 MFIs were selected based on the quality and completeness of the data supplied (only MFIs rated between 3 and 5 diamonds²⁹ were included in the analysis).

3.3.3 DESIGN OF THE MODELS, TESTING AND ESTIMATION

Three empirical models were designed and utilised in the estimation, as depicted in equations 3.2, 3.3 and 3.4. The design is based on the two outreach dimensions (depth and breadth) explored in the study. The independent variables employed in the analysis

²⁹ Diamonds are used to rate the quality of financial statements and reports submitted by MFIs. The values range from 1 – 5 with five being the highest. A MFI rated 5 implies that its data set is complete with audited financial statements.

are based on the widely used measures for depth and breadth of outreach revealed by various studies in microfinance. The first dependent variable, average loan size (ALS), is used to investigate the depth of outreach of microfinance institutions and equation [3.2] seeks to serve that purpose. For breadth of outreach, the study employed the two most commonly used proxies, namely, the number of active borrowers (NAB) and the percentage of female borrowers (PFB), as measures; equations [3.3] and [3.4] depict the models. The empirical models estimated are presented as follows:

$$\begin{aligned} \ln ALS_{it} = & \delta_0 + \delta_1 \ln PAR_{it} + \delta_2 \ln GLP_{it} + \delta_3 \ln ROA_{it} + \delta_4 \ln OEA_{it} + \delta_5 \ln OSS_{it} \\ & + \delta_6 \ln YLD_{it} + \delta_7 \ln ROE_{it} + \delta_8 \ln BSM_{it} + u_{it} \end{aligned} \quad (3.2)$$

$$\begin{aligned} \ln NAB_{it} = & \beta_0 + \beta_1 \ln PAR_{it} + \beta_2 \ln GLP_{it} + \beta_3 \ln ROA_{it} + \beta_4 \ln OEA_{it} + \beta_5 \ln OSS_{it} \\ & + \beta_6 \ln YLD_{it} + \beta_7 \ln ROE_{it} + \beta_8 \ln BSM_{it} + u_{it} \end{aligned} \quad (3.3)$$

$$\begin{aligned} \ln PFB_{it} = & \gamma_0 + \gamma_1 \ln PAR_{it} + \gamma_2 \ln GLP_{it} + \gamma_3 \ln ROA_{it} + \gamma_4 \ln OEA_{it} + \gamma_5 \ln OSS_{it} \\ & + \gamma_6 \ln YLD_{it} + \gamma_7 \ln ROE_{it} + \gamma_8 \ln BSM_{it} + u_{it} \end{aligned} \quad (3.4)$$

where δ_0 β_0 γ_0 are the intercepts, and $\delta_1 - \delta_8$, $\beta_1 - \beta_8$ and $\gamma_1 - \gamma_8$ are the coefficients of the parameters to be estimated. u_{it} is the error term and is assumed to have normal distribution. $u_{it} \sim IID(0, \sigma^2)$. All variables are taken in their logarithm form for ease of interpretation of the results and their definitions and measurements are reported in Table 3.1. Prior to estimation, a number of diagnostic tests were performed to support decisions made in variable and model selection to ensure the accuracy of the final estimated results. The Fisher-ADF test was conducted on each variable used in the models to check for the presence of unit roots. Tests for unit roots in each series are best practices which are aimed at ensuring that the variables are stationary. Very often, the possibility that some series in a group may contain more than one unit root exists, and differencing is extremely important under such situations. The test results showed the absence of unit roots.

Next, the Variance Inflation factor (VIF) analysis for the independent variables was done to check for multicollinearity. The values obtained from the test range from 1.02 to 1.49, indicating low levels of multicollinearity. Finally, to ensure the appropriateness of the model used in estimation, the Hausman test for model specification was done and the results presented in Table 3.3. The null hypothesis underlying the test is that there is no substantial difference in the fixed effects model and random effects model. The test statistic is said to have an asymptotic chi-square distribution with degrees of freedom equal to the number of regressors contained in the model. If the computed chi-square value exceeds the critical chi-square value for any given degrees of freedom and significance level, the conclusion is that the fixed effects model is more appropriate. Thus, the RE model is not appropriate because the random error term is probably correlated with one or more regressors. In other words, the Hausman test strongly rejects the random effects model if the probability value of the estimated chi-square statistic is very low (Gujarati, 2004).

Table 3.3: Hausman Specification Test: Fixed Effects vs. Random Effects for MFIs Outreach

Variable	coefficients		
	Fixed Effects (b)	Random Effects (B)	Difference (b-B)
Portfolio at risk (PAR)	-0.1380452	-0.1821369	0.0440917
Gross loan portfolio (GLP)	0.5802773	0.6006268	-0.0203496
Operating expense to assets ratio (OEA)	0.050733	0.0595972	-0.0088643
Borrower per staff member (BSM)	0.337593	0.3877897	-0.0501967
Yield on gross loan portfolio (YLD)	0.0927061	0.0416677	0.0510384
Operational self-sufficiency (OSS)	-0.0603183	0.0150964	-0.0754147
Return on equity (ROE)	-0.0076815	-0.0065369	-0.0011446
Return on assets (ROA)	0.0253867	0.0317405	-0.0063538

Source: Estimation

Test: Ho: difference in coefficients not systematic $\chi^2(8) = (b-B)'[(V_b - V_B)^{-1}](b-B) = 22.89$, Prob> $\chi^2 = 0.0035$

The test results presented in Table 3.3 favoured the use of the RE model as against the FE. This provides additional support and justification for the use of the RE model in this chapter for analysis. The null hypothesis of the test which states that the difference in coefficients is not systematic is therefore rejected since the probability chi-square is less than 0.05 percent.

3.4 EMPIRICAL RESULTS AND DISCUSSIONS

Results obtained from the random effects analysis is presented and discussed in this section. The first part covers the descriptive statistics of the variables used in the analysis. This is followed by the results obtained from the correlation analysis, which shows various relationships among these variables. The final aspect presents and discusses results from the multiple regression analysis, which uncovers the main factors that drive MFI outreach.

3.4.1 DESCRIPTIVE STATISTICS

The analysis here relied on the random effects methodology for panel data analysis. All the necessary initial robust checks were carried out prior to estimation. From the descriptive statistics reported in Table 3.4, the mean of most variables can be interpreted as the percentage of firms in the category. The average loan size of MFIs on average is about 31 percent of respective country's GNI per capita. This estimate compares favourably with the 15.3 percent reported in Africa in 2003, since per capita GNI for most countries have recorded increases in recent years. An average outstanding balance below 20 percent of per capita GNI is an indication that clients are very poor. The number of active clients served by MFIs on average is 56,243 members with 5 percent female outreach. The proportion of female clients reached by the selected institutions is extremely low since on average 60 percent women participation has been reported in most studies.

Table 3.4: Descriptive Statistics of Variables Used in MFIs Outreach Analysis

Variable	Obs	Mean	Standard deviation	Minimum	Maximum
Average loan balance as percentage of GNI (ALS)	306	0.3100	0.2844	-1.1398	1.5109
Number of active borrowers (NAB)	607	56242.99	122222.4	72.0	801809.0
Percentage of female borrowers (PFB)	278	0.0510	0.1646	-0.1038	1.7900
Portfolio at risk (PAR)	538	0.0898	0.1100	0.0005	0.8300
Gross loan portfolio (GLP)	620	6.6951	0.8661	0	9.5337
Return on assets (ROA)	620	-0.8530	1.2776	-19.06	0.8870
Operating expense to assets ratio (OEA)	297	161.6431	128.6933	0.0	809.0
Operational self-sufficiency (OSS)	620	1.0656	0.4897	0.0331	8.415800
Yield on gross loan portfolio (YLD)	620	0.5387	2.3100	-1.6200	18.2100
Return on equity (ROE)	275	-0.0839	0.9621	-14.0900	0.9300
Borrower per staff member (BSM)	300	2.3065	10.8315	0.1644	86.4600

Source: Estimation

NB: The number of MFIs selected per country are: Benin= 9; Ghana=10; Nigeria=7; Burkina Faso=3; Cameroon=6; Ethiopia=7; Uganda=5; Tanzania=4; South Africa= 4; and Kenya= 13.

Table 3.4 shows that the MFIs in the study demonstrate a low level of portfolio quality with an average portfolio at risk over 30 days of 8.9 percent. This suggests a worsening situation with regards to loan recoveries, and management needs to take collective action to improve and enhance outreach. The asset allocation of all MFI types shows that gross loan portfolio represents 66.9 percent of assets. This can be said to be fairly good, with potential impacts on the MFIs' social and financial performance. However, the institutions are not profitable, since the average return on assets is negative (85 percent). Mori et al (2015) observed similar negative returns on assets for MFIs in East Africa.

This could be due to the diverse nature of the industry, as most MFIs in SSA are made up of cooperatives and NGOs with dominant social performance goals.

For OSS, values below 1 indicate that the respective MFI is not covering costs from operating revenues. All the sampled MFIs are operationally sustainable, as revealed by OSS. MFIs on average incur 161 percent costs per year to service their portfolios. This can be seen as too high and reflecting the unprofitable nature of the industry. Furthermore, it is shown in Table 3.4 that MFIs charge on average 53.8 percent interest rate on loans. This can be said to be too high considering the kind of business investments that the poor are engaged in. However, MFIs on average post negative returns on equity (8.3 percent). The productivity level of staff is shown to be high (230 clients on average per staff member). This is well above the global average of 139 borrowers and 149 savers per staff member. This could be attributed to the group-lending approach which yields advantages in handling group transactions since most MFIs in the region are member-based.

3.4.2 RESULTS OF CORRELATION ANALYSIS

Table 3.5 shows the presence of significant trade-offs from the correlation analysis. The first is the trade-off between sustainability and wider outreach as proxied by the number of active borrowers. This means that institutions that focus on attaining the financial sustainability goal are unlikely to provide microfinance products and services to a large number of poor clients who require them. This could worsen the already existing situation of limited access to financial services by the poor, leading to financial exclusion. The result supports previous evidence (Quayes, 2012; Cull et al., 2009) on trade-off relations. The most striking result is the trade-off between depth of outreach and breadth of outreach. This means that in the attainment of the social goal, institutions make deliberate choices as to which segment of the poor population to target. As pointed out by Conning (1999), MFIs that target the “low end” of the market segment are less profitable and may not be sustainable. This result is much supported by the finding of this study, suggesting that MFIs that strive to reach the relatively poor do so at the expense of

extending financial services to a large number of poor borrowers. The policy implication is that managers of MFIs and boards of directors should strive to create a balance between the two dimensions of outreach in their programming. Another interesting trade-off which emerged is that between profitability, sustainability, and outreach for the institutions. These various trade-offs confirm the occurrence of mission drift in the microfinance industry in Sub-Saharan Africa. This could be due to industry evolutions that have caused institutions to strategically move towards commercialisation for sustainability purposes rather than pursuing the poverty alleviation goals initially conceived for the industry. For the majority of poor people who desire financial products and services, this is bad news. However, for policy makers, microfinance institution networks, and managers of these institutions, it calls for pragmatic action to restore hope to the poor.

Table 3.5 Correlation Analysis Results for MFIs Outreach

	NAB	ALS	PFB	OSS	ROA	PAR	ROE	YLD	GLP	OEA	BSM
NAB	1.0000										
ALS	-0.0896**	1.0000									
PFB	0.0445	-0.2614***	1.0000								
OSS	0.2348***	0.0637	0.0010	1.0000							
ROA	-0.0319	-0.1286***	-0.1345***	-0.1699***	1.0000						
PAR	-0.2693***	0.1170***	-0.0864**	-0.1982***	0.0073	1.0000					
ROE	0.0034	-0.0037	0.0322	0.0740*	0.1256***	-0.0148	1.0000				
YLD	-0.2303***	-0.1795***	0.1129***	-0.0792*	0.0935**	0.1040***	0.1096***	1.0000			
GLP	0.5968***	0.3471***	-0.0864**	0.3144***	-0.0943**	-0.0393	0.0137	-0.2712***	1.0000		
OEA	-0.1312***	-0.1844***	0.2219***	-0.1918***	0.0710*	0.0227	0.0310	0.2826***	-0.1645***	1.0000	
BSM	0.3348***	-0.3296***	0.1293***	0.0357	-0.1133***	-0.1674***	-0.0312	-0.1564***	0.0036	-0.2182***	1.0000

Source: Estimation

Significance level: * < 0.10, ** < 0.05, *** < 0.01

3.4.3 REGRESSION RESULTS FOR OUTREACH DETERMINANTS

The random effects regression results for the institutional determinants of MFI outreach are presented in Table 3.6. The parameter *Rho* which shows the ratio of individual specific error variance to the composite error term indicates the goodness of fit for the estimated models. Based on this parameter, Model [1] is the best among the three estimated models as it explains a high proportion (71 percent) of the entire variance in the composite error term.

Table 3.6: Random Effects Results of the Determinants of Outreach (Dependent: ALS, NAB, PFB)

Particulars	Coefficients		
	Model [1]: ALS	Model [2] :NAB	Model [3]: PFB
Portfolio at risk (PAR)	0.0454529*** (2.80)	-0.1821369 ** (-4.45)	0.0087776 (0.52)
Gross loan portfolio (GLP)	0.0852472*** (4.53)	0.6006268*** (14.38)	-0.0100927 (-0.58)
Return on assets (ROA)	-0.0187997*** (-2.57)	0.0317405 (1.64)	-0.03492*** (-4.34)
Operating expense to assets ratio (OEA)	-0.0533091*** (-2.56)	0.0595972 (1.10)	0.0994478*** (4.51)
Operational self-sufficiency (OSS)	0.0731993 (1.05)	0.0150964 (0.09)	0.0306084 (0.44)
Yield on gross loan portfolio (YLD)	-0.0578539** (-2.23)	0.0416677 (0.62)	0.0378718 (1.39)
Return on equity (ROE)	0.0064736 (1.35)	-0.0065369 (-0.52)	0.00481 (0.94)
Borrower per staff member (BSM)	-0.1261982*** (-7.06)	0.3877897 *** (8.53)	0.0201617 (1.08)
Intercept	-0.6926289*** (-5.11)	-0.7843124*** (-2.66)	-0.1077301 (-0.88)
sigma_u	0.31824549	0.32651779	0.14610204
sigma_e	0.20291035	0.55471993	0.22404889
rho	0.71097367	0.25731751	0.29836035
R-square	0.2834	0.5040	0.0892
Number of observations	620	620	620
Wald-statistic	Chi2(8) = 100.45 Prob > chi2 = 0.0000	Chi2(8) = 334.51 Prob > chi2 = 0.0000	Chi2(8) = 48.70 Prob > chi2 = 0.0000

Source: Estimation

Significance level: ***< 0.01, **< 0.05, * <0. 10.

Portfolio at risk (PAR) positively and significantly influences depth of outreach but negatively influences breadth of outreach as measured by the number of active borrowers (NAB). This shows that deeper outreach contributes to worsening portfolio quality while wider outreach reinforces it. This result contradicts Adhikary and Papachristou's (2014) finding that depth, as opposed to breadth, mitigates risk. The significantly negative relationship between PAR and breadth of outreach, however, supports the findings of Crabb (2008). The need to control PAR so as to improve loan portfolio quality thus appears relevant from the analysis. Furthermore, gross loan portfolio (GLP) positively influences both depth and breadth of outreach, as expected. This means that, as the loan portfolio of an MFI increases, its outreach prospects improve, though focussing on females appears insignificant. This result is in line with Kar (2013) who found positive significant links between MFI size and depth of outreach.

In addition, Table 3.6 shows that return on assets (ROA) is significant and relates negatively to both depth and breadth of outreach, contrary to expectations. Model [1] shows that a percentage point increase in the return on assets will lead to a 0.018 percentage points decline in MFIs' depth of outreach. Model [3] shows that these negative impacts are even greater for MFIs that focus service delivery on female borrowers. This suggests a need for portfolio diversification, a situation where MFIs instead of augmenting lending to the poor invest in other assets perceived to yield higher returns. As MFIs experience positive returns on their investments, the profits are channelled to other investments at the expense of reaching out to many poor clients with the needed products and services. The observed higher operating costs that plague most MFIs in the industry could also account for this situation. This result supports the findings of Mersland and Strom (2016) that MFIs struggle with higher costs and lower earnings.

The operating expense to assets ratio (OEA) is negative and significantly related to the depth of outreach. For instance, Model [1] shows that a percentage point increase in the operating expense to assets ratio will lead to a 0.053 percentage points decline in the depth of outreach of MFIs. This means that rising operating costs have negative consequences for extending financial services to core poor clients. However, a positive

significant relation exists between OEA and the percentage of females served (PFB), suggesting that reaching out to more female borrowers increases the operating expenses of MFIs. Model [3] show that a percentage point increase in the operating expense to assets ratio will result in a 0.099 percentage points increase in MFIs' breadth of outreach to women. This result confirms that of Hermes et al. (2009) who find lending to women inefficient.

Operational self-sufficiency (OSS) has a positive coefficient in all three models but is not statistically significant. This suggests that the sustainability levels of MFIs do not really drive outreach. This could be attributed to receivable subsidies as most institutions (48.2 percent) covered in the study are member-based, typical of the industry in SSA. This finding contradicts Zerai and Rani (2011) who found strong positive relations between OSS and breadth of outreach.

The yield on gross portfolio (YLD) is negative and statistically significant, as expected, in the depth of outreach model. Model [1] in Table 3.6 shows that a percentage point increase in the yield on the gross portfolio will lead to a 0.057 percentage points decline in MFIs' depth of outreach. This means that poorer clients attract higher interest rates on their loans. This confirms the classical Welfarist perspective that rising interest rates will not only lead to the exclusion of the poor but will hurt outreach efforts made by institutions since the poor will be unable to afford the high-interest rates (Conning, 1999). However, a positive association exists between YLD and breadth of outreach, though statistically insignificant. This implicitly suggests that cross-subsidisation on interest rates between the poor and the core poor may be taking place at the level of wider outreach by MFIs.

Furthermore, the results show that borrower per staff member (BSM) significantly influences depth of outreach negatively but has a positive influence on the breadth of outreach (NAB). Model [1] show that a percentage point increase in staff productivity will lead to a 0.123 percentage points decline in MFIs' depth of outreach. However, a percentage point increase in staff productivity will result in a 0.387 percentage points increase in MFIs breadth of outreach. The intuition is that MFIs are less productive in their efforts in serving their relatively poor clients. The remoteness of location and time

demands imposed on both clients and staff could account for this. These results are very revealing since previous studies did not closely examine the link between the two dimensions of outreach and the productivity level of MFI staff.

Table 3.6 also shows that return on equity is positively related to the depth of outreach but it is not statistically significant. Also, a negative insignificant relationship is shown between return on equity and MFIs' breadth of outreach as proxied by the number of active borrowers (NAB). This result is consistent with previous findings by Lafuorcade et al. (2005) and Balkenhol (2007) that MFIs in SSA only generate negative returns on investments.

Findings from the study, therefore, show that gross loan portfolio (GLP) and portfolio at risk (PAR) are the main factors that positively influence the depth of outreach of MFIs in SSA. The level of staff productivity (BSM), lending interest rate (YLD), operating expenses (OEA) and return on assets (ROA) negatively affect outreach depth. On the other hand, Model [2] shows that staff productivity (BSM) and gross loan portfolio (GLP) positively drive MFIs' breadth of outreach. MFIs' outreach to female clients is seen to be positively influenced by the OEA and returns on equity. The results show that using the number of borrowers appears to be a better predictor of MFI outreach in SSA than the proportion of females reached.

3.5 CHAPTER SUMMARY

This chapter examined the institutional factors that drive microfinance outreach in Sub-Saharan Africa using the random effects methodology to panel data analysis. The chapter reviewed the existing literature on the theoretical framework and concept of outreach and the determinants of outreach both at the firm and macroeconomic levels. The chapter also presented the theoretical and empirical models of the random effects methodology used in the estimation. Estimated results show that the sampled MFIs incurred higher costs in making loans to female borrowers. Also, results of the correlation analysis show the existence of various trade-offs, most importantly that between the two dimensions of outreach (depth and breadth) studied. These results have implications for industry

sustainability, efficiency and outreach to the poor which various stakeholders need to be aware of for appropriate policy action. Furthermore, a number of institutional-level factors were found to influence both depth and breadth of outreach. More specifically, portfolio at risk (PAR) and gross loan portfolio (GLP) are the positive determinants of the depth of outreach, while borrower per staff member (BSM) and gross loan portfolio (GLP) impact positively on the breadth of outreach. Details of these empirical results and discussions are presented here and the chapter concluded with a summary. The next chapter presents and discusses the issue of microfinance sustainability and key determinants in SSA.

CHAPTER 4

DETERMINANTS OF MICROFINANCE INSTITUTIONS' SUSTAINABILITY AND ITS RELATIONSHIP WITH OUTREACH

This chapter together with the previous one responds to objective two of the study (*To analyse the determinants and extent of outreach and sustainability of MFIs in SSA*). The chapter is grouped into five sections for ease of presentation of the information. A contextual background to MFI sustainability and its relevance in SSA is provided in section one. The relevant literature on microfinance sustainability as documented by previous studies is presented in section two. The discussion covers the theoretical framework for sustainability, determinants of sustainability and the trade-off relationships between sustainability and outreach. The methodology applied in the analysis is detailed in section three. The discussion covers both the theoretical and empirical models, Variables and their measurement, and estimations using the fixed effects approach. Empirical results as well as the key findings obtained from the analysis are presented and discussed in section four. The chapter concludes with a summary in section five.

4.1 CONTEXTUAL BACKGROUND

Poverty remains a reality in most developing countries and it has been argued that dearth of assets and inadequate flow of income is the root cause of poverty (Besley, 1995). The availability and accessibility of credit and savings to poor people is vital in improving their economic conditions and to facilitate efficient investments in an economy (Besley, 1995). Intuitively, this means that financial services even in small amounts and in diverse forms could make positive changes in the economic conditions of the poor. However, financing poor people has remained a major concern particularly in SSA due to failures associated with formal credit markets, high repayment risks and lack of acceptable collateral (Hulme & Mosley, 1996; Hermes & Lensink, 2007). These situations continue

to exclude poor people from accessing financial services, and microfinance is therefore seen as a solution as it promotes financial inclusion.

In Sub-Saharan Africa, evolution of the microfinance sector can be traced to two interlinked factors: (i) exclusion of the poor from the formal financial sector as a colonial legacy where financial services were channelled through large scale export-led projects in urban areas, and (ii) donor inflows in the form of concessionary loans which were channelled to certain political colonies and specific cash crops development (De Haan & Lakwo, 2010). These projects, which were managed by corrupt government officials, relied heavily on external strategies with limited product diversification and were largely unsustainable (De Haan & Lakwo, 2010). This view suggest that early efforts to support poor people out of poverty did not yield much results as expected. With the strong emergence of microfinance in the early 1980s in the region, many believed that the failures observed in pro-poor government programmes which the poor did not largely benefit from were over. Microfinance institutions have led to the integration of poor people into financial credit markets who now have some level of access to financial services. The movement has attracted the attention of both practitioners and academicians globally and has effectively utilised ideas from existing informal financial institutional mechanisms in meeting the financial needs of poor people (Armendariz & Morduch, 2004; Milana & Ashta, 2012).

Despite the high priority placed on microfinance interventions by both national and international development agencies as a means of alleviating poverty, the performance of MFIs in terms of financial sustainability, outreach and efficiency is increasingly being questioned by various authors (Buckley, 1997; Morduch, 1999; Cull, Demirguc-Kunt & Morduch, 2007, Bateman, 2011, 2014). For instance, Morduch (1999) asks ‘whether microfinance can meet the full promise of poverty reduction without subsidies’. Buckley (1997) in his survey of micro-enterprises in Ghana, Kenya and Malawi asked whether MFIs are in any way different from the rural and credit cooperatives in the 1970s, implying that they may be unsustainable. Ledgerwood and White (2006) observed that despite the scale of outreach, MFIs still reach only a small percentage of their potential market and ask, ‘what can be done to extend financial services to the poor sustainably’.

Besides the numerous questions being raised, the high interest rates charged by some MFIs remain a key area of debate in the literature with some people calling for total commercialisation of the industry. For instance, Armendàriz and Morduch (2010) note that commercialisation is one of the most contentious issues in the microfinance industry today due to the trade-off debate of fighting poverty and attaining sustainability. Hudon and Traca (2011) reported that, despite the type of commercialisation, a vast majority (95 percent) of MFIs still rely on subsidies which seem to improve efficiency with threshold effects. Subsidies, therefore, could keep inefficient institutions alive but not on a longer term basis. In contrast, Mersland and Strom (2009) reported that the commercialisation of microfinance has not led to mission drift since the search for profits seems to have been accomplished by a drive to cut down costs. From the perspective of MFIs that supply these services, high interest rates are necessary to cover the high fixed expenses associated with administering small individual loans (Robert, 2013).

Achieving the dual goal of microfinance sustainability and outreach remains a challenge to most institutions globally. Hermes and Lensink (2007) expressed the need for further evidence on the specific mechanisms that account for performance differentials among microfinance institutions. Currently, cross-sectional investigation to show whether pursuing sustainability comes at the expense of MFIs outreach is limited. Adongo and Stork (2005) in their study of MFIs in Namibia document that the institutions were unsustainable due largely to the Usury Act of 1968 that placed a cap on the interest rate. Though MFIs sustainability has become topical in recent times, only a few studies (Makame & Murinde, 2006; Kipsha & Zhang, 2013) have explored empirically this subject matter, especially in the context of SSA. These earlier studies, besides their limited geographical focus, used either less rigorous analysis (see Olevieries Polanco, 2005) or were based largely on country-level case studies focussing on sustainability strategies adopted by organisations. Empirical evidence of trade-offs and the factors that drive MFI sustainability, therefore, remain limited in the context of SSA. The chapter, therefore, responds to two issues: (i) Is there a trade-off between microfinance outreach and sustainability in SSA? (ii) What are the institutional determinants of sustainability?

The findings are relevant to managers of MFIs who are constantly searching for ways to improve productivity, and enhance sustainability and profitability of their institutions.

4.2 EVIDENCE ON MICROFINANCE INSTITUTIONS' SUSTAINABILITY

This section discusses previous work done on MFIs sustainability and its relations to outreach and other dimensions of performance. The review is categorised into three areas: the concept and framework for microfinance sustainability, determinants of sustainability, and the trade-off relations between outreach and sustainability.

4.2.1 THEORETICAL FRAMEWORK FOR MICROFINANCE SUSTAINABILITY

Poverty is explained partly by the absence of economic opportunities and microfinance is seen as a sustainable path towards providing viable economic alternatives. The importance of microfinance sustainability, therefore, goes beyond poverty reduction to cover the sustainable supply of microfinance services on a long-term basis (Balkenhol, 2007). However, various studies on microfinance interventions across the globe have reported mixed findings, sometimes controversial. The generalisation of the positive impacts of microfinance has not been universally accepted and concerns about mission drift have been expressed by some leading scholars (Morduch, 1998; Copestake et al., 2005). The general lack of depth of outreach of microfinance schemes has also been raised. The dynamic environments within which MFIs operate is characterised by economic shocks and adverse effects which compel them to seek financial sustainability for growth since donor funding cannot always be guaranteed.

For microfinance institutions to achieve their full potential, a growing literature posits that they must become financially sustainable (Brau & Woller, 2004). Rhyn and Otero (1992) discussed four levels of sustainability using the life cycle path to include: total grant dependent; borrowing at a concessionary interest rate to cover costs, being operationally self-sufficient, and attaining full financial sustainability. However,

Ledgerwood (1999) and Mayer (2002) emphasised that operational self-sufficiency (OSS) and financial self-sufficiency (FSS) should be used as measures of sustainability since MFIs dependence on subsidies cannot be considered sustainable.

Operational self-sufficiency (OSS) is defined as the ability of an MFI to continue operations indefinitely using own resources generated without seeking external support in the form of subsidies, grants and donations (Conning, 1999). OSS is the most widely used measure of financial performance, for two reasons: the institutional diversification that is currently taking place in the market and (ii) accounting practices which make it harder to use other measures (such as return on assets) as proxies for sustainability (Rosenberg, 2009). It measures the ability of managers to run organisations and to cover operating costs including the possibility of attracting funding. This measure of performance is more appropriate because donors may not be profit-oriented. However, it has been criticised for not depicting the real picture of the financial sustainability position of MFIs. For instance, operating incomes may be increasing but not sufficient enough to meet the costs of inflation and borrowing from commercial sources. Christen (1997) shows that in calculating OSS, only three items are considered: total operating income, total cash expenses, and total non-cash expenses. Thus, it does not take into account the cost of capital. However, in the determination of financial self-sufficiency (FSS), the cost of capital, as well as the cost of inflation, are key additional parameters that must be considered.

Financial self-sufficiency (FSS) is sometimes taken to mean financial profitability. An MFI is financially self-sufficient if true profits are generated well enough to maintain the values of resources after adjustments have been made for inflation and compensations for the risk of lending to the MFI. This means that the MFI is able to meet its financial obligations and operate without donor support. FSS has great value for MFI managers and investors see it as sufficient for good performance. It is at the apex of the sustainability performance framework and all institutions desire to attain this level of sustainability (Christen et al., 1995). However, only a few MFIs are able to reach FSS level. Also, MFIs need to keep good financial accounts and follow recognised accounting

practices with a high level of transparency. Computation is, therefore, more complex and most MFIs without the requisite qualified staff shy away from it.

Generally, sustainability is defined as “the ability of a program to continuously carry out activities and services in pursuit of its statutory objectives” (Rosenberg, Gonzalez, & Narain, 2009). In the context of MFIs, it involves generating sufficient profits to cover all expenses without dependence on any form of subsidy (Tucker & Miles, 2004). According to Khandker and Khalily (1996), it reflects the ability to deliver services continuously to rural populations as a development financial institution. Sustainability of an institution indicates permanency in the realisation of its intended goal and can be viewed at several levels: institutional (group and individual) which relate to organisational, managerial and financial aspects³⁰. Financial sustainability has become the central point of focus in microfinance analysis in recent times at the expense of client sustainability. However, the two goals need to be pursued since in the absence of sustainable clientele base, a microfinance institution is bound to fail. The issue of subsidy, therefore, is vital in expanding outreach but not on a sustainable basis. It thus features a trade-off between the poverty alleviation being pursued by donors and financial self-sufficiency.

The conceptual foundations of the ‘Sustainability paradigm’ stem from the failed traditional subsidised credit programmes of the 1960s and 1970s (Adams, Graham & Von Pischke, 1984; Robinson, 2001) due largely to institutional unviability (Gonzalez-Vega, 1994). These subsidised programmes were less successful both from the social impact and good governance viewpoints. This has been attributed to the subsidised interest rates, the high cost of making small loans to a larger number of borrowers, poor targeting (exclusion of the poor), high dependence on donor funds, widespread corruption, and high default rates. This diagnosis led to two main conclusions: (i) institutional sustainability is crucial for successful delivery of financial services to poor clients and (ii) financial self-sufficiency is a necessary condition for the long-term survival of institutions. The way forward among stakeholders in the microfinance industry is to focus more on sustainability and efficient institutional building.

³⁰ Sa-Dhan Microfinance Resources Centre, 2003, Sustainability of microfinance interventions, Perspective Paper No.4, Sa-Dhan, pp. 1-20.

The importance of MFIs to achieve financial sustainability has been highlighted by various authors. Hollis and Sweetman (1998) note that financial sustainability is integral to institutional sustainability. Schreiner (2000) argues that unsustainable MFIs cannot support the poor in future because they would cease to exist. Nyamsogoro (2010) notes that the absence of MFIs is much better than having unsustainable ones. Extra efforts are needed for MFIs to attain sustainability for two reasons: (i) to qualify the institutions to borrow from external sources (capital markets and banks) to augment their operations (Gibbons & Meehan, 1999) and (ii) to enable them to achieve the poverty alleviation goal being pursued in the long-run (Otero, 1999). However, Morduch (1999b) calls for more quantitative empirical research into MFIs' performance, asserting that most of the earlier studies on MFIs performance have been constrained by inadequate and unreliable data at the firm level. Zeller and Meyer (2002) noted that sustainable MFIs follow demand-oriented approaches, provide better products and increase their efficiency with cost reducing information systems and new lending technologies which will, in turn, increase impact on poverty reduction. Using a poverty outreach index, Paxton (2003) found that sufficiently large self-reliant MFIs may hold the promise of reaching the largest number of poor.

Sustainability remains a key area of debate in the microfinance literature (Robinson, 2001). There are two schools of thought regarding sustainability and outreach in the microfinance literature. The two theories differ on the vehicles, the technology, and the performance assessment methodology used to provide financial services (Bhatt & Tang, 2001). The first is the 'Welfarists' also known as the "the poverty camp", which propagates the dominance of the outreach goal and places relatively greater weight on depth of outreach³¹ relative to breadth of outreach with social metrics as determinants of institutional success (Hashemi & Rosenberg, 2006; Montgomery & Weiss, 2005; Woller, 2002; Morduch, 2000; Dichter, 1997; Hulme & Mosley, 1996). Proponents of this viewpoint argue that MFIs can use donations from social investors in the form of equity to achieve sustainability without being financially self-sufficient. MFIs, therefore, should

³¹ Depth of outreach refers to serving the very poorest of clients, while breadth of outreach refers to serving large number of clients, even if they are only marginally poor or non-poor.

focus on providing financial services to the poorest households rather than striving to reach financially self-sustainable levels through higher interest rates and other fees levied on the poor which will likely worsen outreach to poor clients. The Welfarists view the microfinance landscape as having both profit-seeking and social mission entities that target different markets with different funding sources with variable levels of commitment to social and financial returns. They focus on using credit to help overcome poverty by providing credit with subsidised interest rates.

The second school of thought is the “Institutionists” or “the sustainability camp”, which emphasises the importance of sustainability and efficiency (Otero & Rhyne, 1994; Christen et al., 1995; Rhyne, 1998; Christen, 2001; Bhatt & Tang, 2001; Robinson, 2001; Isern & Porteous, 2006). Proponents of this theory hold the view that this approach is the only viable way to serve a large number of borrowers, leading to the great breadth of outreach. Rhyne and Otero (1992) and Otero and Rhyne (1994) have argued that to achieve significant outreach, sustainability of MFIs is a prerequisite. Industry commercialisation is therefore seen as the main route through which MFIs can deliver the needed products and services to poor clients over a long period of time and also expand operations to cover new clients in different locations. They emphasise the importance of MFIs to be able to cover their costs of lending money out of the income generated from the loan portfolio and to reduce operational costs. Proponents argue that large-scale outreach to the poor on a long-term basis cannot be guaranteed if MFIs are not financially sustainable. Both sides provide anecdotal evidence to support their views. Nonetheless, under certain conditions, sustainability and outreach may be compatible (Morduch, 2005; Annim, 2010). It is important to state that both groups ultimately want to maximise social impact even though they differ on who to target and how to achieve the goal.

4.2.2 DETERMINANTS OF SUSTAINABILITY

Several factors influence the sustainability of MFIs. Broadly, the macroeconomic environment and the management structure of the institutions can greatly influence their level of sustainability. The financial spread of MFIs depends on their viability and sustainability. To be able to supply services on a sustainable basis, MFIs must maintain

high repayment rates. Failure to do so can affect organisational efficiency. Minimisation of administrative expenses is vital for MFIs sustainability. Well managed MFIs that adhere to optimal lending practices should be able to maintain an administrative expense to transaction cost ratio of between 15 to 25 percent (Christen, 1997). Personnel expenses constitute the bulk of administrative costs and they range between 50 to 70 percent of the total amount of MFIs administrative expenses (Gibbon & Meehan, 1999).

Hollis and Sweetman (1998) compared six microcredit organisations in 19th Century Europe to identify institutional designs that were a prerequisite for financial sustainability. They found that organisations that derived their funding from deposits were more reliable than those which depended on charitable sources which tended to be more fragile and without focus. Hollis and Sweetman (2001) further show that MFIs were financially sustainable for decades due to their adaption to the local economic and social environment. Mosley and Hulme (1998) relate the design features of 13 MFIs to the institutions' social impact and argued that more sustainable institutions may have a higher impact. Moreover, Bogan (2012) found that an increased use of grants by large MFIs decreases their level of operational self-sufficiency. The size of MFIs assets and the capital structure are associated with performance. Only MFIs with total assets of US\$1.3 million were included in the study.

Ayayi and Sena (2010) examined the key drivers of microfinance sustainability using data from 101 countries for the period 1998-2006. They reported that portfolio quality, higher interest rates, and prudent management are critical enablers of MFIs' financial sustainability. Similarly, Tehelu (2013) found loan intensity and loan size to be significant positive determinants of financial sustainability in East Africa. However, management inefficiency and portfolio at risk had negative impacts on sustainability. The breadth of outreach and deposit mobilisation are not important determinants of financial sustainability. However, the study did not look at the determinants of credit risk and lending behaviour since these variables are the main determinants of financial sustainability. Previously, Cull et al. (2007) in their study on sustainability and outreach trade-offs posit that MFIs that offer individual-based loans are more profitable than

institutions that provide group-based loans. This suggests that the type of loan influences the profitability and sustainability of MFIs.

De Crombrughe, Tenikue, and Sureda (2008) analysed the determinants of self-sustainability using a sample of MFIs in India. The authors investigated three aspects of sustainability: cost coverage by revenue, repayment of loans, and cost control using data for the period 2004-2005 using regression analysis. The study concluded that MFIs can cover costs on small and partly uncollateralised loans without necessarily increasing the loan size or raise the monitoring cost. They suggested that better targeting of interest rate policy could improve the financial performance of MFIs. Hartarska and Nadolnyak (2007) found a positive significant impact of size and capital ratio on the operational self-sufficiency of MFIs.

Hassan et al. (2009) used Subsidy Dependent Index (SDI), Subsidy Dependent Ratio (SDR) and efficiency techniques to study the financial sustainability of the Bangladesh Unemployed Rehabilitation Organisation (BURO), a microfinance institution. The study found that while BURO achieved financial sustainability from 2001 to 2005, there was a reverse trend between 2006 and 2007. Using SDI to determine financial sustainability has some drawbacks due to the implicit assumption that a rise in interest rate will result in higher profits. Studies, however, show that higher interest rates could lead to a decline in profitability due to adverse selection and moral hazard effects (Morduch, 1999a; Cull et al., 2007).

Firm level variables play a critical role in the financial performance of institutions. Several studies on the determinants of sustainability of MFIs have reported a positive and significant relationship between firm size and MFIs sustainability (Mersland & Strom, 2007; Bogan, 2008; Cull et al, 2009b; Nyamsogoro, 2010). This is a reflection of the cost advantages associated with size (economies of scale). Kimando, Kihoro, and Njogu (2012) analysed the factors influencing the sustainability of MFIs in Muranga Municipality in Kenya using primary data collected from 15 MFIs. The study found that financial regulation, the number of clients served, financial coverage, and volume of credit transacted were the factors that affected the sustainability of MFIs. However, the sample size for the study was small (45 respondents) and the analysis done was not very

rigorous. Commercial banks which are now actively engaged in delivering microfinance services were excluded from this study.

Furthermore, the level of competition in an industry is said to impact on financial performance of MFIs. A number of empirical studies have looked at competition and performance with mixed findings. Theoretical analyses have shown that competition has a negative impact on the financial performance of MFIs and that competition leads to poorer borrowers dropping out of the market. Theoretically, intense competition results in a drop in interest rates and dynamic incentives³², which reduces profitability and cross-subsidisation. Hoff and Stiglitz (1998) observed that the presence of numerous MFIs in a market often leads to multiple borrowing by clients and hence higher default rates. Similarly, Patten et al. (2001) compared the performance of the microfinance institution Bank Rakyat Indonesia (BRI) to formal banks in the country during the East Asian financial crises (Asian contagion). They found that the performance of BRI was superior to the formal banking sector in terms of loan repayment and savings rates of members. Repayment performance of institutions thus affects the financial performance and viability of institutions. However, McIntosh, de Janvry and Sadoulet (2005) used MFIs data in Uganda from 1998-2002 to examine how competition affects the behaviour of borrowers of incumbent village bank. The authors reported that competition does not have a significant impact on the breadth of outreach of MFIs.

Additionally, interest rate, which is sometimes linked to competition in the marketplace, affects sustainability efforts by institutions. According to Morduch (2000), higher interest rates result from the inelastic demand for credit particularly among populations that previously experienced credit rationing. Raising interest rates have also been found to be associated with individual-based lenders who enjoy improved financial performances. Stiglitz and Weiss, (1981) argue that this can undermine the portfolio quality of institutions due to adverse selection and moral hazard. The available evidence shows that for individual-based lending, portfolio at risk rises with interest rates.

³² Factors that motivate borrowers to repay their loans so that they can have access to future loans and larger loans. Example: getting larger loan following prompt repayment of an initial loan taken.

The interest rate debate revolves around two key factors: morality and financial logic. The financial logic of MFIs covering all their operating costs with a margin to remain sustainable is what underpins the setting up of higher interest rates. From the perspective of the service providers, a higher interest rate is necessary for long-term sustainability of their operations and quality service delivery to clients. Accelassato (2006) notes that in West Africa, MFIs that are financially sustainable had to apply interest rates of 84 percent, relative to between 35 and 60 percent charged in Indonesia. Exorbitant interest rates charged can result in MFIs losing their clients, thus undermining their social mission. Cull, Dermiguc-Kunt and Morduch (2007) provided supportive empirical evidence to this in their study of MFIs granting individual loans. They found that interests applied on loans beyond 60 percent led to decreases in credit demand, which made the MFIs unprofitable. It has been argued that high-interest rates also erode surpluses generated by borrowers, leaving them with little net gains. Low uptake and demand for financial services have also been linked to higher interest rates. According to Dehejia, Montgomery and Morduch (2012), high-interest rates can undermine ‘the original intentions of the push for microfinance’. On the other hand, too low interest rates could cause financial distress and lead to bankruptcy.

The type of lending methodology employed also affects the sustainability level of institutions due to the direct effects on the portfolio quality. Group-lending with joint liability, peer monitoring by members, and the application of social sanctions have been found to be effective ways of minimising loan defaults and enhancing the sustainability of MFIs. Group loans have a positive impact on the quality of the credit portfolio of MFIs (Cull et al., 2007). Gibbons and Meehan (1999) maintain that the portfolio at risk rather than the loan repayment rate must be controlled in order to improve the quality of the loan portfolio. Nonetheless, the role of management remains another driving force. Good financial management is a prerequisite for the attainment of both financial and client sustainability. The use of new information technology can thus reduce the cost of granting loans, increase the productivity of loan officers and enhance financial sustainability of MFIs. Financial and dynamic incentives for staff also drive the sustainability of the institution as they deliver their best. Emphasis on client relations and

loyalty, adoption of management structures and the incorporation of best practices are vital in sustaining MFIs (Churchill, 2000; Schreiner 2000).

4.2.3 TRADE-OFF BETWEEN SUSTAINABILITY AND OUTREACH

The social mission of MFIs which underlies their emergence is poverty reduction among the ever growing population. Recent dynamics in microfinance markets have however shifted the emphasis from poverty alleviation to economic objectives which are seen as vital for globalisation and comparative advantage for the institutions. Most MFIs are seeking financial sustainability for growth and this involves generating sufficient profits to cover their expenses while eliminating all forms of subsidies (Tucker & Miles, 2004). The implications for financial self-sufficiency on the depth of outreach have received attention in the microfinance literature since Morduch published his article on the ‘microfinance schism’ in 2000. The publication took into consideration the two competing perceptions from the welfarists and institutionists on MFIs outreach and sustainability. Nonetheless, few MFIs have been able to achieve financial self-sufficiency levels. Montgomery and Weiss (2011), using household data from rural Pakistan found that commercially oriented MFIs can meet a double bottom line goal of simultaneously pursuing profits and a social mission.

The trade-off between outreach and sustainability stems from the high transaction cost involved in making small loans to poor clients, particularly in remote and inaccessible locations. The general absence or lack of collateral by poor people to help mitigate risk does not help in forecasting ex-ante positive repayment rates. The literature on trade-off is not extensive in the microfinance field and is largely anecdotal. Empirical evidence on whether outreach focus complements institutional sustainability has presented mixed findings. Though most studies have found and reported a trade-off between outreach and sustainability, others observed the absence of a trade-off. Several studies provide evidence of a trade-off between financial performance and outreach to the poor (Crawford, Skully, & Tripe, 2011; Hermes et al., 2011; Galema & Lensink, 2009; Cull et al., 2007; Adongo & Stork, 2006). In this regard, MFIs that perform well financially do

so at the expense of their outreach to the poor. Conversely, other studies have reported a positive relationship between profitability and sustainability with outreach to the poor, hence the absence of a trade-off (Adhikary & Papachristou, 2014; Makombe, Temba, & Kihombo, 2005; Brau & Woller, 2004; Schreiner, 2000).

However, in the microfinance literature, the nature, extent, size and implications of trade-offs remain contentious. Few rigorous studies have been carried out in these areas, and the majority of them come from regions outside Africa. Cull et al. (2007) found evidence of a trade-off between sustainability and outreach and laid emphasis on the role of institutional designs in determining the existence and size of such trade-offs. Cull et al. (2009b) show that serving the poor could be profitable but that higher fees imposed do not necessarily translate into profits and that it is not cost effective serving better-off clients. Their study, however, did not incorporate country fixed effects (time-invariant cross-country differences) into the analysis. Similarly, Hermes et al. (2011) reported a trade-off between sustainability and outreach using cost efficiency as a measure of sustainability. Outreach was found to be negatively related to MFI efficiency.

Galema and Lensink (2009) explored the size of the trade-off using a sample of 25 MFIs to estimate the extent to which social investors are willing to accept a decrease in returns to achieve higher outreach. Their results show that the trade-off is not large for an average loan of 180 US\$ or more, but rather for average loans below this level, suggesting a severe trade-off around the lower end of the poverty distribution. Bystrom (2007) observed that commercially viable micro-lending could be an interesting alternative for private investors who want to alleviate poverty. Adhikary and Papachristou (2014) empirically examined the trade-off between financial performance and outreach in a panel of 133 South Asian MFIs from 2003 to 2009 using random effects modelling and Generalised Method of Moment estimation. The study found that depth of outreach is positively related to financial performance, implying that a financially sustainable microfinance expansion can achieve social goals at an acceptable credit risk level. Similarly, Quayes (2012) found a positive complementary relationship between financial sustainability and depth of outreach in his study of 72 MFIs across 82 countries.

Nawaz (2010) explored the determinants of MFI profitability and sustainability using a panel data of 179 MFIs globally. The evidence does not support the trade-off between outreach and sustainability, however, the trade-off between costs and sustainability was noted. Zerai and Rani (2011) reached a similar conclusion of no trade-off in their study of outreach to the poor and financial sustainability for 85 Indian MFIs using a correlation matrix.

Few empirical studies in SSA have analysed the sustainability outreach trade-off. Makame and Murinde (2006) in their study of 33 MFIs in East African found strong evidence of a trade-off between outreach and sustainability. Similarly, for the same region, Kipsha and Zhang (2013) found that negative impacts of profitability focus on outreach to the poor while outreach was positively related to both sustainability and profitability. Annim (2012) tested the hypothesis that MFIs using their own funds and concentrating their efforts on achieving financial sustainability often results in mission drift. Using data on 2691 MFI clients and non-clients in Ghana, and applying regression analysis, the study reported that only MFIs that were operationally self-sufficient were reaching poorer clients. Formal institutions that relied on their own funds were found to actually target non-poor clients, suggesting complementarity in development efforts regardless of the source of funds.

4.3 EMPIRICAL MODELS AND SPECIFICATIONS

This section presents the theoretical and empirical estimation of the fixed effects model, testing of the variables, and the estimation procedures followed. Detailed variable description and the results obtained from the fixed effects estimation are presented and discussed.

4.3.1 MODEL SPECIFICATION, TESTING, AND ESTIMATION

The Fixed Effects (FE) and Random Effects (RE) models are the most widely applied models for panel data analysis (Green, 2005). The FE model is employed in this chapter

for the analysis of unbalanced panel data³³ for the period 2003-2013. Also, the FE approach accounts for all unobserved firm-specific residual variation in performance, thus, averting potential bias resulting from omitted variables (Stock & Watson, 2007). The main differences between the FE and RE models is summarised in Table 4.1.

Table 4.1: Differences Between Fixed Effects and Random Effects Models

	Fixed Effects (FE) model	Random Effects (RE) Model
Functional form	$y_{it} = (\alpha + u_i) + X'_{it}\beta + v_{it}$	$y_{it} = \alpha + X'_{it}\beta + (u_i + v_{it})$
Assumptions	No assumptions	Individual effects are uncorrelated with regressors
Intercept	Varying across group and/or time	Constant
Error variances	Constant	Randomly distributed across group and/or time
Estimation	LSDV, within effect estimation	GLS, FGLS (EGLS)
Hypothesis test	F- test	Breuch-Pagan LM test

Source: Adapted from Park (2011: 8)

Various diagnostic tests were performed prior to estimation and these informed the choice for the model. For the purpose of testing and estimation, a stationarity test was first conducted using the Fisher test. This test is based on a test statistic for a unit root in each MFI combined with the probability value (*p-value*). The test is based on the assumption that all series are non-stationary under the null hypothesis as against the alternative hypothesis, that all series are stationary (Greene, 2008). Maddala and Wu (1999) contend that this test performs better than other tests for panel unit roots and has the additional advantage of accommodating unbalanced panels, which most tests do not. The test results were significant (null hypothesis rejected) paving way for the model to be estimated. Next, multicollinearity was checked by performing the Variance Inflation Factor (VIF) test on each independent variable; the results showed the absence of multicollinearity.

Another central issue that needed to be addressed was the choice of model for the estimation. Clearly, the choice lies between the fixed effects (FE) and Random Effects

³³ Data that have different time period observations across the same firms (MFIs)

(RE) model; the Hausman (1978) test was employed. The null hypothesis underlying the Hausman test is that the FE model and RE model do not differ substantially. The test statistic has an asymptotic chi-square distribution with degrees of freedom equal to the number of regressors in the model. The FE model assumes that the V_i s are fixed parameters to be estimated. Both the dependent and independent variables were transformed and OLS applied to the transformed data to obtain the estimates. The model can control for all time-invariant variables, but it cannot estimate them directly. According to Baltagi (2008), the within transformation of the equation helps to get rid of the fixed effects. Gujarati (2004) notes that the ‘fixed effects’ is due to the fact that each MFI intercept although different from the intercept of the other MFIs, is time-invariant.

Under the RE model, the assumption is that the intercept values for each individual MFI are random drawings from a much larger population of individual firms; estimation is done using the generalised least squares (GLS) method. GLS uses cross-sectional weights for every observed MFI and the true variance components to produce a matrix weighted average for the within and between which is obtained by regressing the cross-sectional averages across time estimators (Greene, 2008, 2010; Baltagi, 2008). Unlike the FE model, the RE model can estimate coefficients of time-invariant variables explicitly introduced into the model.

The Hausman test is implemented by first estimating the FE model, save the coefficients, estimating the RE model and then comparing the coefficients of the two models. If the value of the Hausman test is larger than the critical chi-square, then the FE estimator is the appropriate choice (Hausman, 1978). Table 4.2 presents the Hausman test results which provide strong evidence that the model specification for this analysis follows the FE model. The F-statistic is significant at the 1 percent level ($F(67,542) = 10.48$). The FE approach is further reinforced by the absence of significant heteroscedasticity in the residuals of the estimated model. Therefore, the two estimates do not differ systematically under the null hypothesis, as the *p-values* in Table 4.1 shows. This means that the coefficients from the two estimations are not statistically different; hence the RE model is rejected in favour of the FE model. To avoid biased results, the restrictions imposed by the FE model on parameter estimates were tested.

Finally, to help develop robust empirical results, sensitivity tests were performed. If the coefficients are not sensitive to the inclusion of additional variables then the variables of interest can robustly affect the dependent variable. The same linear models were estimated with and without additional firm-specific variables. The joint impacts of the added variables were assessed through improvements in the overall explanatory power of the model. Only the robust results of the empirical models are presented here.

Table 4.2: Hausman Specification Test for FE and RE models

Variable	coefficients		
	Fixed Effects (b)	Random Effects (B)	Difference (b-B)
Portfolio at risk (PAR)	-0.0530778	-0.0522673	-0.0008105
Average loan size (ALS)	0.0539795	0.0285571	0.0254224
Gross loan portfolio (GLP)	0.057431	0.0621998	-0.0047688
Yield on gross loan portfolio (YLD)	0.0308524	0.0319317	-0.0010793
Cost per borrower (CPB)	-0.0144162	-0.0229868	0.0085706
Operating expense to assets ratio (OEA)	-0.0436566	-0.0475004	0.0038438
Debt equity ratio (DER)	0.0003692	0.0003822	-0.000013
Age of institution (AGE)	0.1252723	0.0458104	0.0512056
Governance effectiveness (GOE)	0.0362718	0.030814	0.0054578

Source: Estimation

Note Test: Ho: difference in coefficients not systematic. $\chi^2(9) = (b-B)'[(V_b - V_B)^{-1}](b-B) = 27.67$. Prob>chi2 = 0.0005

4.3.2 THEORETICAL AND EMPIRICAL MODELS

Theoretically, Mundlak (1961) and Wallace and Hussain (1969) were the earlier proponents of the fixed effects (FE) model. The model allows for the endogeneity of all the regressors with individual effects and has been applied in most empirical studies with satisfactory results. The method is useful when controlling for variables that are fixed over time (Brooks, 2008) with a large number of observations and the dataset used for the analysis fits well into this. Since the FE approach requires within transformations it has the potential to suffer from a degree of freedom problems. The model fitness is usually

done through the F-test. The test compares the fixed effects model with OLS to see how much the fixed effect can improve the goodness-of-fit.

The general form of the theoretical fixed effects model used is specified in equation 4.1.

$$y_{it} = (\alpha + u_i) + \beta X_{it} + v_{it} \quad (4.1)$$

Where y_{it} is the dependent variable, α is the intercept term, β is a $(k \times 1)$ the vector of parameters to be estimated on the explanatory variables, and X_{it} is a $(1 \times k)$ vector of observations on the explanatory variables, $t = 1, 2, \dots, T$; $i = 1, 2, \dots, N$; and k represents the number of slope parameters to be estimated. u_i is the unobservable individual-specific effects and v_{it} is the unexplained portion of y_{it} . The trade-off between sustainability and outreach was established using correlation analysis. All variables were taken in logs. Two empirical models were estimated using operational self-sufficiency (OSS) and return on assets (ROA) as dependent variables for sustainability as captured in equations 4.2 and 4.3.

$$\begin{aligned} \ln OSS_{it} = & \alpha_0 + \alpha_1 \ln DER_{it} + \alpha_2 \ln GLP_{it} + \alpha_3 \ln GOE_{it} + \alpha_4 \ln ALS_{it} + \alpha_5 \ln YLD_{it} + \\ & \alpha_6 \ln PAR_{it} + \alpha_7 \ln NAB_{it} + \alpha_8 \ln OEA_{it} + \alpha_9 \ln CPB_{it} + \\ & \alpha_{10} \ln AGE_{it} + u_{it} \end{aligned} \quad (4.2)$$

$$\begin{aligned} \ln ROA_{it} = & \beta_0 + \beta_1 \ln DER_{it} + \beta_2 \ln GLP_{it} + \beta_3 \ln GOE_{it} + \beta_4 \ln ALS_{it} + \beta_5 \ln YLD_{it} + \\ & \beta_6 \ln PAR_{it} + \beta_7 \ln NAB_{it} + \beta_8 \ln OEA_{it} + \beta_9 \ln CPB_{it} + \\ & \beta_{10} \ln AGE_{it} + u_{it} \end{aligned} \quad (4.3)$$

where α_0 and β_0 are the intercepts, and α_1 to α_{10} and β_1 to β_{10} are the coefficients of the parameters to be estimated, u_{it} is the error term which is assumed to be normally distributed, $u_{it} \sim iid(0, \sigma^2)$. Estimation of the above equations was done using the Stata version 14 software programme.

4.3.3 DESCRIPTION OF VARIABLES AND PREDICTED SIGNS

Two main variables have been used to proxy MFI sustainability in this study: operational self-sufficiency (OSS) and returns on assets (ROA). Operational self-sustainability (OSS) is the most commonly used indicator for measuring sustainability despite its criticism of being less rigorous. It is a standard measure of sustainability and is preferred to other indicators (such as the SDI and FSS) because it is relatively easier to compute. The SDI and FSS, though superior measures for sustainability are used less for the reason that they are too complex and getting available data on them is a challenge at the level of most MFIs. Hence the choice for OSS in this study. The study used return on asset (ROA) as the second dependent variable for sustainability to help determine which of the two variables best explains MFIs sustainability in SSA. ROA is a standard industry measure of profitability and sustainability. It is computed based on standard accounting practices and requires that accurate records are kept. This poses a challenge to MFIs especially the smaller ones which do not have the necessary accounting personnel. This, therefore, places a limit on its application in the microfinance sector. Nonetheless, sustainable MFIs should be generating positive returns which will likely impact on MFIs' sustainability and efficiency.

A number of independent variables have been incorporated into these models based on literature review. The variables used, their measurements, and predicted sign on sustainability are summarised in Table 4.3. Portfolio at risk (PAR) is defined as the risk of not recovering loans from clients after a due date has elapsed by 30 days. It is included to measure the credit risk position of MFIs and to evaluate the performance of management in their loan recovery efforts. Higher estimates of PAR would mean that MFIs are unable to recover loans granted to clients. This surely will have an adverse impact on the loan portfolios of MFIs and their ability to grant future loans to clients. Previous studies on microfinance sustainability have included this variable, with valuable results. A negative relationship is anticipated between PAR and the two measures of sustainability.

The average loan size as a percentage of per capita GNI (ALS) is included as a proxy for depth of outreach. Most studies have used average loan size as a proxy for mission drift

(Serrano-Cinca & Gutierrez-Nieto, 2014; Mersland & Strom, 2010; Hermes et al., 2011; Cull et al., 2007). One reliable way to judge mission drift is to look at areas where MFIs open new branches (Rosenberg, 2009).

Table 4.3: Summary of Variables, Measurements and Expected Sign on Sustainability

Variable	Measurement	Expected Sign	Data Source and period
<i>Dependent variables</i>			
Operational self-sufficiency (OSS)	Total operating financial income/ Fixed cost + total operating cost + loan loss provision	indeterminate	The MIX 2003-2013
Return on assets (ROA)	Adjusted net operating income, net of taxes / Adjusted average total assets	positive	
<i>Independent variables</i>			
Portfolio at risk (PAR)	Outstanding balance, portfolio > 30 days + renegotiated portfolio/ Adjusted gross loan portfolio.	negative	The MIX 2003-2013 Micro Banking Bulletin, 2005
Average loan size (ALS)	Average loan balance per borrower/GNI per capita	indeterminate	
Number of active borrowers (NAB)	(Total active borrowers/country’s total population)*1000	positive	
Gross loan portfolio (GLP)	Gross loan portfolio, adjusted for standardized write-offs	positive	
Yield on gross loan portfolio (YLD)	Adjusted financial revenue from loan portfolio/ Adjusted average gross loan portfolio	positive	
Cost per borrower (CPB)	Operating expenses/Average number of borrowers	negative	MIX market 2003 - 2013
Operating expense to assets ratio (OEA)	Adjusted operating expense / Adjusted average gross loan portfolio	negative	
Debt to equity ratio (DER)	Adjusted total liabilities/ Adjusted total equity	indeterminate	
Age of MFI (AGE)	Number of complete years of MFI service delivery to clients	positive	
Government effectiveness (GOE)	Measure of the competence and the quality of public service delivery	positive	Heritage foundation

Source: Based on Review of Literature

This suggests that the loan size granted to clients could be valuable information to support proper targeting of clients to ensure sustainability. Evidence shows that MFIs often give larger loan sizes to poor customers with good credit repayment records (thus,

they graduate such clients into a middle class of borrowers). Smaller size loans with shorter repayment periods have been found to favour the poor. However, higher costs are involved in issuing small loans due to screening, monitoring, and administration (Lupenu & Zeller, 2001; Hulme & Mosley, 1996). This study, therefore, includes average loan size to assess its impact on MFIs' sustainability. A negative relation is expected with sustainability.

Another closely related outreach variable included in Table 4.3 is the number of active borrowers (NAB). This variable is assumed to have positive impacts on MFIs sustainability as it shows the clientele base reached by these institutions. MFIs with wider outreach coverage are likely to enjoy economies of scale in their operations and therefore are more likely to be sustainable than those with a fewer outreach. The number of active borrowers (NAB) is included to assess the impact of MFIs' decisions to extend microfinance products and services to a large number of poor clients (breadth of outreach) on their sustainability drive. This is very important since it reflects the dual goal of microfinance.

Furthermore, to achieve the needed scale sustainably, MFIs are required to have a larger portfolio which is well managed. Gross loan portfolio (GLP) is included to capture the real impacts of MFI loan portfolios on their sustainability. The loan portfolio is the biggest asset of any MFI and the way it is deployed and managed has implications for sustainability. A larger loan portfolio size is likely to have greater impacts on the number of clients served by MFIs. Hence, greater profitability and sustainability levels are likely to emerge due to scale economies in operations. A positive relationship is therefore anticipated.

The yield on gross loan portfolio (YLD) is a proxy measure for interest rates charged by MFIs to clients and some previous studies on sustainability have also utilised it (Kipsha & Zhang, 2013). From the perspective of the institutionist, interest rates are necessary for MFIs to cover their costs of operations and provide diverse products and services needed by clients on a sustained base. On the other hand, an argument that the poor cannot afford market rates of interest which often comes along with MFIs struggling to pursue their

sustainability goal also exists. Nonetheless, the expectation is that interest rates should increase with sustainability.

Also, included in Table 4.3 as an independent variable is the cost per borrower (CPB). This is a cost side variable included in this study to capture the management efficiency level of MFIs operations. Good cost management is a necessary ingredient for sustainability. A well-managed MFI should produce loans at a lower cost and keep other operating costs to the barest minimum. Hence, cost per borrower (CPB) is anticipated to decline with sustainability. Another cost side variable included is the operating expenses to assets ratio (OEA). High operating costs have the tendency to crowd out MFIs serving poorer clients and hence impact on their sustainability. Dealing with higher administrative costs faced by MFIs remains a major challenge in the microfinance sector (Hulme & Mosley, 1996). Aleem (1990) reported that for each dollar lent, about half a dollar is spent in operating costs. Similarly, Gonzalez (2007) found that operational costs represent about 62 percent of charges made to borrowers by MFIs and calls for a reversal of this trend. The expectation is that a rising operating expenses to assets ratio (OEA) should relate negatively with sustainability.

In addition, the debt-to-equity ratio (DER) is a good indicator in assessing the extent of utilisation of commercial funds by MFIs and is included to capture the influence of MFIs' capital structure on their sustainability. The availability and use of debts by MFIs help to expand their capital base and outreach. Debts also propel MFIs to move towards achieving sustainability and efficiency. The increased use of debts, however, often results in higher financing costs and lower investments in gross loan portfolio (Esperance et al., 2003). Hence, we expect DER to relate negatively to MFIs' sustainability performance.

The age of MFIs (AGE) is an institutional specific characteristic variable which is included to evaluate the learning curve effects of MFIs on their sustainability. Older MFIs are assumed to have gathered a lot of experience along the way in their growth path as they adopt trial and error approaches in the implementation process. Experience matters because it helps in shaping the planning and growth paths of institutions through programme reviews. Age is therefore expected to have a positive impact on MFIs sustainability.

Governance effectiveness (GOE) is a complementary business environment measure drawn from the heritage foundation. Good governance is reflected in the functioning of institutions as well as the creation of the necessary investment climate for MFIs to thrive. Well-functioning institutions can ensure proper enforcement of contracts, property rights and attract investments. This will likely create positive impacts on the microfinance sector and contribute to the sustainability of MFIs. This variable is included to capture the likely influences of the business environment within which MFIs operate on the sustainability level of these institutions. Previous studies have used it (Mariu 2011; Nyamsogoro, 2010) and a positive relationship is expected with sustainability.

4.4 EMPIRICAL RESULTS AND DISCUSSIONS

This section present results of both correlation and regression analysis. The first part examines some basic descriptive statistics obtained from the data. This is followed by the results of the correlation and regression analysis.

4.4.1 TRADE-OFF RELATIONS BETWEEN MICROFINANCE INSTITUTIONS' OUTREACH AND SUSTAINABILITY

Table 4.4: Partial Correlation Results of Outreach and Sustainability

A Outreach				B Sustainability		
	ALS	NAB	PFB		OSS	ROA
Variable	Corr	Corr	Corr	Variable	Corr	Corr
ROA	-0.0992	0.0409	-0.1680***	NAB	-0.0180	0.0122
PAR	0.1319***	-0.2945***	-0.0899**	ALS	-0.0376	-0.1180***
CAR	-0.0577	-0.0164	0.0803**	PFB	0.0327	-0.1966***
ROE	0.0209	-0.0092	0.0422	PAR	-0.1858***	0.0090
YLD	-0.0713**	-0.0560	0.0587	CAR	0.0160	0.0654
GLP	0.2882***	0.5531***	-0.0369	ROE	0.0712**	0.1300***
OEA	-0.1205***	-0.0233	0.2011***	YLD	0.0520	0.0475
OSS	-0.0564	0.0070	0.0126	GLP	0.2363 ***	-0.0245
				OEA	-0.1699 ***	0.0621

Source: Estimation

Significance level: ***, <0.01, **, <0.05, *, < 0.10

Table 4.4 reports the partial correlation results of 71 MFIs with 620 observations. Section A presents correlation results for outreach while section B focuses on sustainability. Section A of Table 4.4 show that a negative correlation exists between return on assets (ROA) and depth of outreach (ALS). This means that MFIs' returns on investments do not necessarily contribute to deeper outreach. A positive significant correlation is found between PAR and depth of outreach (ALS). This means that poor management of MFI loan portfolios hinders their outreach to relatively poor clients. This suggests that timely recovery of loans could augment outreach to relatively poor clients. Furthermore, the interest rate on loans (YLD) and operating expense to assets ratio (OEA) are significant and negatively related to the depth of outreach. This means that raising interest rates lead to exclusion of the relatively poor. At the same time, increases in the operating costs of MFIs affect the depth of outreach. This highlights the cost implications involved in serving poorer clients, as raised in previous studies (Conning, 1999; Lapenu & Zeller, 2001) with implications on MFIs outreach performance. A positive and significant correlation is found between GLP and depth of outreach (ALS). This means that improvements in the loan portfolio can have tremendous impacts on the depth of outreach. Finally, a negative correlation is found between operational self-sufficiency (OSS) and depth of outreach (ALS) (-0.0564) but is not statistically significant. This suggests the absence of a trade-off between depth of outreach and sustainability. This result, therefore, does not confirm the concerns over mission drift which have been expressed.

Various results also emerged in analysing the breadth of outreach of MFIs. A significantly negative correlation is found between portfolio at risk (PAR) and the breadth of outreach. Intuitively, improvements in MFI loan recovery will enhance their outreach to poorer segments. This means that a trade-off exists between credit risk and the ability of MFIs to extend microfinance services to a large number of clients. The results are robust and consistent when viewed from the general wider outreach (NAB) and that focused on women (PFB). Gross loan portfolio (GLP) significantly and positively drives MFIs' breadth of outreach (NAB). Furthermore, return on assets (ROA) is found to have a significant negative correlation with outreach to females (PFB). This suggests that improvements in MFIs' profitability do not impact on their outreach to female clients.

However, a positive correlation is found between capital assets ratio (CAR) and breadth of outreach to females (PFP) and is statistically significant. This means that the capital structure of MFIs has positive effects on their outreach performance to females. A significantly positive correlation is found between operating expenses to assets ratio (OEA) and the MFIs' breadth of outreach to females (PFB). This means that serving female borrowers is inefficient.

Section B of Table 4.4 shows that a negative correlation exists between the depth of outreach (ALS) and sustainability (OSS) (-0.0376) but is not statistically significant. This means that there is no trade-off between outreach and sustainability of MFIs in SSA. Similarly, a negative insignificant relation is found between the breadth of outreach (NAB) and sustainability. This means that the outreach efforts by MFIs do not improve the operational sustainability of the institutions. Portfolio at risk (PAR) is negatively correlated with sustainability and is significant. This suggests that credit risk management greatly impacts on MFIs' sustainability. A trade-off, therefore, exists between portfolio at risk and the operational sustainability of MFIs.

Furthermore, a positive correlation exists between return on equity (ROE) and sustainability and is statistically significant. This means that MFIs equity is important in the attaining of operational sustainability levels. Similarly, a positive correlation is found between yield on the gross loan portfolio and operational sustainability though not statistically significant. Concerns about higher interest rates being charged to clients cannot be confirmed by this result. Moreover, a significant positive correlation is found between gross loan portfolio (GLP) and operational sustainability of MFIs. This means that efficient management of the loan portfolio is critical for MFI sustainability. Finally, a significantly negative correlation exists between operating expenses to assets ratio (OEA) and MFIs sustainability. This suggests that higher operating costs by MFIs affect their operational sustainability.

In addition, using returns on Assets (ROA) as an alternative indicator for sustainability, various interesting relations emerged. A significantly negative correlation is found between the depth of outreach (ALS) and operational sustainability (ROA) (-0.1180***). This means the existence of a trade-off between depth of outreach and MFI sustainability.

In addition, a significantly negative correlation is found between breadth of outreach (PFB) and operational sustainability. This means that serving female clients does not improve MFI sustainability. This is consistent with Hermes et al's (2011) finding that it is costly and inefficient to serve females. Finally, a significantly negative correlation is found between return on equity (ROE) and operational sustainability (ROA).

To conclude, the trade-off between sustainability and depth of outreach depends very much on the variables used. This finding is consistent with Kipsha and Zhang (2013) who reached the same conclusion in their analysis of the relationship between MFIs' outreach and sustainability in East Africa. Key findings from the analysis are summarised below.

- There is no trade-off between depth of outreach and MFIs' sustainability (OSS). However, a trade-off emerges when the return on assets (ROA) is used as a proxy for sustainability.
- Portfolio at risk (PAR) significantly and positively influences the depth of outreach but has negative impacts on the breadth of outreach. Thus, proper management of MFIs risk improves the depth of outreach but worsens the breadth of outreach.
- A significant trade-off exists between MFIs' rate of interest (YLD) and depth of outreach as well as operating expenses to assets ratio (OEA) and depth of outreach.
- The loan portfolio of MFIs' improves both depth and breadth of outreach (NAB).
- MFIs return on assets does not improve outreach to female borrowers (PFB).
- Trade-offs exist between PAR and sustainability as well as OEA and sustainability.
- Return on equity (ROE) and gross loan portfolio (GLP) are significant positive determinants of MFIs' sustainability in SSA.
- MFIs' outreach to female borrowers is less profitable and is unsustainable. This is however, contrary to Asian experience as documented in the literature.
- Return on equity has positive impacts on MFIs' operational sustainability.

4.4.2 FIXED EFFECTS RESULTS OF THE DETERMINANTS OF SUSTAINABILITY

Table 4.5 depicts the split regression results for four models using operational self-sufficiency (OSS) and return on assets (ROA) as the dependent variables.

Table 4.5:Regression Results for Fixed Effects Model (Dependent Variables: OSS, ROA)

Variable	Coefficients			
	Operational self-sufficiency (OSS)		Return on assets (ROA)	
	Model 1	Model 2	Model 3	Model 4
Portfolio at risk (PAR)	-0.0530778*** (-5.49)	-0.0532735 *** (-5.51)	0.0648292 (0.67)	0.0693595 (0.71)
Average loan size (ALS)	0.0539795** (2.15)	0.0553025** (2.02)	-0.3436831 (-1.36)	-0.3671377 (-1.34)
Gross loan portfolio (GLP)	0.057431 *** (4.84)	0.0565224*** (4.16)	-0.061332 (-0.52)	-0.0449008 (-0.33)
Yield on gross loan portfolio (YLD)	0.0308524** (1.99)	0.036393** (1.99)	0.1678034 (1.08)	0.1660262 (1.06)
Cost per borrower (CPB)	-0.0144162 (-1.26)	-0.0144053 (-1.26)	-0.0392139 (-0.34)	-0.0394491 (-0.34)
Operating expense to assets ratio (OEA)	-0.0436566*** (-3.57)	-0.043537*** (-3.56)	-0.1305916 (-1.07)	-0.1329393 (-1.08)
Debt to equity ratio (DER)	0.0003692 (1.24)	0.0003683 (1.23)	-0.0008436 (-0.28)	-0.0008284 (-0.28)
Age of MFI (AGE)	0.1252723 (0.36)		-2.632017 (-0.76)	
Governance effectiveness (GOE)	0.0362718** (1.92)	0.363216* (1.92)	0.1996617 (1.05)	0.1991213 (1.05)
Number of active borrowers (NAB)		0.0014251 (0.14)		-0.0259362 (-0.26)
R-squared	0.1607	0.1518	0.0226	0.0191
Number of Observations	619	619	619	619
Constant	-0.5363582 (-1.41)	-0.4010766*** (-4.79)	2.539253 (0.67)	-0.2996193 (-0.36)
F- test	F(67, 542) = 10.48 ***	F(67,542) = 10.60 ***	F(67, 542) = 1.43**	F(67, 542) = 1.47**

Source: Estimation

Note: This table displays regression results conducted to investigate the determinants of sustainability of MFIs in SSA. t-statistics are presented in parentheses, significance level: ***, <0.01, **, <0.05, *, <0.10.

Model [1] and [3] serve as the base models for OSS and ROA respectively through which additional variables were incorporated to help check the robustness and sensitivity level of the variables that were found to significantly influence MFIs sustainability. The joint F-test shows that there are significant fixed effects. The assumption of the MFIs' being homogeneous is rejected and an appropriate fixed effects model estimated. The results which are presented in Table 4.5 show that Model [1] and [2] produce the best results while Model [3] and [4] performed poorly. Hence, we concentrate discussions on Model [1] and [2] with OSS as the predicted variable.

The coefficient for the portfolio at risk (PAR) is negative, as expected, and is statistically significant. Model [1] shows that a percentage point increases in the portfolio at risk will lead to a decline in operational self-sustainability in MFIs by 0.053 percentage points. This means that MFI managers are not performing well in their loan recovery efforts and this is affecting the sustainable operation of the institutions. This suggests that more efficient ways of pursuing loan recoveries will need to be instituted if MFIs are to meet the goal of poverty reduction in the long term. This result confirms earlier studies by Nyamsogoro (2010), Ayayi and Sena (2010) and Tehelu (2013) that poor management of the loan portfolio impacts negatively on the operational sustainability level of MFIs.

The coefficient of average loan size (ALS) is positive and is statistically significant at the 5 percent level. Model [1] shows that a percentage points increases in the average loan as a percentage of GNI per capita will result in an increase in MFIs operational self-sustainability by 0.053 percentage points. This means that MFIs' sustainability improves with an increase in the average loan size. This suggests mission drift since an increase in average loan size would mean curtailing lending to the relatively poor. Intuitively, this means less outreach to poorer clients in favour of wealthier clients so that the MFIs can be profitable and operate sustainability. This finding supports previous evidence provided by Cull et al (2007) that average loan size impacts positively on both the operational and financial sustainability of MFIs.

Table 4.5 shows that gross loan portfolio (GLP) had a positive and statistically significant coefficient. Model [1] shows that a percentage point increases in the gross loan portfolio (GLP) of MFIs will lead to increases in operational self-sustainability of 0.057

percentage points. This means that GLP as the main income source for MFIs has positive effects on their sustainability. A larger loan portfolio therefore if well managed will improve the profits and enhance the sustainable operation of MFIs without reliance on external funding. This finding is consistent with Tehelu (2013) but contradicts that of Okumu (2007) who found a negative impact of loan portfolio on MFI sustainability.

Furthermore, the coefficient for yield on gross loan portfolio (YLD) is positive and statistically significant at the 5 percent level. Model [1] shows that a percentage point increase in the yield on gross loan portfolio (YLD) will lead to increases in operational self-sustainability of MFIs by 0.030 percentage points. This means that MFIs in the sample charge competitive interest rates in an effort to cover their cost of operations. This suggests that some level of commercialisation may be taking place in the microfinance sector in SSA. For the institutionist, this is a welcome news. However, for the welfarists, this should be of great concern since many poor people could be excluded from accessing financial services. This finding is consistent with previous evidence by Ayayi and Sena (2010) and Annim (2012) that interest rate positively impacts on MFIs' operational self-sustainability.

The coefficient of the cost per borrower (CPB) is found to be negative and statistically insignificant. This suggests that the costs associated with producing loans do not drive MFIs sustainability. This could be attributed to good management practices in the loan production process and therefore efficient cost management. An alternative explanation could be bias sample selection which favoured MFIs that are already doing well in the market as only institutions rated 3 and above were considered.

Furthermore, operating expense to assets ratio (OEA) had a negative coefficient as expected and is statistically significant at 1 percent. Model [1] of Table 4.5 shows that a percentage point increase in the operating expenses to assets ratio (OEA) will lead to a decline in MFIs' operational self-sustainability by 0.043 percentage points. This means that higher operating costs have adverse negative consequences on the sustainable operations of MFIs in SSA. This points to the need for management of MFIs to focus attention by monitoring their expenses carefully so as to attain operational sustainability.

This finding is in line with Kosmidou (2008) and Tehelu (2013) who found poor expense management to be a factor that impedes MFI profitability and sustainability.

The debt to equity ratio (DER) is found to have a positive coefficient as expected but is not statistically significant. This means that the capital structure of MFIs though very important, does not necessarily result in self-sustainable operations. This result contradicts earlier findings by Rajan and Zingale (1995) and Fama and French (2002) which reported a negative relationship between a firm's debt level and profitability.

The coefficient for the age of the institution (AGE) is positive but not statistically significant. This means that learning curve effects are yet to have significant positive effects on the sustainability drive of MFIs. This finding is in line with Ayayi and Sena (2010) but contradicts that of Cull et al (2007) who found positive significant impacts of age on MFIs' operational self-sustainability.

The intervention by various national governments in creating a conducive environment for MFIs to operate in is very vital. The coefficient of governance effectiveness (GOE) is positive and statistically significant. Model [1] of Table 4.5 shows that a percentage point increase in governance effectiveness will lead to increases in MFIs operational self-sustainability by 0.036 percentage points. This means that MFIs' sustainability is improved when a favourable operating business environment is promoted by governments. This could come in the form of infrastructure development, regulation and well-functioning legal systems that enforce contracts, among others. This finding is consistent with Okumu (2007) who found the efforts of the Ugandan government to be supportive in promoting MFIs development.

Model [2] show that the breadth of outreach of MFIs does not contribute significantly to their sustainable operations. The coefficient of the number of active borrowers is positive as expected but not statistically significant. This could be explained by the fact that the industry in SSA is still dominated by small-sized MFIs that lack the needed scale to be able to reach operational self-sustainability levels. This result contradicts the findings of Adhikary and Papachristou (2014) who reported significant positive impacts of MFIs breadth of outreach on profitability.

To conclude, the analysis shows that the average loan size as a percentage of GNI (ALS), gross loan portfolio (GLP), yield on gross portfolio (YLD) and governance effectiveness (GOE) positively and significantly drive MFIs sustainability while the portfolio at risk (PAR) and operating expenses to assets ratio (OEA) negatively and statistically influence MFIs sustainability levels in SSA. Other variables found not to have an influence on sustainability are the cost per borrower (CPB), the age of MFI (AGE), the debt-to-equity ratio (DER) and the number of active borrowers (NAB). These results have policy implications for managers and policy makers. Knowing these key drivers, MFI managers can select the right factors that weigh down their sustainability efforts and effectively deal with them through proper planning and monitoring.

4.5 CHAPTER SUMMARY

This chapter examined the presence of trade-off between sustainability and outreach and established the key determinants of MFI sustainability in SSA. It presented and discussed relevant literature on the concept of sustainability and its framework, determinants of sustainability and the trade-off relations between sustainability and outreach. Using the institutionist framework, the study tested the presence of trade-offs and the determinants of sustainability through correlation analysis and the fixed effects regression approach. Finally, the empirical results obtained from the analysis were presented and discussed. The findings show mixed evidence and that it is hard to have a real opinion on the trade-off debate between outreach and sustainability. While, the results show the absence of a trade-off between depth of outreach and sustainability, a positive association however exists between breadth of outreach and sustainability. Other trade-offs emerged from the analysis, suggesting that the choice of the dependent variable used influences the nature of the trade-off between outreach and sustainability. Furthermore, the results show that average loan size as a percentage of GNI per capita, gross loan portfolio, and portfolio at risk, operating expense to assets ratio, governance effectiveness, and portfolio yield are the main determinants of MFI sustainability in SSA. Targeting clients with larger loan size with competitive rates of interest, therefore, could contribute to MFI sustainability. However, this has implications for the social goals of the institutions. The next chapter examines the efficiency of MFIs in SSA.

CHAPTER 5

EFFICIENCY OF MICROFINANCE INSTITUTIONS AND THEIR DETERMINANTS

This chapter focuses on measuring the cost efficiency of microfinance institutions (MFI) and their determinants in Sub-Saharan Africa (SSA). It accomplishes objective three (*To analyse the efficiency of MFIs in SSA and their key drivers*) of this study. The chapter is divided into five sections. Section one provides a brief overview of microfinance efficiency in the industry. This is followed by a review of the related relevant literature on microfinance efficiency which is presented in section two. The discussion covers the concept and theoretical framework for sustainability, Microfinance institutions (MFIs) outreach, sustainability, and efficiency as well as the determinants of sustainability. The methodology and estimation procedures followed are elaborated and presented in section three. The discussions cover the theoretical and empirical stochastic frontier analysis model, data and variables used as well as estimation. The main empirical results and key findings are presented and discussed in section four. The chapter concludes with a summary in section five.

5.1 BRIEF OVERVIEW OF MICROFINANCE EFFICIENCY

The role of microfinance institutions (MFIs) in economic development has long been recognised though it only became part of the financial system in most developing countries in the early 1990s. Evidently, countries with larger microfinance sectors experience lower levels of poverty (Imai et al., 2012), and yet efficient assessment of the operations of these institutions remains very low in Africa where development aid is proportionately large (Honohan, 2008). Ineffective MFIs are a major constraint on the development of the microfinance industry (Helms, 2006). The efficient supply of financial services to the poor is crucial in ensuring balanced national development and this is attainable through efficient institutions. It is, therefore, important not to neglect the

issue of efficiency in the microfinance sector since this could have telling effects on interest rates and hence microenterprise development and the wellbeing of the poor. Sustainability of MFIs is directly linked to efficient operation.

The efficiency and sustainability of MFIs have become key concerns in recent times following increased donor accountability, the need for regulation, increased investor interest and market-driven boards of directors who now demand strong financial performance. The microfinance industry has come under scrutiny following numerous studies that tend to show limited impacts of microfinance on development outcomes (Bataman, 2011; Dichter, 2007). This has shifted attention and focus to institutional sustainability and efficiency. Bhatt and Tang (2001) in their survey of MFIs in developing countries found that most microfinance programmes had difficulty in sustaining their operations in the absence of grants, external funding, and subsidies, signifying inefficiency in their operations. Korth, Stewart, Rooyen and De Wet (2012: 575) in their systematic review of the evidence of microfinance impacts on clients in SSA ask ‘whether microfinance is about banking the unbanked, or a development intervention aimed at attaining long-term sustainable response to high levels of poverty’. Long term sustainable response implies the attainment of efficiency in operations. MFIs striving to achieve sustainability through commercialisation suggest that subsidisation may have compromised the efficiency of these institutions. As Conning (1999) noted, subsidies may keep inefficient institutions alive, but only in the short term. Commercialisation from the viewpoint of the institutionalist need not be pursued just for profit but must be geared towards attaining efficiency in operations. Furthermore, the numerous examples of microfinance client over-indebtedness observed in some countries (Schick, 2013 for Ghana; Hurwitz & Luiz, 2007 for South Africa; Chen, Rasmussen, & Reille, 2010 for Morocco) are not just an outcome of sustainability but inefficiency.

Although the majority of MFIs are not efficient, the exact level of inefficiency and ways to improve operations remain largely unexplored. To date, a little systematic study has been done to measure the efficiency level of MFIs, particularly in SSA. Only a few studies (Segun & Anjugan, 2013; Oteng-Abayie, Amanor, & Frimpong, 2011; Abate, Borzaga, & Getnet (2014) have explored this subject matter in Africa. While the work of

Abate et al. (2014) is a field-based report which focused on MFIs only in Ethiopia and examined the relationship between outreach and cost efficiency, while that of Oteng-Abayie et al. (2011) is based on sampled MFIs in Ghana. Thus, they are country specific case studies that do not give a bigger picture of the microfinance industry in the region. Moreover, the study by Abate et al. (2014) relied on data collected for only one year but analysing cost efficiency within a panel data framework could yield much richer results for policy considerations.

Efficient MFIs should be able to deliver microfinance services effectively to clients at minimised costs. However, the average cost per borrower (72 dollars) remains higher in Africa compared to other continents (Lafuorcade et al., 2005). MFI efficiency analysis, therefore, is a critical concern both for research and public policy as it has become one of the most important trajectories in modern development finance. Neglect to measure satisfactorily the performance of these institutions could lead to reputational damage, reduce investor confidence and client base of the institutions. According to Brand and Gerschick (2000), efficiency is critical for an MFI to remain agile, competitive and responsive to customer needs. They note that, in the absence of competition, early players in microfinance markets had little external pressure to control costs and could cover their inefficiencies with high-interest rates. Because microfinance has been a philanthropic favourite for quite some time there has been little incentive for MFIs to improve efficiency until the recent onset of competition (Brand & Gerschick, 2000: 9). Yet, in most microfinance markets, competition is increasing, making efficiency ‘a critical factor in deciding which institutions will survive’ (Robinson, 2001: 12).

This chapter, therefore, examines empirically the cost efficiency of MFIs in SSA and the factors that influence efficiency levels using the Stochastic Frontier Approach (SFA). Cost efficiency has become a favourite model among researchers in evaluating the overall performance of financial institutions in recent years. This analysis differed from previous ones that investigated MFIs efficiency in that a large number of relevant input and output variables are incorporated into the cost frontier for the first time using recent panel data. The findings add significant insights to the existing microfinance literature taking into account the effects of various institutional factors on efficiency.

5.2 EVIDENCE ON MICROFINANCE EFFICIENCY

This section presents a brief review of the theoretical and empirical literature on microfinance efficiency studies essential to lay the foundation for stochastic frontier modelling. In this regard, the sub-sections covered include: (i) the concept and measurement of efficiency (ii) the relationship between outreach, sustainability, and efficiency and (iii) the determinants of MFIs efficiency.

5.2.1 THE CONCEPT AND MEASUREMENT OF EFFICIENCY

There have been quite a number of studies on the efficiency of microfinance institutions but most of these studies differ in their definition of efficiency, estimation methods and the potential determinants of efficiency. The efficient functioning of microfinance institutions is very important in ensuring access to financial services for the poor. Analysing the efficiency operation of these institutions is relevant for policy support.

The 1980s saw a change in the operational landscape of MFIs with efficiency and cost control emerging as central themes following declining donor subsidy levels and raising interest rates on loans with the view to attaining sustainability. Various authors began to pose questions regarding the efficiency of these institutions. For instance, Hoff and Stiglitz (1990) ask whether it is possible to efficiently serve the poor? Copestake (2007) equally wanted to know whether social performance management was a good idea. These interrogations prompted the research community to act. Earlier studies on microfinance efficiency were undertaken by Worthington (1998), inspired by the numerous efficiency studies performed on banks and non-bank financial institutions. These studies, however, only dealt with the financial aspects of MFIs. Recent studies by Gutierrez-Nieto et al., (2009), Hermes, Lensink and Meesters (2011) and Serrano-Cinca, Gutierrez-Nieto, and Reyes (2016) extended efficiency studies to cover social and financial efficiency aspects as well.

The concept of efficiency is at the core of economic theory. The theory of production is concerned with optimization, which implies efficiency (Baumol, 1977). Decision-makers are presumed to be concerned with the maximisation of some measure of achievements

such as profit or efficiency. The analysis of efficiency, in general, focuses on the possibility of producing a certain level of output at the lowest cost or of producing the optimal level of output from given resources. In the context of microfinance, efficiency reflects how well an MFI allocate inputs such as staff, assets, and subsidies to produce the maximum output such as a number of loans, financial self-sufficiency and poverty outreach (Balkenhol, 2007). According to Annim (2010), efficiency is the optimal combination of staff time, staff number and cost of operation to respectively disburse maximum loans to a maximum number of clients, particularly the deprived, while delivering a range of valued services. Efficiency analysis, therefore, relates inputs to outputs in the most cost effective way.

The efficiency of a firm has several dimensions. Farrell (1957) discusses the concept of economic efficiency to compose of two parts: technical and allocative. Technical efficiency is the firm's ability to maximise outputs from a given set of inputs under a given production technology. On the other hand, allocative efficiency depicts the use of inputs in optimal proportions taking into account the relative prices of the inputs. Allocative efficiency which is the same as cost efficiency is the main focus of analysis for this chapter. Cost efficiency, therefore, differs from technical efficiency by factoring price into the decision-making analysis though the two concepts are sometimes used interchangeably. Therefore efficiency measurements that show the scope for improved performance relating to cost may be useful in the formulation and analysis of policies that would afford management to concentrate on activities that yield more results at minimum cost to the units and clients.

MFI inefficiency can arise from internal and external sources (Bhatt & Tang, 2001). Internal inefficiencies are those related to management challenges such as fraud or misapplication of funds at the firm level. External inefficiencies are those that management has little control over such as those that arise from donor support to programmes. The authors expressed the need to subject MFIs to some basic internal and external efficiency tests since it impacts on their sustainability. Brand and Gerschick (2000) in their study of MFIs in Latin America found inefficiency to be driven by two

factors: (i) under exploitation of economies of scale and (ii) operating in non-competitive environments where there is little pressure to improve efficiency.

Two main approaches exist in the literature to measure MFI outputs and costs: the production approach and the intermediation approach (Berger & Humphrey, 1997). In the production approach, financial institutions are treated like a manufacturing company that uses inputs to produce outputs. Varying input levels leads to either desirable or undesirable outputs and deposits are considered as inputs. The mandate of MFIs then is to transform inputs (such as deposits) into outputs (number of transactions processed). On the other hand, the intermediation approach views MFIs as “mediating funds between savers and investors” for surplus or deficit utilisation (Berger & Humphrey, 1997: 197). For example, savings deposits in a bank are used as the vehicle to create financial profits from the investments premiums received. Thus, MFIs guarantee interest rates to clients and uses their savings to produce loans. A competitive and efficient MFI would minimise the total operating and interest costs for any given outputs (Fries & Taci, 2004). Deposits are considered inputs under this approach.

The production approach requires detailed data on transaction flows and is reported to be more useful in assessing the efficiency of bank branches where processing of clients transactions usually occurs (Berger & Humphrey, 1997; Bauer, Berger, Ferrier & Humphrey, 1998). In contrast, the intermediation approach helps to improve resource allocation and is more appropriate when efficiency assessment is conducted for the entire industry and takes into account the funding sources, investments and interest expenses (Gonzalez-Vega & Mesalles, 1988; Berger & Humphrey, 1997). The literature suggests intermediation approach as more appropriate for evaluating entire banking industry for two reasons: (i) the approach is inclusive of interest expenses, which accounts for 50-66 percent of total costs of banks and (ii) it may be superior for evaluating the importance of frontier efficiency to the profitability of financial institutions since minimisation of total costs (not just production costs) is needed to maximise profits (Bauer et al., 1998).

Several approaches exist in the literature for efficient measurement of financial institutions. The debate on the comparison of various methods was initiated by Berger, Hancock and Humphrey (1993) and Berger and Humphrey (1997). The main approaches

documented are (1) the tick frontier approach (2) the distribution-free approach (3) Data Envelopment Analysis (DEA) approach and (4) Stochastic Frontier Analysis (SFA). Each approach has its own strengths and weaknesses and the debate on which approach is superior remains far from conclusive in the literature. Bauer et al. (1998) employed all the four main approaches to evaluate six consistency conditions³⁴ that efficiency estimates from any good model should satisfy using data from the US. Evidence from the comparisons showed mixed results regarding consistency of the four main approaches. Thus parametric methods were found to be generally consistent with one another, non-parametric methods were also consistent with one another, but the two (parametric and non-parametric) were generally not mutually consistent.

One key drawback of the distribution-free approach is the strong assumption that each firm's inefficiencies are persistent over time and the inability of the model to accommodate organisational and technological changes. In most empirical efficiency studies, the DEA³⁵ and SFA are the most commonly applied methods. One key advantage of DEA is that it can accommodate multiple inputs and outputs, estimate constant returns to scale (CRS) and variable returns to scale (VRS) and allow technological change measurement. Variable selection for inputs and outputs is very vital in DEA application. There is no statistical framework on which significance tests can be based and it requires homogeneous data for all Decision Making Units (DMU). However, downward biased efficiency estimates with the potential to eliminate efficient firms from the comparisons have been noted as one key limitation. Also, satisfactory management of noisy data (Worthington, 2000), including unbalanced panels, remains a challenge. Jenkins and Anderson (2003) warn against the use of correlated inputs and outputs in a DEA model. Another important issue is that the number of efficient units increases with the number of inputs and outputs in the model, hence adding to irrelevant variables can alter the estimated results obtained (Dyson et al., 2001; Pedraja-Chaparro, Salinas-Jimenez & Smith, 1999). However, bootstrapping approaches have been developed over the years to

³⁴ Rankings of the estimates, efficiency levels of the estimates, identification of worse and best firms, consistency of the estimates over time, competitive conditions in the market, and consistent with standard non-frontier measures of performance.

³⁵ This is a nonparametric approach that uses linear programming techniques. No assumptions regarding the distribution of the error term is required for estimation. Originally proposed by Farrell (1957) and later extended by Charnes, Cooper and Rhodes (1978) and Banker, Charnes and Cooper (1984).

overcome these limitations [see for example Wilson (2008); Simar and Wilson (1998, 2000)].

The stochastic frontier approach (SFA) has been reported to overcome these limitations. It allows analysis of unbalanced panels and captures data irregularities, a feature common to developing countries' data (Paxton, 2007). This study, therefore, uses the Battese and Coelli time-dependent model for panel data analysis following the SFA methodology. The approach was first proposed and developed independently by Aigner, Lovell and Schmidt (1977) and Meeusen and van den Broeck (1977) for cross-sectional data and later extended by others for panel data (Pitt & Lee, 1981; Seale, 1990). Estimation is based on econometric methods through maximum likelihood application. Specific functional form (translog or Cobb-Douglas) must be chosen and distributional assumptions regarding the error term made (normal half-normal, truncated, exponential or gamma) before estimation can be done. Inefficiencies are assumed to enter the model through the error term which decomposes observed frontier deviations into random events and possible inefficiencies (Gregoire & Tuya, 2006). The approach is more efficient in handling statistical noise and outliers and allows statistical tests of hypotheses to be performed (Forstner & Isakson, 2002). However, the computation procedure is very cumbersome and special care is required during estimation since the possibility of getting different efficiency scores exists (Schmidt & Sickles, 1984). A brief summary of the main differences between SFA and DEA is presented in Table 5.1.

Various extensions of these two models have been developed and applied in the literature. The first is the non-standard stochastic frontier models which have received relatively few applications in banking efficiency studies. Green (2005) applied two random parameter specification models to conclude that model specification has significant impacts on the precision of estimated inefficiencies. This point is crucial because estimated inefficiency is often used as a dependent variable in second stage regression for the determinants of efficiency. Bos, Keotter, Kolari, and Kool (2009) report that the efficiency rankings of German savings banks are sensitive to the treatment of heterogeneity.

Table 5.1 Summary Differences between SFA and DEA

Particulars	SFA	DEA
Methodology	Uses econometric approach through maximum likelihood methods (parametric method)	Uses linear programming techniques to estimate pair-wise linear and production frontiers (non-parametric method)
Error term (ε_i)	Composed of idiosyncratic and inefficiency components ($\varepsilon_i = v_i + u_i$). Distributional assumptions must be made (normal, half-normal, truncated, or gamma) before estimation can be done.	Has no random error (v_i) and all variations are treated as reflecting inefficiencies. No distributional assumption required for estimation
Source of inefficiency	Inefficiencies enter through the error term, which is orthogonal to the predicted frontier.	Firms on the vertices are considered fully efficient and inefficiencies of other firms are estimated relative to this frontier.
Prediction	A predicted value is assumed to characterise the cost or production function estimated.	A small change in measurement error or lack of a firm on the frontier may have large cumulative effect on the aggregate inefficiencies (i.e. upward biased inefficiency measures)
Demerits	Inefficiencies are drawn from the asymmetric half normal distribution and the random fluctuations drawn from a symmetric normal distribution. The estimation procedure is very burdensome and has the tendency to produce different efficiency measures. Specific functional form (translog or Cobb-Douglas) must be chosen before estimation can be done.	Inefficiency measure is sensitive to the number of exogenous constraints, which reduce the number of observations, biasing measured efficiency downward by eliminating some potentially more efficient firms from the comparisons. Inability to handle noisy data in a satisfactory manner. No functional form assumptions required.
Merits	Ability to incorporate and manage statistical noise and handle outliers. Statistical tests of hypotheses can be performed	Potential to accommodate multi-input and multi-output estimation. Can estimate CRS and VRS and allow measurement of technological change.

Source: Authors Compilation Based on Studies (Schmidt & Sickles, 1984; Bauer et al., 1998; Worthington, 2000)

Tecles and Tabak (2010) used a Bayesian stochastic frontier to estimate cost and profit efficiency for a sample of Brazilian banks between 2000 and 2007, noting the need to compare their estimated efficiencies with those drawn from random effects models to combat heterogeneity issues. Sun and Chang (2011) use a heteroscedasticity stochastic frontier model to estimate the cost efficiency of a sample of Asian banks. The novelty in their approach is that the posited determinants of inefficiency affect the latter in a non-monotonic manner. In an application to Mexican banks, Williams and Barros (2013) estimated three random parameters stochastic models. Mean cost efficiency is shown to be higher than that obtained from standard panel data estimates.

The methodological conclusion is that efficiency appears to be underestimated if firm heterogeneity is confounded with inefficiency in the model specification. This suggests that much of the previous literature understates the ‘true’ level of bank efficiency.

5.2.2. MICROFINANCE INSTITUTIONS OUTREACH, SUSTAINABILITY, AND EFFICIENCY

Several empirical studies examined the relationship between microfinance outreach and efficiency. Outreach is one of the dual goals of MFIs and it can be defined as the number of poor clients reached with financial services by an institution. Extending financial services to underserved populations often comes at a cost with likely impact on operations. Several empirical studies found that outreach variables impact on MFIs efficiency. Hermes et al. (2011) find that small size loans decrease the operational efficiency of MFIs. Bos and Millone (2014) show that some MFIs effectively combines both depth and breadth of outreach and operated efficiently. However, they observed that decreases in efficiency occur as the loan portfolio becomes larger. Mersland and Strom (2011) reported that MFIs that tailor lending to women are less profitable and inefficient. Similarly, Segum and Anjugam (2013) found the loan portfolio size of MFIs in SSA to be inefficient though the institutions were efficient in reaching the target number of clients. Ayayi and Sene (2010) reported that client outreach has positive impacts on the attainment of financial sustainability. In their study of 217 MFIs across 101 countries, the authors further noted that financial sustainability is enhanced by high-quality credit

portfolio, application of high-interest rate and sound management. However, Hermes, Lensink, and Meesters (2009) using the stochastic frontier analysis approach found MFIs outreach to be negatively related to efficiency. Thus, institutions with lower average loan balances and more women borrowers were found to be less efficient. This is corroborated by Abate et al. (2014) who found evidence of a trade-off between outreach and cost efficiency in MFIs. The authors revealed a greater cost efficiency gap between specialised MFIs and financial cooperatives in their performances with cooperatives showing better cost containment, a situation they attributed to the effective use of social collaterals in contract enforcement.

Other efficiency studies on microfinance have followed the DEA approach. Nawaz (2009) examined the role of subsidies in microfinance efficiency and reported that subsidies only play a marginal role in MFI financial efficiency but that a trade-off exists between outreach and efficiency. This suggests that MFIs that focus on outreach are less efficient, and lending to women in the absence of subsidies is also inefficient. Similarly, Glass, McKillop, and Rasaratnam (2009) investigated how environmental factors influence performance of the Irish League of Credit Unions (ICUs) using the DEA approach. The results show that only 7 percent of the institutions were technically efficient while the remaining 93 percent operated at various levels of technical inefficiency. The best-practiced firms were observed to have few bad debts and designated as 'industrial or associational Credit Unions' and informational advantages arising from common bonds facilitated lending decisions. Amersdorffer, Buchenrieder, Bokusheva and Wolz (2015) analysed the performance of 15 Agricultural Credit Cooperatives (ACCs) in Bulgaria using data for the period 2000 to 2009 based on a case study. The authors developed a new analytical model for DEA based on the Social Performance Indicator (SPI) audit tool which enabled them to evaluate the quality of social networks and client benefits within the framework of efficiency analysis. The study revealed that only ACCs which perform well financially could be ranked higher in the social output specification but that financial performers do not necessarily make the best social performers. High external capital costs were found to have adverse effects on the frontiers which impeded the growth of the institutions.

Bos and Millone (2014) used standard procedures that accommodate different business models to estimate the efficiency of MFIs taking into account the multiple dimensions of output. Their empirical results show that MFIs with significant depth of outreach achieve economic efficiency. Thus, output mix strongly influences the efficient performance of MFIs negatively, causing some MFIs to shift away from their business models. Furthermore, a significant trade-off exists between MFIs financial and social performance though the level of effect varies with institutional type. Further supportive evidence of a trade-off between outreach and sustainability is provided by Hartarska, Shen, and Mersland, (2013) who found growth and consolidation of holdings for profit-motivated MFIs to improve efficiency. However, Louis, Seret, and Baesens (2013) found a significantly positive association between MFIs social efficiency and financial performance.

Establishing the technical efficiency level of MFIs has not been left out in the literature. Qayyum and Ahmed (2006) found MFIs in Pakistan, Bangladesh and India to be technical inefficient. Tariq and Mohd (2008) in analysing the efficiency of 40 MFIs in India found that the mean efficiency scores were low about one-third; even though it was increasing over the sampling period, 2005-2008. Their findings showed a trade-off between outreach and efficiency. Servin, Lensink, and Berg (2012) show that NGOs and Cooperatives had lower intrafirm and interfirm³⁶ technical efficiencies compared with Banks and Non-Bank Financial Institutions (NBFIs). Thus, the type of ownership of an MFI greatly influences its technical efficiency, due to the different technologies used. Furthermore, Marwa and Aziakpono (2015) analysed the technical and scale efficiency of savings and credit cooperatives in Tanzania using a sample of 103 audited financial statements for the year 2011 following the conventional DEA approach. The authors found the average scores of 42 percent, 52 percent, and 76 percent for technical, pure technical and scale efficiencies. In addition, Wijesiri, Vigano and Meoli (2015) examined the technical efficiency of 36 MFIs and its determinants in Sri Lanka using the two-stage double bootstrapping approach. Bias-corrected efficiency estimates are obtained from

³⁶ Intrafirm efficiency refers to the efficiency of an MFI relative to its own production frontier. Interfirm efficiency is the efficiency of an MFI relative to a best practice frontier (Lensink, Silver & Stefanou, 2001). See Lensink et al. 2001 and Servin et al. 2012 for more on these terms and their measurement.

individual MFIs which are then regressed on a set of explanatory variables using the double bootstrapping truncated regression approach. Their findings show that MFIs are both financially and socially inefficient. Furthermore, age and capital to assets were found to be significant drivers of financial efficiency whereas age, MFI type and return on assets significantly influence social efficiency.

5.2.3 DETERMINANTS OF MICROFINANCE INSTITUTIONS' EFFICIENCY

MFIs have been faced with growing competition, both from within and outside the industry but will presumably remain in business if they operate efficiently. Competition in the industry is growing and this could lead to an efficient expansion of microfinance products to clients (Rhyne & Otero, 2006). At the same time, lending to the poor could come at the expense of attaining efficiency. Recent transformations in microfinance towards financial policy regulations have implications for competition and efficiency. Regulatory policies aimed at enhancing competition can exert competitive pressure and create incentives for improvements in efficiency, which may enhance financial stability (Tabak, Fazio, & Cajueiro, 2012; Schaeck & Cihak, 2013). Institutional environments and regulatory structures have been found to affect the efficiency of banking operations in different ways and in different country contexts (Barth, Lin, Ma, Saede, & Song, 2013). In the case of emerging markets, Rojas-Suarez (2007) observed that the combination of market power and industry concentration could hinder financial deepening and efficiency gains. Conversely, Berger and DeYoung (1997) find that competition may adversely affect efficiency due to poor management in client screening, monitoring and the accumulation of non-performing loans. Similarly, Guha and Chowdhury (2013) examined the effects of microfinance competition and default to show that double-dippingⁱ occurs at equilibrium for profit oriented MFIs. Double dipping naturally leads to default and inefficiency and this is made worse by higher transaction costs.

Analysing the determinants of efficiency is vital for policy considerations and it is particularly relevant considering the changing dynamics in the microfinance landscape

where access still remains limited and client over- indebtedness is on the increase. Though no established theory exists that explains factors influencing measured efficiency, studies on mergers and bank performance are the foundation stones (Wheelock & Wilson, 1995). Banking sector studies have revealed numerous determinants of efficiency in the past, such as high capital to assets ratio, age of bank, number of branches, ownership status, managerial control, organisational structure, economic performance and location (Mesters, 1997; Valverde, Humphrey, & de Paso, 2007, Gutierrez-Nieto et al., 2007). These factors are applicable to the microfinance sector too.

Theoretical and empirical evidence shows that the type of MFI influences efficiency. Mersland and Strom (2009) show that non-governmental organisations (NGOs) and credit cooperatives are more cost efficient due to market contracts (group lending) which help overcome information asymmetries. Similarly, Haq, Skully and Pathan (2010) reported that NGOs were efficient in transforming inputs into outputs (production approach) while banks exhibited greater efficiency in mediating funds between savers and borrowers (intermediation approach). This suggests that model specification could have implications for measured efficiency. Gutierrez-Nieto et al. (2007) show that location and NGO status influence MFI efficiency. Lafourcade et al. (2005) in their survey of MFIs in Africa found formal MFIs more efficient than semi-formal MFIs. However, among the formal MFIs, cooperatives were the least efficient. Similarly, Hassan and Sanchez (2009) found higher technical efficiencies with formal MFIs (Banks and Credit Unions) than non-formal MFIs (non-profit organisations and NBFIs). MFIs in South Asia had the highest technical efficiency compared to their peers in Latin America and the Middle East and North Africa (MENA) regions. The difference between these last two studies is that while the latter explored the source of inefficiency which was due to pure technical rather than scale efficiency, the former did not explore the source of inefficiency. Glass et al. (2009) in their study of the Irish Credit Union found that organisational and structural variables significantly influence MFI efficiency.

Oteng-Abayie et al. (2011) analysed the determinants of MFI economic efficiency in Ghana using the Cobb-Douglas stochastic frontier model for the period 2007-2010. They

found the MFIs highly inefficient with an average economic efficiency of 56.29 percent. Moreover, the age, cost per borrower and savings indicators (number of savers) of outreach and productivity were significant drivers of economic efficiency. Similarly, Singdhu, Goyaldu and Sharmadu (2013) using Tobin's regression and correlation analysis for the period 2005-2009 reported that total assets, location, and borrower per staff were significant determinants of MFIs technical efficiency. Furthermore, Nghiem, Coelli, and Rao (2006) investigated both technical and scale efficiency of 46 microfinance schemes in Vietnam using DEA. Their findings show 80 percent average technical efficiency for the schemes surveyed. Age and location of schemes were significant factors that influence efficiency. Twaha and Rashid (2012) explored the determinants of MFI productivity in India using the Bayesian approach and found that age influences productivity positively while the number of officers and cost per borrower affects it negatively. This means that learning curve effects gained from programme implementation enhance MFIs productivity.

Gonzalez (2007) examined the effects of both institutional and country level variables on the efficiency of MFIs using an unbalanced panel data from 1,003 institutions across 84 countries over the period 1999-2006. The main institutional level variables found to have a positive influence on MFIs efficiency are the average loan size relative to GNI per capita, age and gross loan portfolio relative to assets. The results further show that electricity production per capita has a positive effect while the percentage of roads paved negatively affect efficiency at the country level. Similarly, Tariq and Mohd (2008) reported that age of the institution, location and regulation were significant determinants of MFIs efficiency in India.

In addition, Chen (2009) use bank-level data to study the efficiency of the banking sector of 10 Sub-Saharan African middle-income countries. The author focused on the cost efficiency of the banks utilising aggregate influence rather than a bank or country-specific level. The study found a possible 20-30 percent reduction in total cost by the banks if they operate on the efficient frontier. Furthermore, foreign-owned banks and private banks were found more efficient than public banks. Macroeconomic stability, depth of financial development, competition, and strong legal framework were noted as

important drivers of efficiency (Chen, 2009). Conversely, using a similar approach to study manufacturing firms in East Africa, Aggrey, Eliah, and Joseph (2010) found a negative association between firm size and technical efficiency.

Le and Harvie (2010) examined the factors that influence efficiency and reported that firm age, size, location, ownership, cooperation with a foreign partner, product innovation, competition are significantly related to technical efficiency. Conversely, using a similar approach, Aggrey, Eliah and Joseph (2010) found a negative association between firm size and efficiency. More recently, Ochola (2016) studied the efficiency and determinants of savings and credit cooperatives (SACCO) in Kenya using a two-stage DEA and Tobit regression methodology for the period 2011-2013. In the first stage, constant returns to scale, variable returns to scale and pure efficiency measurements were conducted using DEA approach on 94 firms. The efficiency scores obtained were then censored and Tobit regression used to explain the variation in efficiencies to a set of explanatory variables. The study found that loans advanced to SACCO members, advances and turnover were significant determinants of efficiency. However, in terms of beta values, deposits and loan advances and turnover were negatively associated with efficiency, indicating that an increase in deposit and loans and advances may pose obstacles to SACCO efficiency.

5.3 METHODOLOGY AND ESTIMATION

The theoretical and empirical models used in achieving the chapter objective are presented here. Also, included in this sub-section is a description of the variables used and the estimation procedures followed.

5.3.1 THEORETICAL STOCHASTIC FRONTIER MODEL

The assumption which underpins the measurement of efficiency is the existence of a gap between the observed performance of a firm and its potential level. Technical efficiency is therefore measured as the ratio of actual output to the potential output. The stochastic frontier can be modelled in terms of either profit or cost function. While production functions follow maximisation and cost functions follow minimisation procedures for

estimation, both approaches lead to the same efficient outcome due to duality theory (Varian, 1992; Tewari & Singh 2003). However, estimation of cost functions has gained more prominence in recent times since minimisation of industry cost is critical to MFIs success. Following previous works by Hermes et al. (2011) and Oteng-Abayie et al. (2011) this study estimates a cost function following the Battese and Coelli (1995) family models. The theoretical cost model specified for panel data is generally given as:

$$\ln C_{i,t} = C(y_{i,t}, w_{i,t}, q_{i,t}; \beta) + u_{i,t} + v_{i,t} \quad (5.1)$$

where $C_{i,t}$ is total cost faced by the MFI with (i,t) representing the cross sectional and time dimensions of the data and $C(y_{i,t}, w_{i,t}, q_{i,t}; \beta)$ is the cost frontier. $y_{i,t}$ is the logarithm of output. $w_{i,t}$ is the vector of logarithm of input prices. $q_{i,t}$ are MFI specific control variables. β is a vector of all parameters to be estimated. $u_{i,t}$ captures cost inefficiency and is independent and identically distributed with a truncated normal distribution. $v_{i,t}$ captures measurement errors, omitted variables and random effects and is distributed as a standard normal variable. Both $u_{i,t}$ and $v_{i,t}$ are time and MFI specific and are represented as $v_{i,t} \sim iidN(0, \sigma_v^2)$ and $u_{i,t} \sim N^+(m_{i,t}, \sigma_u^2)$.

The stochastic inefficiency term is generally defined as:

$$m_{i,t} = \delta_0 + \sum_n \delta_n z_{n,i,t} \quad (5.2)$$

where z denotes the vector of n variables that determine the inefficiency of MFI i at time t , and the deltas are the coefficients to be estimated. Considering the various distributional forms that the inefficiency term assumes, our study follows the normal truncated distribution. The expected value of the inefficiency of each MFI at a given time period is conditional on the composed error term as defined by Jondrow, Materov, and Schmidt (1982). The standard estimator is as follows:

$$E[u/\varepsilon] = \frac{\sigma\lambda}{1+\lambda^2} \left[\frac{\varphi(w)}{1-\varphi(w)} - w \right], \varepsilon = v + u, w = S\varepsilon\lambda/\sigma \quad (5.3)$$

Since the inefficiency term ($m_{i,t}$) cannot be estimated directly from the sample, this approach serves as an indirect estimator for computing it. The inefficiency component is

retrieved from the composite error term for the cost function estimation for each MFI. The inefficiency level for an individual MFI is computed as:

$$TE_{it} = \exp (- U_{it}) \quad (5.4)$$

where U_{it} denotes the firm specific inefficiency estimate from the maximum likelihood estimation. The restrictions imposed by the model often lead to various values and the results calculated as: $\sigma = (\sigma_u^2 + \sigma_v^2)^{1/2}$, $\gamma = \frac{\sigma_u^2}{\sigma_u^2 + \sigma_v^2}$ and $\lambda = \sigma_u / \sigma_v$

where σ is the total variance, σ_u^2 is variation due to inefficiency, σ_v^2 is variation due to noise, γ is the ratio of variation due to inefficiency to the total variation, and λ is the ratio of the standard deviation of inefficiency to the noise component. Higher values of lambda (λ)³⁷ signify strong evidence of the existence of inefficiency. The value $\lambda=0$ signifies the absence of inefficiency and indicates that the ordinary least square (OLS) estimation is more appropriate (Coelli, Rao, & Battese, 1998). Similarly, higher value of gamma (γ) suggests greater explanatory power of the inefficiency to the total variation (Radam, Yacob, & Muslim, 2010). γ is restricted between 0 and 1.

Testing the robustness of the estimated frontier function is often done using the log-likelihood ratio test. This test shows the relevance or otherwise of the inefficiency component. A null hypothesis of no inefficiency in the observed sampled units ($H_0: \mu=0$) is usually tested against an alternative hypothesis ($H_1: \mu> 0$). If the test favours the null hypothesis, then the stochastic frontier model is reduced to an OLS model with normal errors.

5.3.2 VARIABLES AND MEASUREMENT

This section provides a review of the variables included in the study. The analysis for this chapter used total cost (TC) as the dependent variable. Total Cost is defined as the sum of interest and operating expenses (in US\$). A number of recent studies have used this variable in MFIs efficiency analysis (Hermes et al., 2011; Oteng-Abayie et al., 2010;

³⁷ Is the generalised log-likelihood ratio statistic (λ) is defined as: $\lambda = -2\{\ln[L(H_0)] - \ln[L(H_1)]\}$ where $\ln[L(H_0)]$ and $\ln[L(H_1)]$ are the values of the log-likelihood function obtained from the frontier model under the null and alternative hypothesis respectively.

Abate et al., 2014). In cost function estimation, it is relevant to know the total cost faced by the institutions to help determine appropriately the cost efficiency level of operation. As MFIs faces an extensive cost in borrowing capital and producing loan, it is important to use a proxy that best characterise the cost structure of the industry. Other proxies have also been used in the literature such as total operating cost (Isik & Hassan, 2002), financial expenses and operating expenses (Manlagnit, 2011). However, these proxies only capture one aspect of the cost components of the institutions. MFIs facing greater costs are expected to be inefficient in their operations.

A number of independent variables were included in the cost function to serves inputs and outputs. The intermediation approach to measuring cost is employed since efficient and competitive MFIs aim to minimise costs for any given inputs (Fries & Taci, 2004). To determine which MFI products to include as outputs, the value-added criterion³⁸ was used. In this regard, three variables were included as MFIs outputs (loans to customers, deposits, and loan loss provision) and three as input prices (labour, Interest expenses, the number of loan officers).

The price of labour (SAL), is used as average unit wage cost. It is a key input in the mediation process of MFIs and previous studies on efficiency have used it (Oteng-Abayie et al., 2011; Hermes et al., 2011). The price of labour constitutes and major input cost of MFIs. In view of the critical role played by labour, this study included it to help access how effectively it is being deployed and combined with other inputs for maximum output production. Furthermore, interest payments per deposits held (R) is included as the second input variable. High-Interest expenses are a growing concern being expressed in the microfinance industry. This would likely have an impact on the efficiency operation of MFIs. Previous studies have also included this variable as an input (Oteng-Abayie et al., 2011; Hermes et al., 2012). MFIs that commit greater funds into covering interest expenses are unlikely to be efficient so the expectation is to have a negative relation with efficiency. Finally, the number of loan officers (NLO) is used as input and is measured as the total number of employees directly involved in managing the loan portfolio. Previous

³⁸ The process of identifying MFI activities that produce a flow of banking services associated with substantial labour or capital expenditure.

studies used are a proxy for labour (Gutierrez- Nieto et al., 2009; Oteng-Abayie et al., 2011; Servin et al., 2012).

On the output side, the gross loan portfolio (GLP) is the main asset for MFIs and it is measured as the gross loan portfolio multiplied by total assets in US dollars. The study also included the number of active borrowers (NAB) to measure the size effects of MFIs. It is included to assess outreach effects on efficiency performances of institutions. Large size MFIs will have greater number of active borrowers and this is likely to drive down the cost of producing loans. They are therefore more likely to be cost efficient than small sized MFIs with a smaller number of borrowers. Previous studies have used it (Gutierrez- Nieto et al., 2009; Servin et al., 2012) and positive effects on efficiency are expected. Finally, the loan loss provision (LLP) is included to control differences in the risk-taking strategies of MFIs which would likely impact on efficiency (Fries & Taci, 2005; Hermes et al., 2011; Manlagnit, 2011). It is hypothesized that problem loans are associated with high-cost MFIs (inefficient). Hence, loan loss provisioning is expected to relate positively to higher operating costs and lower efficiency operations

Analysing the determinants of efficiency is critical in isolating factors that impede efficiency operations. Several independent variables were included as factors that influence efficiency operations based on literature review. Total assets (TA) which reflect the size of MFI is included to assess if economies of scale which are associated with larger firms results in cost efficiency. Studies have shown that larger size firms enjoy economies of scale and therefore more likely to be efficient in their operations cost (Hermes et al., 2011). MFI size (TA) is expected to relate positively to efficiency. Next, return on assets (ROA) is included to measure MFI profitability level (Servin et al., 2012). It is defined as the net profit before tax divided by total assets and it provides insights into the sustainability and profitability of MFIs (Hartarska, 2005). MFIs which earn good returns in deploying their assets are more likely to be efficient. Positive effects on MFI efficiency are therefore expected. Furthermore, average loan balance as a percentage of GNI per capita (ALB) is included to measure the effects of depth of outreach on efficiency. Hermes et al. (2011) argue that MFIs that grant large loans to clients are more likely to be cost efficient than those that grant small sized loans. The

ALB is a standard measure of outreach and most studies on efficiency in microfinance have applied it (Servin et al., 2012; Luo, Seret & Baesens, 2013). Another, standard performance variable for outreach included is the percentage of female borrowers (PFB). It is the proportion of female borrowers in the total loan portfolio of MFIs and higher values indicate the depth of outreach since lending to women is associated with lending to the poor (Servin et al., 2012; Luo, et al., 2013; Hermes et al., 2011). Hermes et al., (2011) find that depth of outreach is negatively related to efficiency.

In addition, a number of cost side variables affect the efficiency of MFIs. The cost per borrower (CPB) is a good proxy for good service delivery and shows how much MFI spend on borrowers (Norman & Stocker, 1991; Bos & Millone, 2015). This is very informative considering that MFIs that spent higher amounts to produce loans are unlikely to be efficient. A negative relation with MFI efficiency is anticipated. Also, operating expenses to assets ratio (OEA) has been found to have an influence on MFI efficiency (Servin et al., 2012). Furthermore, borrower per staff member (BSM) is included to assess staff productivity. Improved staff performance will naturally lead to increased efficiency in MFI operations hence a positive impact is expected (Norman & Stocker, 1991). The yield on gross portfolio (YLD) is a proxy for interest rate charged by the MFI to its borrowers and the cost of borrowing for the respective MFI. It indicates how much interests, fees, and commissions an MFI generates from its average gross loan portfolio (SEEP Network, 2010). Higher nominal interests can raise the interest costs of MFIs and reduce efficiency in activities such as risk management and credit information evaluation. The expectation is for yield to have a positive effect on efficiency. Kar (2013) argues that MFIs with a large number of female borrowers indicate “a better quality outreach to the poor”.

Meanwhile, the risk level faced by MFIs will likely have an impact on the efficiency. Africa MFIs are reported to have the greatest percentage of the portfolio at risk (7.03%) (Bogan, 2012). Non-repayment of loans (88.9%) has also been reported as a key challenge facing MFIs sustainability (Kimando et al., 2012). This would likely impact negatively on efficiency and previous studies have analysed using this variable as well (Servin et al., 2012; Luo, et al., 2013). Finally, MFIs said to become efficient over time

(Hartarska et al., 2006). The variable is included to control for inefficiency effects over time due to changes in operating conditions. It is argued that as institution increases in age and mature, their overall level of efficiency should rise because of learning curve effects (Ledgerwood, 1999). This suggests that overall efficiency of MFI improves with age. Empirical evidence on the effects of age on MFI efficiency has been mixed with two things. The first set of evidence holds that age is positively associated with technical efficiency (Hartarska et al., 2006; Paxton, 2007; Wijesiri et al., 2015). They argue that MFIs may be inefficient in their early years of operation due to higher operating costs. The second set of evidence holds that older MFIs are less efficient (Hermes et al., 2011). They suggest that younger MFIs may leapfrog older ones. The effect of Age on MFI efficiency, therefore, is not clear.

5.3.3 EMPIRICAL MODELS AND SPECIFICATIONS

In the empirical estimation, a cost function is specified using the Cobb-Douglas functional form as used in some recent studies (Oteng-Abayie et al., 2011; Hasan, Kamil, Mustafa, & Baten, 2012; Abate et al., 2014). Despite its known limitations, this functional form had an advantage in identifying growth patterns in the microfinance sector and it is simple in handling multiple inputs (Murthy, 2002). The translog functional form, though widely applied in the literature, has the tendency to exhibit near-multicollinearity due to the different output variables used (Farsi & Filippini, 2004). Mitchell and Onvural (1996) with robust estimations show that cost function does not clearly have a translog form in the banking industry. Translog specifications have also been found to result in overestimation of cost inefficiencies. For instance, Berger and Deyoung (1997) in their study of inefficiency in US banks found that more than 50 percent of the costs were overestimated by the translog model. Besides these limitations, our initial test estimation using both Cobb-Douglas and translog specifications revealed that the Cobb-Douglas better fits the available data set³⁹. However, as Ahmed and Bravo-

³⁹ The OLS residuals estimated from the translog function to serve as starting values for the Maximum likelihood estimation did not have the right skewness

Ureta (1996) note, the functional specification has a discernible but rather little influence on measured efficiency.

Cost efficiency reflects the closeness of the real costs of an MFI to that of ‘best practice’ firms in situations where identical outputs are produced under the same conditions (Hermes et al., 2011). Following the intermediation approach, the cost function in equation 5.5 is estimated. This empirical model is derived from the theoretic model developed by Battese and Collie (1995) presented in section 5.3.1 which has been applied previously by Hermes et al. (2011).

$$\begin{aligned} \ln TC_{it} = & \beta_0 + \beta_1 \ln SAL_{it} + \beta_2 \ln R_{it} + \beta_3 \ln GLP_{it} + \beta_4 \ln NAB_{it} + \beta_5 \ln LLP_{it} \\ & + \beta_6 \ln NLO_{it} + V_{it} + U_{it} \end{aligned} \quad (5.5)$$

Where

TC = Total cost faced by the institution and is proxied as the total expenses to total assets ratio multiplied by the total assets (US\$)⁴⁰.

SAL= Price of one unit of labour per year and is calculated as the operating expenses to total assets ratio multiplied by the total assets (US\$).

R = Interest payments per deposits held. It is proxied as the financial expenses to total assets ratio divided by the total deposits to total assets ratio.

GLP = Gross loan portfolio, total outstanding loans including current, delinquent and rescheduled loans, but excludes loans written off and interests receivable.

NAB = Number of active borrowers, the total number of clients actively accessing financial services at a given point in time

LLP = Loan loss provision, the percentage of the loan portfolio set aside against loan defaults based on cash flow

NLO = Number of loan officers, the total number of employees directly involved in managing the loan portfolio

⁴⁰ The variables TC, SAL, R and GLP do not have data directly available from the MIX market data source. The available data is in the form of ratios such as total equity to total assets. That explains why we multiply these ratios with total assets to construct data for TC, SAL, R and GLP.

V_{it} = Random disturbance term that captures the effects of random factors and measurement errors, and

U_{it} = the inefficiency term.

From the cost equation, SAL, R, and NLO are inputs while GLP, NAB, and LLP are outputs. All variables were taken in logs.

Computed ratios obtained from equation (5.5) are then regressed on firm-specific control variables to capture the factors that influence the efficiency of MFIs in SSA. The inefficiency model estimated is specified as:

$$U_{it} = f(\text{CPB, PAR, ALB, PFB, BSM, TA, ROA, OEA, YLD, AGE}) \quad (5.6)$$

where

U_{it} = the level of individual firm inefficiency

CPB = Cost per borrower, measured as the ratio of operating expenses to an average number of active borrowers. A good proxy for service delivery and we expect it to relate negatively to efficiency.

PAR = Portfolio at risk, measures the quality of MFI's assets that are at risk past 30 days due. Higher values indicate poor loan collection and inefficient operations.

ALB = Average loan balance per borrower (in US dollars), measures depth of outreach and calculated as total loans divided by the number of active borrowers. The coefficient can be positive or negative.

PFB = Percentage of female borrowers, measures breadth of outreach and calculated as the proportion of female borrowers to the total number of active borrowers. The coefficient can be positive or negative.

TA = Total assets, measures MFI Size. Larger size firms benefit from scale economies and are more likely to be cost efficient in operations. TA is expected to relate positively to efficiency.

ROA = Return on assets, measures profitability and sustainability of MFIs. Profitable MFIs are more likely to be efficient in their operations so we expect a positive relationship.

BSM = Borrower per staff member, measures MFI staff productivity and performance. Improved staff performance will lead to increased efficiency in operations; hence, a positive impact is anticipated.

YLD = Yield on the gross portfolio, a proxy for interest rate charged by MFIs to clients and the cost of borrowing. The expectation for a positive relation holds.

AGE= Age of MFI, the number of complete years of operation of MFI since establishment. MFIs often become efficient over time (Hartarska et al., 2006). AGE is expected to be positively related to MFI efficiency due to learning curve effects.

Estimation of equations (5.5) and (5.6) was done simultaneously in a one-step approach as proposed by Battese and Coelli (1995) following the maximum likelihood procedure. The two-step estimation procedure is said to violate some OLS assumptions during the first stage of estimation regarding the independence and identical distribution of the error component associated with the cost frontier.

5.3.4 DATA AND ESTIMATION

All the data used in estimation for this chapter came from the MixMarketTM database. Detail description of this data source is articulated in section 2.5 of chapter two for reference. The analysis relied on 619 observations over a period of ten years (2003-2013) in a panel data form. Computation of the cost function was done using the statistical software programme, LIMDEP version 10. Initial diagnostic tests were performed to check stationarity, multicollinearity and heteroskedasticity problems common with most econometric analysis. Correlation analysis was also performed to support in variable selection for the cost function estimation. Having satisfied all the initial test conditions, equations 5.5 and 5.6 were then run simultaneously following the one-step estimation procedure that produces estimates of the cost efficiency levels of the sampled MFIs and the factors that explain inefficiency using total cost as the dependent variable.

Six (6) separate regression models were estimated. Model [1] serves as the base model for the cost function estimated. Discussions of all the variance parameters are based on this model since the results remain robust even after incorporating additional variables in

the different models estimated. Model [2] captures the effects of size and profitability on MFI efficiency. Large size firms are often said to enjoy economies of scale and are therefore more likely to be profitable and efficient in operation. This holds true in our analysis since we found total asset (TA) as significant. Model [3] includes both depth and breadth of outreach variables to capture their influence on efficiency. Efficient MFIs as argued should have greater outreach to clients. The evidence here suggests that serving poorer and marginalised populations impede efficient operations. Model [4] examines MFI cost side variables to capture their influence on the efficiency level. Firms operating at a higher cost are less likely to be efficient. The statistical evidence provided here showed that other factors other than the cost incurred in lending and operating could be important drivers of efficiency. Model [5] includes risk and productivity variables to examine their influence on efficiency. The higher risk associated with making loans is often cited as a reason for the high interest rates charged by institutions. The empirical evidence shows that untimely recovery of loans drives MFI inefficiency. In some cases, outstanding loans have to be re-negotiated before payments can be made and this could affect financial and outreach performance of the institutions. Finally, model [6] combines all the models, including the age of the institutions, to evaluate the robustness of the results.

5.4 EMPIRICAL RESULTS AND DISCUSSIONS

Maximum likelihood estimates of the stochastic cost frontier model are presented in Table 5.2. Panel A report the results of the cost frontier estimation while panel B presents the results of the determinants of inefficiency. Using the Cobb-Douglas function to represent the production technology of MFIs with the truncated normal distributional assumption for the inefficiency term, most coefficients (83 percent) of the estimated models are significant with the expected signs.

The inefficiency parameter (λ) is significant in all the models, suggesting the existence of inefficiency among the sampled MFIs. The null hypothesis of ‘no inefficiency among the sample MFIs observed’ over the period is therefore rejected in favour of the alternative hypothesis. A value of λ being zero would have implied the absence of inefficiency and hence our inability to proceed with the maximum likelihood estimation.

Table 5.2: Maximum Likelihood Estimates of Cost Efficiency and Correlates of Inefficiency (Dependent Variable =TC)

Variables	Estimated Models					
	[1]	[2]	[3]	[4]	[5]	[6]
Panel A						
SAL	0.73641*** (85.56)	0.69368*** (89.52)	0.71069*** (31.06)	0.73343*** (68.43)	0.71935*** (82.57)	0.73792*** (64.98)
R	0.04927*** (4.74)	0.06474*** (4.88)	0.02055 (0.86)	0.03717*** (5.13)	0.06113*** (4.42)	0.01603* (1.93)
GLP	0.31024*** (10.81)	0.22428*** (8.18)	0.55507*** (8.05)	0.30825*** (11.45)	0.27280*** (9.93)	0.32815*** (11.38)
NAB	-0.02378 (-0.43)	0.02211 (0.42)	0.02504 (0.13)	0.10421* (1.75)	0.01212 (0.22)	0.01899 (0.31)
LLP	0.03226** (2.13)	0.01471 (0.92)	0.02981 (0.90)	0.06983*** (5.13)	0.01631 (1.13)	0.03529* (1.80)
NLO	-0.04604 (-1.14)	-0.05158 (-1.18)	0.11415 (0.76)	0.01208 (0.28)	-0.03823 (-0.79)	0.02802 (0.59)
Constant	0.62612*** (4.47)	-312.140 (0.03)	-0.88767*** (-3.01)	0.41024*** (3.66)	-227.4773 (-0.05)	0.48817*** (4.18)
Panel B: Inefficiency Model						
TA		0.54007*** (7.91)				0.80932*** (6.84)
ROA		0.03042 (0.04)				0.60407 (1.26)
ALB			-0.00178*** (-72.01)			-0.00059*** (-4.34)
PFB			-6.03330 (1.91)			-0.78980*** (-3.03)
CPB				0.00338 (1.21)		-0.00037 (-1.12)
OEA				1.41001 (0.66)		1.51869*** (4.58)
BSM					-0.00088 (-1.13)	-0.00477*** (-4.36)
YLD					-0.09992 (-0.31)	-0.16757 (-0.72)
PAR					-0.89759** (-2.16)	0.23364 (0.62)
AGE						0.02210 (1.41)
Constant	0.62612*** (4.47)	310.689 (0.03)	2.51154*** (12.92)	-1.1546422 (-0.53)	9.6664 (0.05)	-4.32355*** (-4.99)
Lambda (λ)	4.36494*** (110.89)	0.96395*** (14.15)	0.73781*** (8.44)	3.11809*** (18.24)	1.63144*** (31.44)	0.68435*** (6.14)
Sigma (u)	1.25676*** (3.35)	0.26104*** (60.18)	0.48845*** (8.68)	0.94947* (1.72)	0.44364*** (31.17)	0.22561*** (33.60)
Eta (η)	-0.03877*** (-14.19)	-0.00019 (-0.03)	-0.41252*** (-3.34)	-0.03027*** (-6.43)	-0.00024 (0.05)	-0.04149*** (-6.30)

Source: Estimation

Significance Level: ***, **, and * at 1 percent, 5 percent and 10 percent respectively

NOTE: Detail parameters for the base model [1]: $\gamma = 0.89722$; $\sigma = 1.28932$, $\sigma_v = 0.28972$, $\sigma_u^2 = 0.08290$, $\sigma_v^2 = 1.57946$. Log-likelihood = -380.53; Wald Chi2 (6) = 306.6; Prob > Chi2 = 0.0000.

Eta (η), which is the parameter for time varying inefficiency, is significant in four out of the six models estimated. The coefficient of the parameter (η) is negative in all model specifications which show that cost inefficiency of MFIs increases over time. For managers of MFIs, this is both bad news and a wake-up call to tackle the incidence of rising cost in the industry. The value of $\sigma^2=0.83118$ points to a wide variation in the cost of MFIs due to differences in cost efficiencies. It shows the goodness of fit and appropriateness of the distributional assumptions made regarding the error term.

From panel A, with the exception of the number of loan officers (NLO) and probably the number of active borrowers (NAB), all other variables included in the models are significant. NLO is not significant in any of the models, assuming both positive and negative coefficients. Similarly, NAB though with a positive coefficient is only significant in the model [4]. The variables SAL, R, and GLP have positive coefficients as expected and are statistically significant in all six models. A positive coefficient suggests an outward shift in the cost function and hence higher cost. The loan loss provision (LLP) variable, which captures the risk-taking strategies of MFIs had a positive coefficient and is statistically significant in three of the models estimated, indicating that MFI risk strategy has an effect on the cost frontier. A significantly positive coefficient, therefore, means an increase in such a variable will result in increased cost efficiency of the MFI (reduction in cost inefficiency).

The sum of the coefficients of all variables in Model [1] is 1.058 which shows a constant cost to size (CRS), indicating the existence of growth potential of the microfinance industry in SSA. The results show that personnel costs (SAL) constitute the greater proportion (69-73 percent) of the operational cost of MFIs included in the study. This finding compares favourably with that of Oteng-Abayie et al. (2011) who found the operating cost of MFIs in Ghana to be 66 percent. These higher operating costs which plague industry operations is one reason for the consistent negative returns obtained by firms in SSA relative to other regions, hence, less efficient in operations. The nature of the operating environment which is largely seen as 'business unfriendly' could also account for this coupled with regulatory and governance issues. The high cost of service

delivery naturally implied limited outreach poorer clients with the needed financial products and services.

Interest payments made by MFIs on loans is one component of their costs and is linked to efficiency. The results show that interest payments significantly drive the cost of operation of MFIs in the region. The magnitude is, however, low and variable (less than 7 percent) of the total cost compared with 18 percent reported by Oteng-Abayie et al. (2011) for Ghana. This could be attributed to the effects of regulation on deposit taking which prohibits unregulated MFIs from collecting deposits. Since most MFIs in SSA are non-profit and member-based organisations with a dominant social mission, little priority is placed on interest payments. Similarly, the results show that gross loan portfolio (GLP) accounts for between 22 to 55 percent of the total cost faced by MFIs. This reflects the small size nature of most firms in the industry. A small loan portfolio suggests less outreach even in the absence of mission drift. The average loan loss provision (LLP) of 3.3 percent can be said to be high compared with the 0.8 percent reported for the region (CGAP, 2010) and the agreed industry standard of 2 percent. This points to the need for MFIs to improve on loan collection efforts and method as the current recovery cost appears to drive down efficiency.

Panel B of Table 5.2 presents the results of the inefficiency model which captures the main sources of variation. The coefficient of average loan balance per borrower (ALB) is negative and significant as expected, signaling that MFIs with lower average loan balances (lending to the poor) are less efficient. This finding confirms that of Hermes et al. (2011) but contradicts that of Mersland and Strom (2010) who find the occurrence of mission drift due to portfolio diversification as MFIs grow older and larger. The breadth of outreach variable (PFB) had a negative coefficient and is statistically significant in the final model. This suggests that augmenting lending to more women will lead to increased cost inefficiency in MFI operation, a finding consistent with Hermes et al. (2011).

Total assets (TA) had a positive coefficient and are statistically significant, suggesting that as the asset base of an MFI increases, its cost efficiency level improves. Thus, larger firms in the industry have cost advantages and may be enjoying economies of scale. This result contradicts Segum and Anjugam (2013) who found negative impacts of MFIs

assets on efficiency in SSA. The coefficient for return on assets (ROA) is positive but statistically insignificant. This result is consistent with that of Wijesiri et al. (2015) and Lobovics, Hermes and Hudon (2014) who find ROA not to have a significant impact on MFIs social efficiency in Sri Lanka and Vietnam respectively. ROA also gives some insights into MFIs sustainability (Mersland & Strom, 2008) and the insignificant effects on cost efficiency may be attributed to the use of unadjusted measures of profitability in the study.

Furthermore, the financial management and performance factors included as explanatory variables are found to have effects on cost efficiency. The yield on gross portfolio (YLD) is statistically insignificant with negative effects on MFI cost efficiency. This goes contrary to our expectation. The coefficient for borrower per staff member (BSM) is negative but significant only in Model [6]. This means that increased staff productivity has positive cost benefits to the institutions. The need for MFIs to evaluate the kind of training programmes conducted for staff appears vital as it impacts on financial performance. Also, the operating expenses incurred in building a unit of the asset (OEA) had a positive and statistically significant coefficient. Higher operating costs, therefore, manifests in the inefficient cost of service delivery by MFIs.

Moreover, the importance of training and experience has been conceptualised to have positive impacts on MFIs performance. The positive coefficient for age means that inefficiency deteriorates as MFIs grow. However, the insignificance of the variable suggests that learning curve effects have no impact on MFI efficiency. This result supports previous studies (Oteng-Abayie et al., 2011; Tariq & Mohd, 2008) that document the positive impacts of AGE on MFI performances, but contradicts that of Hermes et al. (2009) who found younger firms leapfrogging older institutions in terms of efficiency in operations.

To conclude, the analysis shows that, models [1] and [6] better explains the cost efficiency of MFIs and could be useful in decision making. All discussions on the variance parameters are based on the model [1] since the results remain robust even after incorporating additional variables. The assets level of a firm, as well as the loan size offered, are key firm level factors that drive the operating cost of MFIs and hence

sustainability and efficiency. This means that any move to help promote efficiency in MFI operations should be targeted at the total assets and average loan size.

The overall distribution of economic efficiency scores for the period 2003 to 2013 is captured in Table 5.3. The minimum and maximum efficiency range from 7.4 percent to 94 percent respectively with a mean average score of 40.9 percent. This implies that the sampled MFIs exhibit wide variation in inefficiency in their operations. The ratio of the variation due to inefficiency to the total variation (γ) shows that 89.7 percent of the variation in the level of total cost is due to inefficiency. The average economic efficiency score shows that on average MFIs can reduce costs by 59.1 percent and still produce the same level of output by improving on their efficiency. Nonetheless, average MFIs could save 56.48 percent costs $[1 - (40.9/94)]$ if they were to follow ‘best practices’ and operate at the level attained by the most cost efficient units within the sample. The observed inefficiency results from this analysis lend more support to previous studies by Oteng-Abayie et al. (2011); Marwa and Aziakpono (2015) and Wijesiri et al. (2015). The efficiency score distribution revealed that 74.96 percent of MFIs had scores below 50, with only 24.33 percent scoring above this mark. Only 4.83 percent of MFIs had scores above 90 which can be said to be operating near efficiency levels. Inefficiency, therefore, exists due to management differences among the 71 firms chosen.

Table 5.3: Distribution of Efficiency Scores from Cost Function

Efficiency Score	Frequency	Percentage (%)
Less than 10	5	0.80
10-20	61	9.83
20-30	123	19.83
30-40	146	23.54
40-50	130	20.96
50-60	88	14.19
60-70	17	2.74
70-80	5	0.80
80-90	14	2.25
Above 90	30	4.83
Mean		0.4095059
Standard deviation		0.1862572
Minimum		0.0742533
Maximum		0.9400140

Source: Estimation.

Figure 5.1 depicts the kernel density plots of the inefficiency estimates while Figure 5.2 illustrates the year-wise average cost efficiency of MFIs. The average efficiency estimate for the whole MFI industry for the study period shows that MFIs achieved 40.9 percent cost efficiency in their funds' intermediation activities compared with best-practised MFIs operating in the same environment. The highest cost efficiency was in 2004 (45.28 percent) but after that, the industry witnessed a steady decline up to the year 2013. This finding is in sharp contrast with that of Hassan and Sanchez (2009) who found declining levels of MFIs efficiency for the period 2001-2005 in Latin America, the Middle East and North Africa (MENA), and South Asia countries. Though the average cost efficiency has been on the decline for the industry the proportional change over the years has been variable. For instance, the cost efficiency change for 2006 to 2007 was 0.7 percent compared with that of 2007 to 2008 which was 1.5 percent. The year-wise average cost efficiency, though on the decline, seemed to fluctuate during the study period.

Figure 5.3 shows the relationship between the year-wise mean efficiency of MFIs as against the loan loss provisioning made by MFIs over the study period. The graph reinforces the results of the study. That is, as the mean efficiency level of MFIs decline over the years, their cost of operation increases, making the firms less cost efficient. This finding supports the widely held view that issues of poor loan recovery often results from internal inefficiencies as expressed by various studies (Bhatt & Tang 2001). This is a pointer to managers of MFIs to take proactive steps and improve on their loan recovery efforts.

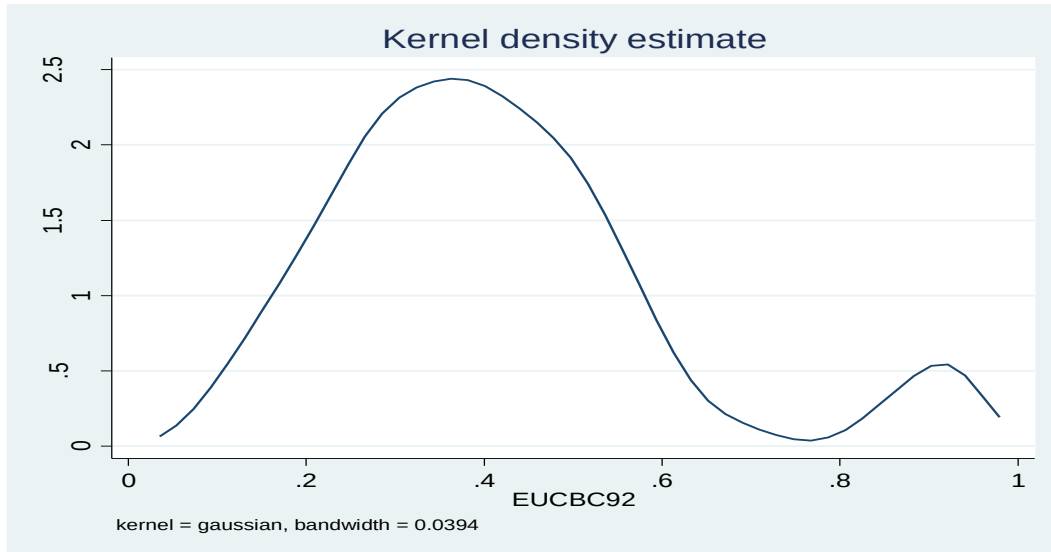


Figure 5.1: Kernel Density Estimates for Inefficiencies from the Time-Dependent Model

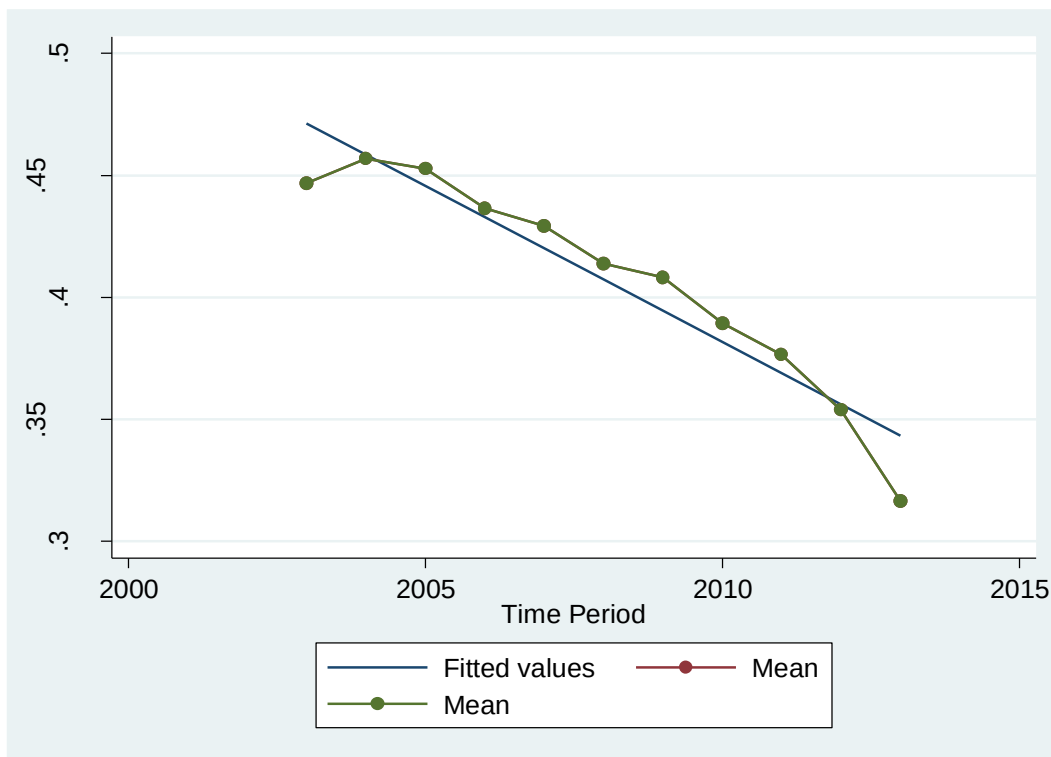


Figure 5.2: Year-wise Average Cost Efficiency of MFIs in SSA

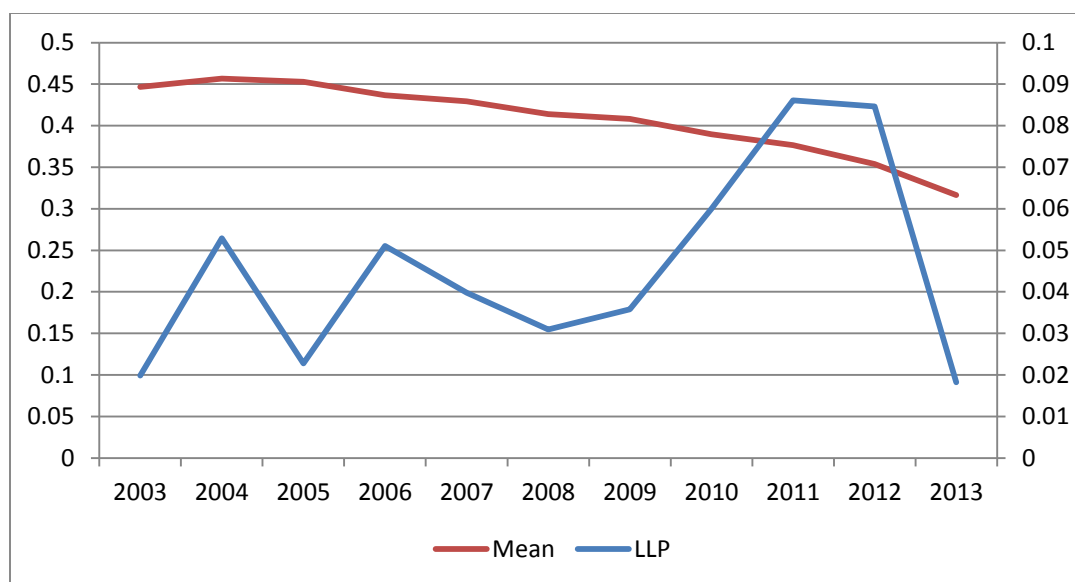


Figure 5.3: Relationship between MFIs Mean Efficiency and Loan Loss Provision

5.5 CHAPTER SUMMARY

This chapter applied the SFA to investigate the cost efficiency of MFIs in SSA and the factors that influence inefficiency using 619 observations for the period 2003 to 2013. The literature on both the theoretical and empirical aspects of efficiency analysis was discussed. The literature review revealed that both the DEA and SFA approaches have been widely applied in empirical efficiency studies. However, due to functional specification of the cost function and the distributional assumptions required by the SFA, most recent researchers tend to neglect the use of the SFA in favour of DEA. The results show that MFIs are cost inefficient in their intermediation role as they currently achieve a mean cost efficiency of 40.09 percent. A wide variation across MFIs in the industry also exists and the majority of MFIs studied (74.96 percent) were found to be operating at the low end of the efficiency scale. The main determinants of MFIs efficiency are total assets, operating expense to assets ratio, average loan balance per saver, the percentage of the female borrower, and borrower per staff member. Meanwhile, the year-wise average cost efficiency revealed a decline in efficiency levels which has implications for industry sustainability. It is recommended that practitioners and managers of MFIs should improve on productivity through technical training in portfolio quality management and

offer diverse financial products and services innovatively at minimised cost. The next chapter presents and discusses the impact of microfinance regulation on MFIs social and financial performance.

CHAPTER 6

EFFECTS OF FINANCIAL REGULATION ON MICROFINANCE INSTITUTIONS' SUSTAINABILITY AND OUTREACH IN SUB-SAHARAN AFRICA

This chapter seeks to address objective four of the study (*To analyse the effects of financial regulation on MFI sustainability and outreach performance*). In section one, a brief overview of regulation is presented which contextualises the regulation problem in SSA. The conceptual framework and theories that underlie microfinance regulation are discussed in section two. The discussion covers three main theories: the public interest theory, the capture theory and the economic theory of regulation. This is followed by a detailed empirical literature review in section three. The review covers the effects of regulation on MFIs in terms of the costs and benefits, funding structure of the institutions, sustainability and outreach performance and economic growth. The methodological approach using the dynamic generalised method of moment technique is discussed both theoretically and empirically in section four. This is followed in section five by a presentation and discussions of the main empirical results obtained. The chapter concludes with a summary in section six.

6.1 BACKGROUND

The impact of regulation in financial markets especially the microfinance industry, has seen a remarkable increase since the 1990s, even though the same cannot be said of the industry in Sub-Saharan Africa. The microfinance literature identifies the legal and regulatory framework as one factor that influences the emergence of different kinds of institutional microfinance providers, especially their development as self-sustaining and commercial institutions. Regulation is seen as appropriate both to facilitate the commercialisation and sustainability of the microfinance industry (especially through mobilisation of savings from the public) and to ensure the stability of the financial system (as well as the protected deposits).

Microfinance which started with development logic has gradually transcended into market logic and is now locked over regulatory logic (Khavul, Chavez, & Bruton, 2013). While institutional change has continued unabated, the role of entrepreneurs in microfinance has also changed significantly over time, making regulation of the market very critical. MFI governance has been consistently reported as one of the major challenges facing the sector in recent times (CSFI, 2011, 2012, 2014). The proliferation of institutions in the industry with the drive to make profits has made regulation indispensable for the sector. The existence of financial market imperfections arising out of the asymmetric distribution of information between regulators and the institution being regulated provides yet another strong case for regulatory intervention. Robust rules are needed in microfinance for efficient fund mobilisation (prudential regulation), appropriate risk management and customer protection (Meagher, 2002).

Deposit mobilisation continues to remain a key justification for microfinance regulation as it allows economies of scope in lending and protection of depositors (Vogel, Arellano, & Thomas, 2000). However, the risk faced by depositors has been found to be insignificant to trigger regulation (Christen, Layman, & Rosenberg, 2003). Also, the size of deposits and the number of assets has been argued to be too small and insufficient to justify regulation of the sector. Valenzuela and Robin (1999) however, maintain that the decision to impose regulation is dependent on the overall size of the market and the specific country context. Nonetheless, the observed crisis in major microfinance markets in 2010, which culminated in the over-indebtedness of most microfinance clients, erosion of the portfolio quality of most institutions, and suicides in some cases, brought into sharp focus the issue of regulation to help protect depositors and ensure the soundness of the financial system (Hossain, 2013; Bayar, 2012). Both microfinance practitioners and institutions alike have expressed the need for regulation in the wake of the crisis and the exponential growth of the sector. However, issues on how to regulate MFIs still linger on while various country-level arrangements are in place to accommodate these institutions (Steel & Andoh, 2003).

In SSA, microfinance regulation became clear in the 2000s following various legislative types put in place by various countries. In most countries, the existing banking laws did

not cover MFIs and no special laws were in place to govern their operations. However, any form of regulation adopted in microfinance market needs critical evaluation since it has the potential to either promote or impede development. Regulating MFIs often comes in the form of interest rate ceilings, foreign exchange controls, limiting new entrants into the market, and establishing reasonable capital requirements all of which are undertaken by government regulatory institutions or by self-regulation⁴¹ (Chavez & Gonzalez-Vega, 1992). Most countries have adopted pragmatic approaches to supervising the sector and according to Ndambu (2011: 2), as of 2008, 29 countries in SSA had put in place specialised laws to moderate the operations of microfinance with only 3 countries not having any form of legislation. (See details in Appendix C).

6.2 THEORIES OF REGULATION

The theory of regulation draws heavily from various existing economic theories, such as the economic theory, transaction cost theory, legal contract theories, property rights theory and the incentives theory. These form the basis of regulating financial markets and are applicable to microfinance as well. This section briefly discusses the main theories of regulation relevant to the microfinance sector (public interest theory, private interest theory and the economic theory of regulation). The discussion covers variants of these theories, empirical evidence in favour or against the theories and their relevance to the microfinance sector.

6.2.1. THE PUBLIC INTEREST THEORY

The public interest theory of regulation has been in existence since the 19th century with various contributions to the subject matter. Formally proposed by Viscusi, Vernon, and Harrington (1992), the theory is also known as the normative analysis as a positive theory (NPT). It seeks to understand when regulation should take place and when it does occur.

⁴¹ Is a form of regulation undertaken by the institutions themselves through associations, networks and apex bodies as a way of minimising the cost of regulation.

The theory holds that regulation is supplied in response to demands by the public to correct market failures or address unfair practices.

Two basic assumptions underpin this theory: (i) economic markets are extremely fragile and apt to operate very inefficiently or inequitably if left alone, and (ii) government regulation comes at no cost (free) (Baumol, 1952). These assumptions provide the basis for the argument that government interventions in the economy (such as trade union protection and public utility regulation) were simply responses to the demands of the public to correct observed inherent inefficiencies and inequalities associated with the free market economy. Regulation, therefore, is viewed as effective in ameliorating market failures and contributes to the promotion of public interest. However, Buchanan (1972) notes that individuals pursue their self-interest in the public domain and because of that, the regulatory process should be assessed as the product of relationships between different groups. The comprehensively developed version (New Haven) assumed full information, perfect enforcement and benevolent regulators (Noll, 1983, Rose & Ackerman, 1988). Market failure still exists; regulation is more efficient, deregulation takes place when more efficient institutions develop, and that politicians act in the public interest. Viscusi et al (1992: 311) put forward the hypothesis that regulation occurs when it should occur because the potential for a net social welfare gain generates public demand for regulation. This means that in the absence of market failures (inefficiency or inequitable market practices) there would be no need for government intervention.

Market failures are rooted in unrestricted competition, natural monopoly power and the existence of externalities. Unrestricted competition does not work well under certain technological conditions and this may result in either too many firms producing and/or prices exceeding the socially optimal level. In addition, the existence of a natural monopoly in an industry leads to externalities which provide the basis for government intervention to ensure net welfare gains. The problem with a natural monopoly lies with the conflict between allocative efficiency and productive efficiency. Productive efficiency requires only one producer to minimise resources. However, in this case, the firm will set price above cost so as to maximise profit, leading to non-achievement of allocative efficiency. Many competing firms are needed to generate allocative efficiency

(price is driven down by marginal cost) leading to productive inefficiency (due to the presence of many firms). Government intervention becomes relevant in this case. Furthermore, perfect competition may not result in welfare-reducing transactions where externalities exist.

One advantage of the normative analysis as a positive theory (NPT) is that it is the best possible means of allocating scarce resources for individuals and for the good of society. Theoretically, under certain circumstances, resource allocation through market mechanism is optimal (Arrow, 1985). However, in practice, optimal resource allocation may not occur, hence the need for other approaches to improve efficiency in resource allocation, government regulation (Arrow, 1985). For a natural monopoly, price and entry regulation may permit both allocative and productive efficiency. In the case of externalities, the imposition of a tax (or subsidy) on the activity that generates the positive (negative) externality can result in socially preferred allocation (Viscusi et al., 1992: 311). This is largely coordinated by the price mechanism.

This theory has been criticised on two major grounds. Firstly, it is said to be an incomplete theory in the sense that it only put forward the hypothesis that regulation occurs when the potential for net social welfare gains generates public demand for it. However, the mechanism through which the public achieve this remains unexplained. Evidently, legislative action and regulatory agency behaviours are critical elements in regulation. The question then is, how does the potential for net social welfare gains induce legislatures to pass regulatory legislation and regulators to pursue the proper actions? These have not been addressed by the theory. Furthermore, it assumes that regulation occurs to correct a market failure but it does not generate the testable predictions required by theory. Thus, the formation of public preferences and the translation of these interests into welfare-maximising regulatory measures is lacking.

Secondly, a considerable amount of the available empirical evidence does not lend support to this theory. The regulation of a natural monopolist does not always constrain firm pricing behaviour as evidence show that price tends to be around the monopoly level. Stigler and Friedland (1962) found that regulation has an insignificant effect on the pricing of electricity utilities. Posner (1974) and Viscusi et al. (1992) observed that many

industries went through regulation (especially price and entry regulation in the trucking, taxicab, and securities industries) which were neither natural monopoly nor plagued by externalities as the theory posits. For instance, Posner (1974: 3) concludes that ‘the theoretical and empirical evidence available after years of research shows that there is no positive correlation between regulation and the presence of external economies or diseconomies or with monopolistic market structure’. Further evidence shows that some firms openly supported and even lobbied for regulation⁴² to help eliminate competitors so that above normal profits could be earned over time. This action though not necessarily inconsistent with the theory simply does not fit well.

Furthermore, the idea of government being conceived of as a costless and effective instrument for altering market behaviour has been explained by emerging themes rather than that put forward by the theory. Evidence based on case studies shows that certain schemes of government regulation (such as airlines, stock markets, a new drug, producers of natural gas) could not be explained based on the equitable distribution of wealth. Posner (1974) notes the need for more analytical and empirical investigations to help transform the NPT into a positive theory of regulation.

These criticisms led to a reformulation of the theory to hold that regulatory agencies are created purely to serve the public interest but are then mismanaged leading to non-achievement of their intended purposes. However, this reformulation fails to account for the substantial evidence of the role of influential groups distorting regulatory goals in the enactment of the legislation setting up the regulatory scheme. In addition, the nature of many of the tasks that have been assigned to the regulatory agencies could not be operationalised simply because the necessary instruments of measurement and control do not exist (Posner, 1969). This led to failure and distortion of the efficient functioning of regulated markets and high cost of effective legislative supervision of the agency’s performance. Ehrlick and Posner (1974) argued that legislative production is a costly process because it involves bargaining among a number of individuals and the cost of bargaining rises with the number of bargainers. Hence, as the business of the legislature

⁴² Example is regulation of railroads in the 1980s.

risers, it delegates more of its work to agencies and exercises progressively less control over the agencies.

Though this theory provides some useful insights, it is generally seen as unsatisfactory. A serious problem with any version of the public interest theory is that the theory contains no linkage or mechanism by which a perception of the public interest is translated into legislative action.

This theory, however, has some relevance to the microfinance sector. The issue of market failure which is central in this theory applies to the microfinance sector. High information asymmetries and moral hazards which characterise the microfinance sector make the situation even more relevant. Furthermore, the need for regulation in the microfinance sector following observed malpractices and distortions in the marketplace also makes the theory relevant. Protection of depositors, promoting the consumer protection issue, and the move by apex bodies to pursue self-regulation are vital in ensuring sanity in the microfinance sector. Of critical relevance is also the issue of competition which appears fierce in microfinance. Since regulation has been shown to be associated with net gainers and losers, understanding the impacts of regulation on microfinance sustainability and outreach performances is relevant. The assumptions of fierce competition, market failures and externalities which underpin the theory and generate public demand for regulation are also central issues in microfinance. Both consumers and MFIs alike have expressed the need for regulation and this is reflected in the public interest theories where some firms even had to lobby for regulation for their own good.

6.2.2. THE PRIVATE INTEREST THEORY OF REGULATION

Espoused by a mixture of welfare state liberals, Marxist and free market economies, private interest theory (the capture theory) holds that regulation is supplied in response to the demands of interest groups struggling among themselves to maximise the income of their members. The theory states that either regulation is supplied in response to the industry's demand for regulation (legislators are captured by the industry) or the regulatory agency comes to be controlled by the industry over time (regulators are

captured by the industry) (Bernstein, 1955). Thus, agencies meant to regulate the industry are ‘captured’ by that industry. The regulatory capture⁴³ theory argues that regulation is captured by the interests of the regulated and then ceases to work in favour of the general public interest, as was intended (Stigler, 1971; Peltzman, 1976; High, 1991). The means that regulation promotes industry profits rather than social welfare. Regulation, therefore, is seen as a tool that promotes the interest of a few rather than the general public, thereby impeding efficiency in service delivery.

The theory builds on the observed weaknesses in the normative analysis as a positive theory (NPT). Evidence shows that regulation used to be pro-producer in nature as it improves firm profitability. In competitive industries, regulation supports a price above cost and prevented entry from dissipating rents. Finally, in some natural monopolistic industries, evidence shows that regulation had little effects on price, such that above normal profits could be earned. This evidence support claims that regulation was inherently pro-producer (Jordan, 1972).

The theory takes several distinct forms (the Marxist, political scientist formulation, and the economists’ version). However, crucial differences exist among the capture theorists in the literature. In the Marxist formulation, capitalists are assumed to control all institutions in society including regulation. Summarised by the Marxist Ralph Nader, ‘capitalists control the main institutions of the society of which regulation is one of those institutions’. However, economic regulation as observed serves the interest of small businesses and even non-business groups (such as dairy farmers, labour unions). A key weakness in this version of the capture theory is that it lacks an explanation.

Bentley (1908) and Truman (1951) are some of the key proponents of the political scientists’ version of the theory which emphasises the importance of interest groups in public policy formation. They provided empirical evidence in support of the role of interest groups in legislative and administrative processes. However, there was no theoretical basis for this assertion and their work could not offer plausible explanations as

⁴³ The tendency of the regulatory process to become biased in favor of particular interest groups. In extreme cases, regulation may result in socially sub-optimal outcomes due to inefficient bargaining (see Newbery, 1999, Laffont 1999).

to why some interests are effectively represented in the political process while others are not. Posner (1974) argues that this version of the interest group theory is unacceptable in its present form and that the economists' version may hold greater promise as it has both theoretical and empirical foundations.

Regulatory capture predicts that regulated firms will earn higher rates of return (on average) than non-regulated firms. The theory relies on the use of government legal coercive power (monopoly control) for the supply of regulation. Incumbent firms can be protected from price wars and entry into new lucrative markets through government regulation. Furthermore, private companies compete for the supply of regulation since regulated firms are more stable financially and more profitable than non-regulated firms.

The capture theory shows that 'overtime, regulatory agencies come to be dominated by the industries regulation (Bernstein, 1955). This formulation is more specific than the general public interest theory because it singles out a particular interest group (regulated firms) in their efforts to influence regulation. It also predicts a regular sequence in which the original purposes of a regulatory programme are later thwarted through the effects of the interest group.

However, the theory has been criticised and described as unsatisfactory for various reasons (Posner, 1974). Firstly, it is difficult to distinguish it in practice from the other versions of the public interest theory. Secondly, it only states the hypothesis that regulation is pro-producer without any theoretical foundations or plausible explanation. Thirdly, it does not explain how regulation came to be controlled by the industry and no satisfactory reasons are advanced as to why other interest groups (consumers, labour groups, firms) involved in the regulatory process are unable to capture the regulatory agency except the industries being regulated. Furthermore, if regulation is meant to promote the interest of the regulated, why have industries not created an agency that will champion their interest? These critical questions remain unexplained by the theory.

Moreover, the theory is also said to be contradicted by the available empirical evidence. Thus, it lacks predictive power in situations where a single agency regulates separate industries with conflicting interests. For instance, the initial purpose of the Interstate

Commercial Act in the US was to shore up the railroad's cartel. Later amendments, however, made it less favourable to the railroads. The consequence of such a change is opposite to what the capture hypothesis predicts. Finally, the capture theory ignores a great deal of the evidence that the interests being promoted by regulatory agencies are frequently those of customer groups rather than those of regulated firms themselves. Posner (1971) maintains that some of the structural issues of the regulatory process are best explained by the influence of interest groups of which customers of the regulated industry are an integral part.

Furthermore, some empirical evidence shows that the capture theory fails to explain the widespread practices of cross-subsidisation observed in regulated industries. For most regulated industries, cross-subsidisation⁴⁴ and a bias towards small producers were the prominent features that characterised the industry. However, the behaviours of cross-subsidisation are inconsistent with profit maximization and cannot be considered pro-producer. In addition, small producers were allowed to earn greater profits under regulation than they would have earned in unregulated markets. Another strong piece of evidence against the capture theory was the long list of regulations that were not supported by the industry (oil and natural gas regulation, social regulation of the environment, product safety). A number of regulations that were adopted by the regulatory agencies could not be reconciled with the theory and were opposed by regulated firms. As noted by Posner (1974) much regulation is opposed by industries because of the negative effects on profitability.

In spite of these shortfalls, the capture theory has some relevance to microfinance. First, the same actors (consumers, regulators, regulated, legislators) are involved in the microfinance industry and the interest group dynamics associated with regulation are unlikely to be different. The key lesson can, therefore, be drawn from the theory to ensure that regulation serves its intended purpose. Secondly, pushing regulation to address the interest of clients has gained more prominence in microfinance in recent times. Issues of consumer protection through regulation will likely impact positively on the financial

⁴⁴ It took the form of uniform prices being charged to different consumers even though the marginal cost of supplying these consumers differed greatly.

inclusion drive of MFIs and enhance outreach. Regulation will likely have effects on firm profitability. At the same time, it could induce funding for MFIs due to increased transparency and create more public confidence in deposit mobilization. The issue of cross-subsidisation as a means of wealth distribution is relevant in microfinance. Cross-subsidisation is already taking place in microfinance as MFIs try to set their interest rates and on the subsidised loans given out for the attainment of the social goals of these institutions. Lessons can, therefore, be drawn from the theory to support the on-going cross-subsidisation observed in the industry.

Both the public interest and private interest views of regulation points to the need for independent regulatory agencies to improve MFIs' efficiency. Self-regulation by MFIs is already on going in the microfinance sector and lessons from these theories could help to refine it for wider adoption. Certainly, self-regulation is complementary to government regulation and it will promote industry development.

6.2.3 THE ECONOMIC THEORY OF REGULATION

Proposed by George Stigler (1971), the theory offers explanations of some of the unexplained and untrue assumptions in previous theories. Also, there was a need to understand the observed regulation and deregulation of various industries that was taking place. The theory admits the possibility of capture by other interest groups but maintained that economic regulation serves the private interests of politically effective groups (Political capture). Available evidence at that time showed clearly that regulation was weakly associated with market failures (in conflict with normative analysis as a positive theory) and at the same time was not exclusively pro-producer in nature as predicted by the capture theory. Depending on the regulated industry, the welfare of different interest groups is improved by regulation. Stigler (1971) generated assumptions and predictions regarding regulation of these industries and the form that regulation would take to ensure logical implications of the assumptions.

The basic assumptions that underpin his analysis were twofold: (i) the basic resource of the state is the power to coerce. Hence, any interest group that is able to convince the

state to use this coercive power to the benefit of that group improves its welfare and (ii) agents are rational in choosing actions that are utility maximising. As Stigler put it 'political systems are rationally devised and rationally employed and can be used as appropriate instruments for the fulfilment of the desire of members'. These two assumptions led to the hypothesis that regulation is supplied in response to the demands of interest groups acting to maximise their income and regulation serves as one avenue for interest groups to increase their incomes and have the state redistribute wealth.

The outcome of Stigler's (1971) approach to economic regulation in predicting the form of regulation and which industries will be regulated yields some key results: (i) regulation is more likely to be designed to benefit relatively small groups with strong preferences on regulation at the expense of relatively large groups with weak preferences; (ii) In most cases, the implication will be pro-producer and price will be set below the profit maximisation level due to the influence of consumer groups; (iii) Regulation will likely be relatively competitive or monopolistic so that the greatest impact can be achieved; and (iv) The presence of a market failure makes regulation more likely, as the gain to some interest groups is large relative to the loss of other interest groups.

Posner (1971) introduced cross-subsidisation⁴⁵ into the analysis of economic regulation as a means of distributing wealth among consumers. Such pricing behaviour can be inconsistent with both profit and welfare maximisation. One crucial function of regulation is to assist the government in redistributing resources (Posner, 1971). The underlying assumption is that society desires to distribute resources among consumer groups and cross-subsidisation aids in achieving that. The outcome of subsidisation is that some consumers (those priced below cost) have more influence on the political process than other consumers (those priced above cost). The model explains the outcome of competition among interest groups in their efforts to influence government policy for improved welfare. However, it is inconsistent with welfare maximisation and profit maximisation and cannot be explained by the normative analysis as a positive theory (NPT) and the capture theory respectively.

⁴⁵ A pricing system through which the same product is priced differently to different consumer groups in the market. For instance, a low income group paying a price lower than the average cost while higher income groups pay a price above the average cost.

Furthermore, Peltzman (1976) formalised the analysis of Stigler in a model and used it to generate predictions about which industries would be regulated and the form that regulation would take. The model is based on a legislator/regulator choosing a regulatory policy that maximises political support. One key assumption of the model is that the legislature chooses policies that maximise their political support less political opposition. This is plausible since the legislature will desire re-election at the expense of social welfare maximisation.

Two main results emerged from this model: (i) Regulation is likely to be biased in favour of a small interest group with strongly felt preferences at the expense of a large interest group with weakly felt preferences, and (ii) A legislature will choose a policy that transfers less than the maximum amount of wealth so as to reduce political opposition by a large amount. This implies that, while economic regulations are likely to take the form of price and entry regulation (which raises industry profits), the price will be set below the monopoly level. The regulatory policy will likely raise industry profits but is unlikely to maximize it and a pricing behaviour different from that set by an unregulated monopolist could be anticipated. The model contributed to enhancing understanding as to why many regulatory policies benefit the industry being regulated. Being a small group with strong preferences over regulation, the industry is better able to provide political support for a legislator than are consumers. This is because consumers are plagued with large numbers of weakly felt preferences with respect to regulation.

Finally, in contrast to the Peltzman model, Becker (1983) proposed a model which focuses on competition between interest groups. The basic assumptions of this model are that politicians, political parties, and voters transmit the pressure of active groups and that regulation is used to promote the welfare of more influential interest groups. A key feature of the model is that the aggregate influence of interest groups is fixed and regulatory activity is measured through wealth transfer. This means that the amount of regulatory activity is determined by the level of influence of one interest group relative to others. Each group, therefore, chooses a level of pressure that maximises its welfare given the pressure level chosen by the other group.

The Becker model yields very exciting results. Firstly, competition among groups for influence in the political process is very dependent on the use of economic resources to obtain wealth transfer, leading to Pareto inefficient outcomes. An increase in marginal deadweight loss from regulation leads to a decrease in the amount of regulatory activity (less welfare transfer). This implies that regulatory policies that are welfare-improving are more likely to be implemented than those that are not. Secondly, industries plagued by market failures stand the chance of being regulated. This means that groups that gained from regulation will apply more pressure while those harmed will apply less pressure against regulation. Thirdly, the model provides theoretical foundations for the normative analysis as a positive theory (NPT). Thus, where market failures occur, there are potential welfare gains from regulation. Finally, it shows that some interest groups will always gain while others will lose in the process.

In sum, the economic theory of regulation is based on two insights: (i) economic regulation should be viewed as a product whose allocation is governed by the laws of supply and demand, and (ii) the theory of cartels may help in locating the demand and supply curves. Thus, viewing regulation as a product allocated in line with the principles of supply and demand directs attention to the benefits it serves when supplied and the cost of obtaining regulation. The assumptions of self-interest and rational choices are integral to the theory. However, the regulation of markets may not result in welfare improvements due to information asymmetries arising from imperfect regulation. It is a complete theory and can be tested empirically.

Nonetheless, certain shortfalls exist in the literature. Firstly, the theory excludes the possibility that a society concerned with the ability of interest groups to manipulate the political process in their favour might establish institutions that enable genuine public interest considerations to influence the formation of policy. Secondly, the available empirical evidence shows mixed findings in support of the theory. Any legislation that benefited some group at the expense of the general public would count as support for the economic theory of regulation. Most of the empirical evidence on regulation is consistent with the interest group theory. Supportive evidence from a number of case studies showed predictions by economic theory regarding the characteristics and circumstances

of interest groups had real benefits from regulation. A number of case studies support the view that economic regulation is better explained as a product supplied to interest groups than as an expression of the social interest in efficiency or justice (Jordan, 1972; Peltzman, 1965). Posner (1971) provides supportive evidence of the influence of interest group pressures on regulatory structure and procedures. He suggested that some standard features of public utility and common feature regulations were best explained by the theory that regulation is designed in significant part to confer benefits on the politically effective customer groups. Posner (1971) however, argued that much regulation may be the product of coalitions between the regulated industry and customer groups for monopoly power and lower price benefits respectively.

On the other hand, evidence against the theory also exists in the literature. Firstly, most of the industries studied were not typical and the empirical research has not been systematic. Researchers do not draw a random sample of the economic legislations passed to examine how much of that legislation can be explained by the economic theory of regulation. Instead, selection of cases has been biased towards finding evidence to support the theory. Furthermore, there is no clear definition of what constitutes 'economic regulation' as a subject of inquiry. For instance, criminal law, civil rights legislation, legislative reappointment and other 'noneconomic' regulations all affect the economic welfare of people. Hence, it is arbitrary to exclude these from the analysis of economic regulation since they obey the same laws of social behaviour.

Secondly, the empirical evidence provided by some case studies is difficult to reconcile with economic theory. Studies have shown that maximum price regulation has little or no effect on the price levels of public institutions (Moore, 1970; Jackson, 1969; Stigler & Friedland, 1962). This shows that efficiency in welfare maximisation cannot be guaranteed. Meanwhile, ineffective regulation has no firm basis in economic theory.

Thirdly, the theory ignores some important elements in the regulatory process by assuming that interest groups adequately control legislators and that legislators adequately control regulators. However, considering that numerous actors (voters, legislators, regulators, and consumers) are involved in determining the regulatory process, it is unclear how interest groups are able to create more of an impact on the

regulatory policy than others. Furthermore, the role of the judiciary has been ignored in the economic theory of regulation. The courts have shown that they can be key actors in the regulatory process. Judicial consent is critical in the reinterpretation of orders anytime a change is implemented. For instance, a reinterpretation of the existing statute was necessary for the deregulation of the airline, telecommunication, and several other industries. Deregulation was implemented only in industries that had judiciary approval and where it did occur, the opposition from committees of congress were irrelevant (Ladha, 1990: 46). How interest groups then get the judiciary influenced and what motivates them are relevant issues not explained by the economic theory of regulation.

Fourthly, the empirical evidence in support of the theory is challenged on the grounds that it is unable to offer a satisfactory explanation of both regulation and deregulation of industries and the necessary change factors. The economic theory of regulation predicts deregulation when the relative influence of interest groups that are benefited by regulation is reduced through (i) changes in cost or demand conditions and, (ii) changes in the cost of organising groups (new mechanisms/ technological discoveries) which reduce free-rider problems. Studies on deregulation provide mixed evidence (supportive and inconsistent) of the economic theory of regulation (Keeler, 1984; Peltzman, 1989). For instance, deregulation of the intercity telecommunications market was supportive of the economic theory of regulation. On the contrary, deregulation of the railroad industry in the US (from 1976-1980) is inconsistent with the economic theory of regulation.

Finally, the effects of economic regulation are difficult to trace in practice. For instance, imposing a tax on gasoline might help the railroad industry. However, which industries will actually benefit and which ones will be injured in the regulation process is difficult to point out. In general, while the economic theory of regulation advances our understanding of the nature of government interventions, much of the empirical evidence appears inconsistent with the theory.

The economic theory of regulation is relevant to the microfinance sector in a number of ways. Firstly, the basic principles of economic theory that underpin the economic theory of regulation relate directly to the microfinance sector. The supply and demand forces are the key predictors of the market performance and the dynamics will most likely be the

same. Secondly, the form that economic regulation takes (Rate of return/cost of service regulation, price cap regulation, and sliding scale regulation) are relevant in microfinance. The cost of service regulation may be more directly applicable to the microfinance sector since it is closely related to deposit services. Thirdly, the assumptions of market failure and externalities are very relevant to microfinance due to the nature and characteristics of clients served. Since economic regulation produces winners and losers, understanding the real impacts of microfinance regulation on sustainability and outreach perspectives remains crucial. Competition among various interest groups is also relevant in microfinance. As pointed out by Helms (2006) a favourable policy environment allows a range of financial service providers to compete in offering high quality and low-cost services to poor clients. There is, therefore, the need to improve the regulatory regimes to overcome some of the regulatory bottlenecks facing microfinance by drawing key lessons from the development of the economic theory of regulation.

6.3 A CONCEPTUAL FRAMEWORK FOR MICROFINANCE REGULATION

Regulation of financial institutions is very important in promoting development objectives, enhancing competition and protecting the interests of consumers (Arun, 2005). Christen et al. (2003) define regulation as ‘the set of binding rules governing the conduct of legal entities and individuals, which are either adopted by a legislative body (laws) or an executive body (regulations)’. In a broader context, regulation is a set of enforceable rules that restrict or direct the actions of participants and as a result influence the outcomes of their actions (Chaves & Gonzalez-Vega, 1994). The existence of binding rules among various interest groups is therefore seen as a prerequisite for proper business conduct. At the same time, mechanisms to enforce such binding rules or settle disputes that are likely to arise from such contractual agreements is crucial in ensuring fairness and transparency. Thus, supervision is crucial in ensuring compliance of regulatory rules. The outcome of regulation, therefore, is to ensure fairness and promote development in target sectors such as the microfinance industry where contractual agreements involving vulnerable poor people persist.

A distinction is often made in the literature between prudential and non-prudential regulation. Regulation is prudential when it governs the financial soundness of licenced intermediaries' businesses, in order to prevent financial system instability and losses to small, unsophisticated depositors (Hoxhaj, 2010). On the other hand, non-prudential regulation covers issues such as consumer protection, fraud, financial crime prevention, interest rate policies, land rights, tax and accounting discipline (Christen et al., 2003). Both types of regulation are however applicable and necessary for the microfinance sector. In recent times, issues of interest rates and consumer protection have become prevalent in the sector and this has given non-prudential regulation greater weight on the side of clients.

The diversity of MFIs and the products they offer is facilitated by a flexible regulatory environment that supports the development of innovative technologies for reaching different market segments not served by commercial banks. Steel and Andoh (2003) argue that specific country decisions need to be made regarding the timing and complexity of regulation to promote development without stifling innovations in the sector. The need for specific regulatory adjustments to suit the microfinance industry has also been expressed by various studies (Van Greuning, Galardo, & Randhawa, 1999; Janssen, 2001; Meehan, 2004). For instance, Meehan (2004) observed that expansion of the microfinance industry might be impossible if regulation is not adjusted to suit the industry. Janssen (2001) in advocating for regulation adjustments pointed out the distinction between microfinance and traditional finance in four areas: ownership structure, client characteristics, products and services, and lending methodology. However, adapting to existing regulation can be difficult and expensive since MFIs usually face extensive costs for licences, technology and capital requirements in the transformation process to become regulated entities (Littlefield & Helms, 2006).

Optimal timing of regulation is very important and two main approaches (*laissez-faire* and the market approach) exist. The *laissez-faire* approach allows MFIs to enter the microfinance sector freely and gain stability in their operations before regulation is imposed. Proponents of this approach believe that early regulation can stifle innovation and impede institutional development. On the other hand, the market approach advocates

for the early set up of a microfinance regulatory framework during the development phase to enable the institutions reach out to the poor and achieve the goal of financial inclusion.

The regulatory system in each country reflects its peculiar economic, political and social conditions. However, the framework remains largely the same. Establishing proper governance structures for regulation requires addressing the political and economic environment in which the regulation is to be established (Bradbury & Ross, 1991; Kilpatrick & Lapsley, 1996; Parker, 1999). The legitimacy of a regulatory system is linked to public confidence which is a product of proper accountability, transparency, proportionality, targeting and consistency. These principles determine the relevance and effectiveness of the regulatory system (Haskins, 2000: 60). Figure 6.1 illustrates the key elements of a regulatory framework.

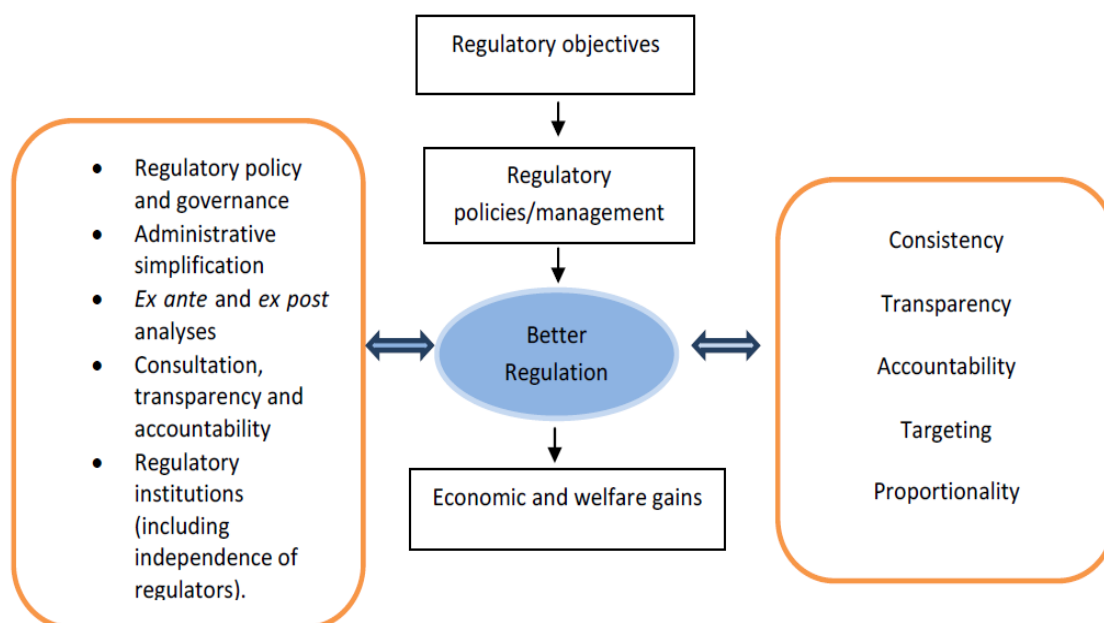


Figure 6.1: Causal Chain and Specific Regulatory Policies (Framework for Regulation)

Source: Adapted from Julilian, Parker, and Kirkpatrick (2012, p. 13)

The form that a particular regulation takes is crucial in achieving regulatory efficiency. Economic theory is often used to predict the causal link between regulation and welfare impacts. Figure 6.1 shows that the objective of microfinance regulation is to improve

economic and welfare gains which are achieved through the implementation and management of various policy instruments. Regulatory agencies are mandated to pursue better regulatory goals which are attainable through the execution of their statutory functions within the framework of ensuring accountability, transparency, proportionality, targeting and consistency. Bi-directional causality, therefore, exists between better regulation and the principles that govern the operations of regulators. Better regulation is also an outcome of the regulatory policy instrument formulation process through to evaluation. Regulation, therefore, is a complex balancing act that involves advancing the interests of various stakeholders (consumers, competitors, and investors) while promoting a wider 'public interest' agenda (Julilian et al, 2012). The regulator needs to achieve an acceptable balance between these regulatory objectives. This has direct implications for the sustainability, outreach and efficient performance of MFIs. Yet, little assessment has focussed on uncovering the actual and potential impact of regulation on MFIs social and financial performance dimensions.

Although regulators work as independent entities, they operate within clearly defined rules and are accountable for their actions. They are required to justify their decisions both to the industry and the general public (Graham, 1995). Transparency among all stakeholders involved in the regulatory process is important and regulation decisions need to be made openly for public scrutiny. Regulation should be proportional to the market failure that it seeks to address and need to be pursued devoid of excessive and spill over effects. The regulation must exhibit high-level uniformity and continuity to avoid unpleasant surprises for investors, and build trust between the regulated, the regulator and the public in order to minimise regulatory risks. Information asymmetries resulting from the nature and interpretation of regulatory rules often leads to regulatory risks (Parker, 1998). Learning to adopt negotiation strategies as part of the regulation dynamics is something that both regulators and management need to embrace. As argued by Parker (2001) regulatory staffs need to take time and learn about the markets that they seek to regulate and how dominant firms within the industry behave. Building trust relationships between the regulator, the regulated and public is, therefore, crucial for regulatory success.

An alternative view to the microfinance regulation dilemma is that it can be contained within the existing legal and regulatory framework. However, Janssen and Wenner (1997) provide empirical evidence from Latin America and Caribbean countries and reported that the principles governing financial regulation are not entirely applicable to MFIs. Formal sector legislation, therefore, needs adaptation in order to be able to accommodate MFIs which have significantly different risk profiles (credit risk, interest risk, and liquidity) for sound management. In addition, Christen and Rosenberg (2000) note that unlike formal financial institutions, the supply of additional capital in times of distress will pose a real challenge to the microfinance sector. They explained that, while lending in formal financial institutions can be stopped in times of distress by regulators without any adverse effect on debt collection, the same cannot be said of the microfinance sector since repayment of outstanding loans will be affected. This will likely have implications for the outreach and sustainability efforts of the institutions.

6.4 EMPIRICAL LITERATURE ON THE EFFECTS OF REGULATION ON MICROFINANCE INSTITUTIONS' PERFORMANCE.

This section reviews previous evidence on the potential and actual effects of regulation on MFIs performance. The sub-sections that follow present and discuss MFIs performances along with several impact lines covering costs and benefits of regulation, outreach, sustainability, funding structure, governance and economic growth.

6.4.1 COSTS AND BENEFITS OF REGULATION

The recent empirical literature on the costs and benefits of regulation is very limited except for earlier studies that focus largely on the banking sector with few predictions on the effects on the microfinance sector. The economic costs for regulation have been classified into two: (i) direct administration cost of the regulatory system, which comes from government budgetary allocation to the regulatory body and (ii) compliance costs of the regulations, which are external to the regulatory agency and borne by consumers and

producers (Guasch & Hahn, 1999). The compliance costs may include the costs of conforming to the regulations, such as business registration costs and those associated with avoiding and evading the regulations (penalties for tax evasion). The main requirements faced by regulated MFIs are rules governing operations, minimum capital requirements, consumer protection, fraud prevention, establishing credit information services, secured transactions, interest rate limits, foreign ownership regulations, and tax and accounting issues.

Though several empirical studies have examined the cost and benefits of regulation, few exist in microfinance and in a developing country context. These few focused studies on this subject matter have reported mixed findings, which makes it difficult to put one's finger on the actual implications of the cost of regulation of MFI performance. For example, Steel and Andoh (2003) found that in Ghana the cost of regulation exceeded its benefits. Such findings support the view that MFIs should rely on non-traditional mechanisms for ensuring repayments, such as group lending policies. However, Theodore and Loubiere (2002) in their study of 12 regulated MFIs operating in Latin America observe that the benefits of regulation outweigh the costs associated with it.

Calculating regulatory costs is cumbersome and the procedures involved are not straight forward. As a result, cost and benefit estimates for regulations are rarely undertaken. Complying with prudential regulations in microfinance and the associated supervisory costs are regarded as being too high for these institutions. Empirical evidence on the cost involved in regulating MFIs remains very limited. This could be attributed to lack of data available and the different country contexts, as MFI regulation is still being formalised in many countries. The best empirical estimates of the costs of regulation come from banks in industrialised countries. For example, by one estimate, the costs of complying with regulation in the US are sizeable, equal to 12-13 percent of banks' non-interest expenses (Elliehausen, 1998; Thornton, 1993). Similarly, Leach (2000: 78) estimates the cost of compliance in the US to be US\$700 billion. This contrasts with a US\$25 billion reported as direct regulatory costs borne by the Federal Agency (Hopkins, 1996). However, these costs are expected to be higher for MFIs. Christen et al. (2003) speculate that the costs of compliance with prudential regulations by MFIs could be up to 5 percent of their total

assets in the first year and decline to 1 percent or more in subsequent years. Regulatory costs are often high for MFIs because of limited-scale economies. Relative to their assets, smaller institutions face higher costs than larger institutions in complying with regulations (Armendariz & Morduch, 2010: 259)

There are a number of reasons why regulation costs may be higher for MFIs compared to banks. Firstly, regulatory costs exhibit economies of scale, thus, smaller banks face higher average costs than larger banks in complying with regulation (Murphy, 1980; Schroeder, 1985; Elliehausen & Kurtz, 1988). Moreover, the start-up costs of regulation display more pronounced scale economies than ongoing costs, because they have a large indivisible component which requires the same amount of time and expense regardless of the scale of bank lending activities. Since most MFIs are typically smaller in size, regulatory costs faced are expected to be much higher. Secondly, the share of the skilled labour cost involved is too high. Studies have shown that a substantial amount of the cost of complying with new banking regulations in industrial countries covers labour costs (Elliehausen & Kurtz, 1988, Elliehausen & Lowery, 1995, Schroeder, 1985). The bulk of these labour costs cover managerial and legal expenses – to monitor employee compliance, coordination of compliance reviews with regulators, and keeping abreast of regulatory changes, regulatory interpretations and court decisions (Elliehausen, 1998). Finally, microlending, which inherently involves making small loans to a large number of borrowers, is plagued with higher administrative costs and high interest rates on loans. Fortunately, the returns to capital can also be high for small, capital-starved businesses. Other costs associated with prudential regulation compliance are likely to force MFIs to raise their interest rates or loan sizes to maintain the same level of profitability. Increases either way could result in the exclusion of some potential poor borrowers. MFIs also need to hire relatively costly personnel to handle the legal and reporting requirements of the regulated institution and this could pose a strain on sustainability.

The benefits associated with regulation have also been documented by various studies. Prudential regulation increases public confidence in the financial system (Arun, 2005; CGAP, 2003). Meagher (2002) argues that regulated institutions are viewed as trustworthy investment channels (promote transparency) and that donors prefer to

allocate funds to licenced and supervised institutions where fraud and issues of money laundering are prohibited and strictly monitored. Regulation of MFIs has been found to strengthen their financial sustainability (Satta, 2006) and ensure a sound equity base. However, empirical evidence on the effects of regulation on MFIs' social and financial performance remains limited particularly in SSA. The only known study is that of Hartarska and Nadolnyak (2007). But this study was global in nature with no regional focus. However, MFI regulation varies significantly across countries.

In sum, recent studies focusing on evaluating the costs and benefits of MFI regulation are limited due largely to data unavailability and the complexity and costs involved in undertaking them. Attempts to quantify the monetary value of the social benefits of regulation remain to be undertaken. The regulatory cost for MFIs would likely outweigh the benefits though the available evidence remains mixed. Nonetheless, regulation remains relevant to MFIs and appropriate forms of it need to be promoted, based on country-specific context.

6.4.2 REGULATION AND FUNDING STRUCTURE

The main reason for prudential regulation is to protect depositors. Deposit mobilisation is seen as a major funding source for most ailing MFIs which are unable to attract funding from commercial sources. Regulation of MFIs is, therefore, likely to have an effect on the funding structure of these institutions. The buffer view of the capital structure of financial institutions supposes that meeting minimum capital adequacy requirements determines the funding strategies of financial institutions. Rhyne (2002) found that possessing regulated status gave MFIs greater access to funds and enhanced their ability to offer a more diversified set of micro-products to clients. Similarly, Joao, Andre, Pereira, and Saito (2015) evaluated the effectiveness of central bank supervision in Brazil as well as the determinants of capital buffer management using bank-level data. The study revealed interesting results: (i) supervision imposes excess capital buffer needs on banks particularly small and medium-sized banks; (ii) market discipline does not influence capital ratios; and (iii) business cycles negatively influence bank capital cushions,

suggesting pro-cyclical capital management. Supervision is, therefore, vital in small-sized institutions and in markets with very weak discipline.

Several factors influence the funding structure of MFIs and complementarity exists between microfinance and formal banking sectors (Tchakoute-Tchuigoua, 2014; Annim, 2010). Tchakoute-Tchuigoua (2014) analysed the institutional framework of the MFIs capital structure using 292 institutions over the period 2004-2009. The author reported that creditor rights, a country's legal tradition and level of financial sector development influence MFIs' access to external finance. Previously, Fidrmuc and Hainz (2013) found that firms in a border region had better access to credit under different regulatory regimes in their study on the effects of banking regulation on cross-border lending in Germany. Furthermore, Tchakoute-Tchuigoua (2016) studied the factors that influence the buffer capital of MFIs, focussing on the effects of competition and assets (loan portfolio quality and lending approaches). The study found loan portfolio quality and MFI size to be negatively related to buffer capital at the lower quintile while risks have a negative association with the capital adequacy ratio and buffer capital.

Hollis and Sweetman (2004) analysed the situation of microfinance organisations when faced with external shocks such as famine, using the Irish Loan Fund during the famine of the 1840s as a case study. These funds were large MFIs operating in Ireland. Their results show that the pre-famine capital ratio was a strong predictor of fund survival through the period. The rate of female literacy was found to be a significant local demographic variable with a strong correlation with fund survival. Pre-famine capital structure management, occupation, and female literacy rate were the main determinants of fund survival. Maintaining a strong capital ratio is, therefore, important in increasing the robustness of institutions.

Hubka and Zaidi (2005) analysed the possible benefits of regulation in the microfinance industry and argued that MFIs providing subsidised loans (such as NGOs) damage the long-term sustainability of microfinance in terms of outreach and efficiency. They made a case in favour of regulation and against government subsidies as a more efficient means for MFIs to gain "financial legitimacy" and access to a broader array of funding. This suggests that regulatory status impacts on the funding choices of MFIs.

The review shows that regulation status has positive impacts on the funding structure of MFIs. MFIs that mobilise deposits are better placed to augment lending to poor clients and operate more sustainably. Transparency, which is a key assessment criterion for donors and investors willing to commit funds to the microfinance sector, is enhanced when the MFIs are regulated. This increases their chance of securing funding from external sources. In addition to regulation, several other factors influence the funding structure of MFIs which managers need to consider in their funding decisions.

6.4.3 REGULATION AND OUTREACH

Asymmetric distribution of information provides the basis for regulation of financial institutions (Marulanda & Otero, 2005). Yet, regulation may divert attention away from outreach, if regulatory requirements focus too much on financial goals such as capital adequacy and financial sustainability. Empirical evidence on the relationship between regulation and the two main dimensions of outreach (breadth and depth) have been found to be weak in the microfinance sector (Hartarska & Nadolnyak, 2007; Hartarska, 2005). Hartarska and Nadolnyak (2007) found no evidence in their study of 114 institutions across 62 countries that supports the assertion that regulated MFIs perform better than non-regulated MFIs in terms of sustainability and outreach. Their results show that MFIs that collect deposits have broader outreach, signifying indirect effects of regulation on outreach. Recently, Kuchler (2011) found an insignificant relationship between credit rights and institutional level outreach. Legal rights and their protection is a characteristic of more developed financial systems, even in situations where institutions are still nascent. Since MFIs and borrowers alike benefit from these legal structures, a greater outreach can be expected. On the contrary, Makame and Murinde (2006) found evidence for a negative relationship between regulation and outreach. Similarly, Cull et al. (2009a) reported that prudential regulation has a negative impact on both outreach and profitability.

Cull, Dermirguc-Kunt, and Morduch (2009b) analysed the effects of MFIs' regulatory supervision on profitability with a focus on how regulated institutions manage their

financial and administrative burdens associated with regulatory compliance. Using a subsample of 154 institutions, the authors applied econometric analysis to ascertain the real impact of regular reporting, onsite supervision and intensity (prudential regulation) on profitability and financial self-sufficiency. They found tensions between maximising financial performance and attaining social goals, leading to various trade-offs in choosing contract mechanisms, regulatory rigour, and level of commercialisation. Thus, profit-oriented MFIs respond to supervision by maintaining profit rates and curtailing outreach to women and customers that are costly to reach. The results further show that intensive and regular supervision is important for deposit-taking MFIs despite the high cost. Institutions with weak commercial focus tend to reduce profitability while maintaining outreach. Thus, regulation and supervision have the tendency to result in mission drift since profits must be made to cover the cost of regulatory compliance. Cull et al. (2009b) conclude that regulatory status has an ambiguous effect on outreach. While it increases the ability of MFIs to develop new deposit-taking banks, their ability to lend to disadvantaged groups is reduced.

Mori, Golesorkhi, Randoy and Hermes (2012) studied board composition and MFI outreach performance in East Africa. They found board composition relevant in helping MFIs to achieve their social objectives. The results suggest that outreach performance is improved when boards of MFIs have a higher share of independence, and have international and female members. The study concludes that boards and board composition matters for MFIs' increased outreach performance. Tchakoute-Tchuigoua (2015) analysed the determinants of governance quality of MFIs using a sample of 178 MFIs rated by Planet rating for the period 2001-2011. The study results show that board activity, board experience, and ownership type are significant determinants of the governance quality of MFIs. Furthermore, MFIs that have effective governance systems in place tend to serve a larger number of clients. Thus, better-governed MFIs have better outreach performance. However, board size and CEO-chairman duality do not drive MFI governance quality.

Nawaz and Iqbal (2015) investigated the link between social performance and corporate governance of MFIs in Asia using panel data from 173 MFIs in 18 countries over a

period of five years. The authors constructed an overall index of corporate governance for MFIs using seven internal governance mechanism variables and applied the generalised least square model. The results point to insignificant impacts of corporate governance on social performance variables due to endogeneity. However, by applying the ordered logit model social performance was found to be a key determinant of corporate governance. Previously, Barry and Tacneng (2013) compared the financial and social performance of shareholder-owned and NGOs in SSA with a focus on the role of institutional quality in shaping outreach. Using a sample of 200 MFIs over the period 2001-2007, the results showed that institutional quality affects the incentives and behaviour of shareholder-owned MFIs in determining their outreach. Furthermore, less effective governance with weak laws were reported as reasons for poor performance of banks and cooperatives compared to NGOs, due to credit rationing in markets aimed at bridging information asymmetries which exclude the poor financially. However, no performance differentials exist under conditions of strong institutional quality.

To conclude, various trade-offs can result in assessing the impact of regulation on MFI outreach but the available evidence of the effect remains mixed and ambiguous. Boards and their composition have largely positive direct impacts on MFI outreach through improved governance. This shows that the role of MFI boards in promoting development and ensuring sustainability through effective outreach is crucial.

6.4.4 REGULATION VERSUS SUSTAINABILITY AND EFFICIENCY

Fair regulation will give an MFI better access to commercial and non-commercial sources of funds for equity and debts, better ways to achieve growth and outreach goals, improved standards of control and reporting, improved ability to provide products beyond microcredit, and enhanced legitimacy in the financial sector and with clients. All these contribute positively towards attaining financial sustainability. On the contrary, ambiguity in regulation could leave MFIs vulnerable to regulatory discretion in the interpretation of the legal basis for lending activity with adverse effects on their operations (Hartarska & Nadolnyak, 2007).

Few empirical studies on microfinance regulation have examined the relationship between financial performance and regulation. The available empirical evidence to date shows that regulation does not impact directly on MFI financial performance. Hartarska (2005) found that regulated MFIs in Central and Eastern Europe and the newly independent states have a lower return on assets relative to others. Tchakoute-Tchuigoua (2010) analysed the relationship between the legal status of 202 MFIs and their performance and reported that private corporations perform better than NGOs, using portfolio quality as a measure of performance. However, the study did not find evidence of regulation having an impact on profitability. Previously, Mersland and Strom (2009) and Hartarska and Nadolnyak (2007) provided supportive evidence that there is no link between regulation and the financial performance of MFIs. Furthermore, Ndambu (2011) assessed the impact of regulation on operational self-sustainability using cross-sectional data for 2008 covering 192 MFIs in 32 countries in SSA. Using a multivariate analysis framework, the study found no evidence that regulatory status either increases MFIs sustainability or improves their deposit intermediation. However, controlling for regulatory capacity, the study found that countries with high official supervisory power have more sustainable MFIs. These studies have used the regulation variable as a binary indicator.

Meanwhile, arguments for MFIs' transformations into regulated entities stem from the perceived greater impact that is likely to be created on their outreach and sustainability goals. Rosenberg, Gonzalez, and Narain (2009) observed that loan size and staff productivity are important factors that influence the sustainability level of institutions.

Competition in the market is likely to induce firms to increase efficiency and attain sustainability in the long run. At the same time, increased competition has the potential to hurt the efficiency and sustainability of MFIs rather than enhance it. McIntosh and Wydick (2005) found that increased competition from non-profit lenders reduces their profits and lending efforts to the relatively poor and less profitable borrowers. The inability to lend to the poor causes non-profit lenders to use their subsidised interest rates to target profitable borrowers. They noted that this can hurt the ability of profitable self-sustainable MFIs to operate and prevents the creation of a competitive microfinance

market. Tchakoute-Tchuigoua (2016) in his analysis of the factors that influence the buffer capital of MFIs and assets found empirical evidence of the effects of competition on pricing and monitoring incentives. However, Hartarska (2012) did not find evidence of the effects of competition on MFI outreach or that competition improves efficiency.

The efficiency of MFIs is posited to be influenced by their regulation status. Jeffry, Ghulam, Pascoe and Cox (2007) analysed the effects of regulatory and financial reforms in the Indian sub-continent following reforms in the early 1990s. Using a Malmquist index of total factor productivity, the authors found that technical efficiency increased and converged in response to the reforms. While India and Bangladesh experienced sustained growth in technical efficiency, Pakistan suffered a reduction in efficiency levels initially before converging in later years. The results show that the financial sectors of these countries have had the desired impact on technical efficiency levels following the reforms.

Hartarska and Mersland (2012) analysed the effectiveness of governance mechanisms on MFI outreach using the stochastic frontier approach. The results show that efficiency increases with board size but declines beyond a membership of nine. The study did not find strong evidence in support of the assertion that MFIs in countries with mature regulatory environments reach fewer clients and that MFIs regulated by independent banking authority are more efficient. The authors also did not find consistent evidence that competition improves efficiency. Similarly, Gaganis and Pasiouras (2013) investigated the effects of central banks' supervision on bank profit efficiency using data from 4,000 commercial banks operating in 80 countries over the period 2000-2006. They found that the level of efficiency decreases as the number of sectors supervised by the central bank increases. Also, countries with unified supervisory authorities in the banking sector were found to be less profit efficient. Finally, the independence of central bank supervision was reported to have negative impacts on banks' profit efficiency. Furthermore, Barth et al. (2013) examined the impact of bank regulation, supervision and monitoring on bank operating efficiency using 4050 bank observations in 72 countries over the period 1999-2007. Findings from the study show that strengthening of official supervisory power is positively related to bank efficiency in countries with independent

supervisory authorities. Also, market-based monitoring of banks for transparency is positively associated with bank efficiency while tighter restrictions on bank activities are negatively associated with efficiency.

The available evidence, therefore, shows that regulation generally has no direct impact on the financial performance of MFIs. Indirect benefits, however, exist as regulation helps to create the necessary environment for investors and for MFIs to grow. Regulation also appears to have little effect on MFIs' sustainability and profitability. However, the competition which is induced by regulation appears to have significant impacts on the efficient operation of MFIs and the banking sector at large.

6.4.5 REGULATION AND GOVERNANCE

Governance is related to the achievement of corporate goals and is viewed from two dimensions: economic governance and corporate governance (Mersland & Strom, 2007). These two dimensions though distinct are sometimes used interchangeably. Dixit (2009) defined economic governance as the structure and functioning of legal and social institutions that support economic activity and transactions by ensuring the protection of property rights, enforcing contracts and taking collective action to provide physical and organisational infrastructure. Governance is directly related to supervision and both are aimed at ensuring the adherence to regulations. Agency theory views corporate governance as a mechanism for conflict resolution between firm managers and stakeholders due to their varied interests (Jensen & Meckling, 1976).

Empirical evidence shows that corporate governance helps MFIs in satisfying their social responsibility obligations (Hartarska & Mersland, 2012; Galema, Lensink, & Mersland, 2012). Ackerman (1973) showed that the social orientation of firms is not solely dependent on the good intentions of managers but also on the business practices of the firm. To help reduce tensions between managers and shareholders in the microfinance industry, recent studies have proposed the use of a stakeholder approach as a more effective strategy to deal with the issue (Labie & Mersland, 2011; Mori & Mersland, 2014; Nawaz & Iqbal, 2015). The approach posits that managers of firms use social

responsibility strategies to reduce agency conflicts and improve governance structures. For instance, Labie and Mersland (2011) suggested the need to incorporate a stakeholder approach into the microfinance governance literature to help identify their management structure in the face of unregulated and ill-disciplined markets. Mori and Mersland (2014) found that stakeholder representation influences board structure and MFI performance. Black, Jang and Kim (2006) in their study of corporate governance in risky firms expressed the need for stricter monitoring and control practices for improved governance systems. Economic and corporate governance in microfinance are, therefore, relevant in analysing the effects of regulations

Becher and Frye (2011) examined the relation between regulation and governance, taking into account the high cost associated with monitoring institutions. Using data from initial public offering, the authors found that regulated firms had greater proportions of monitoring directors, larger board sizes with equity-based compensations compared to non-regulated firms. Furthermore, both regulated and unregulated firms were analogous in terms of trade-offs between traditional monitoring mechanisms and insider ownership. However, regulated firms appeared to decrease monitoring following a period of deregulation.

Regulation and governance are viewed as complementary to the idea that regulators pressure firms to adopt effective monitoring systems. Stigler and Friedland (1962) noted that it is very costly for regulators to monitor the actions of firms since they do not control their daily operations. Hence, regulators are more likely to rely on traditional governance systems to promote their goals. Joskow, Rose, and Wolfram (1996) argued that regulatory pressure manifests in governance differences in firms rather than inherent productivity differences and this may encourage greater monitoring and the adoption of best practices.

Regulation of financial institutions is largely linked to the inherent risk that characterises these institutions and the microfinance sector is not an exception. Klomp and de Haan (2012) examined the impact of bank regulation and supervision on banking risk using quantile regressions for 21 OECD Countries. They found that regulation and supervision had negative impacts on high-risk banks compared to low-risk banks. However, Glass,

Mckillop, and Rasaratnam (2010) reported that 68 percent of the unions in the Irish Credit Union League do not incur an extra opportunity cost in meeting regulatory guidance on bad debt.

Biener, Eling, and Schmit (2014) analysed the impact of regulation in microinsurance markets with a view to uncovering areas where regulators can assist in the development of microinsurance products. The evidence shows that response to microinsurance markets in the form of licencing, capital reinsurance and distribution systems facilitates the development of microinsurance markets through financial literacy initiatives, data collection, and management training.

A number of recent studies have tried to use rating data to establish the link between MFIs' performance and their governance mechanisms (Mersland & Strom 2009; Beisland, Mersland, & Randoy, 2014). Mersland and Strom (2009) examined globally the relationship between firm performance and corporate governance in 278 MFIs using data collected from rating agencies for the period 1998-2007. The study found that financial performance improves with local directors, an internal board auditor, and a female CEO. In addition, the number of credit clients was found to increase with CEO/Chairman duality. Group lending leads to faster outreach than individual lending. Bank regulation has no effect on MFI performance and there is no difference in performance between non-profit organisations and shareholder firms in terms of financial performance and outreach. Similarly, Beisland et al. (2014) examined the association between governance structures and MFIs performance globally. They found that CEO/Chair duality is negatively related to rating scores while the number of international board directors, internal auditor presence, and intensity of competition positively influence rating scores. This is relevant in view of the fact that rating agency reports have the potential to influence investor decisions which are largely anchored in the financial performance of the institutions.

Recognising the varied interests between managers and shareholders and dealing effectively with it minimises conflicts and promotes the attainment of organisational goals. The use of the stakeholder approach has a beneficial influence on board structure and MFI performance outcomes and therefore needs to be promoted in microfinance. In

addition, economic and corporate governance are relevant in understanding the effects of regulation on MFI governance mechanisms. Regulation improves the monitoring mechanisms of firms and pressure from regulators helps in the adoption of effective monitoring systems and best practices, which is likely to reduce cost. Financial and outreach performance therefore improves with MFI internal governance.

6.4.6 REGULATION OF MICROFINANCE INSTITUTIONS AND ECONOMIC GROWTH

Well-designed policies can encourage investors to take a risk and support the development of small businesses through microfinance interventions. Policies that create an enabling environment include straightforward licencing regulations, bankruptcy laws that make it easy to shut down unsuccessful businesses and open new ones, and policies that make it easy to hire and fire employees (Peng, 2013). Kuchler (2011) argues that a good business environment can impact MFIs performance and outreach through the creation of a conducive environment for both MFIs themselves as well as entrepreneurs who typically utilise microfinance services. Thus, overall regulatory quality affects MFI performances. However, Mueller and Uhde (2009) did not find regulatory quality to be a significant factor in the institutional performance of MFIs.

Regulation of financial institutions impacts on economic growth at the macro level. Dar and Amirkhalkhali (2012) investigated the relationship between regulation and economic performance using data from 23 developing countries for the period 2002-2008. The study found that better quality regulation impacts positively on economic growth. However, the view that positive growth impacts are stronger in countries rated low on the regulatory quality scale could not be supported. Similarly, Jalilan, Kirkpatrick and Parker (2006) explored the role of state regulation in growth and reported that growth in poor countries was positively related to regulatory quality. Arun (2005) explored the rationale for the regulation of MFIs in their delivery of critical microfinance services to excluded populations. The study advocated for sector specific regulation with prudential reform to help facilitate savings mobilisation and reduce rigidities encountered in enforcing normal

banking regulations. Incorporation of country-specific regulatory approaches to cover macroeconomic issues and the differences in stages of development is strongly emphasised.

The regulation also impacts on the growth of national economies. Gorgens, Paldam and Wurtz (2003) examined how regulation affects growth using a fixed effects regression model with a semi-parametric estimator. They found that high levels of regulation lower economic growth but that moderate to low levels of regulation have no effect on regulation. More specifically, a heavily regulated economy on average might experience a decline in growth rate by 2-3 percent per annum. Though this effect comes in the context of comparing moderately and highly regulated economies, it offers insights into the cost implications of regulation to national economies. In Australia, regulatory reforms in the National Reform Agenda show that a 1.3 percent increase in national GDP results in a 20 percent reduction in regulatory compliance costs. Moreover, the Australian Government Productivity Commission (2006) found that the regulatory burden had a negative effect on investment and competition, and makes capital stock less responsive to changes in turnover. Furthermore, a negative relationship exists between economic growth and regulatory burden.

6.5 METHODOLOGY AND ESTIMATION

This section presents both the theoretical and empirical dynamic panel model used in the estimation. The main variables utilised and their measurement and design of the models are discussed.

6.5.1 THE THEORETICAL DYNAMIC PANEL MODEL SPECIFICATION

Generally, the use of panel data improves the efficiency of econometric estimates because of the large degrees of freedom and the potential reductions in collinearity among explanatory variables (Hsiao, 2003). The static fixed effects (FE) and random effects (RE) methodology are standard procedure for panel data estimations. However,

the inability of the FE approach to accommodate time-invariant variables remains a major weakness in its application. The RE model addresses this problem by maintaining the time-invariant variables included in the model at first differencing (Vanroose & D’Espalier, 2013; Stock & Watson, 2007). Besides, the model also takes into account all unobserved firm-specific residual variations in MFI performance, hence, curtailing potential bias likely to arise from omitted variables.

Potential problems of endogeneity remain a key concern in assessing MFI performance. Quayes (2012) notes that sustainable MFIs undertaking training and recruiting high qualified personnel to enhance performance could pose endogeneity problems when assessing their performance and outreach. The standard econometric procedure to overcome endogeneity is the use of relevant external instruments that are uncorrelated with the error term. However, finding valid instruments that satisfy all necessary conditions are practically difficult and not an easy task.

One approach to overcome endogeneity is the use of Instrumental Variable (IV) regression as proposed by Hausman and Taylor (1981). The Instrumental Variable (IV) estimator uses only information within the model based on the logic of taking deviations from group means and is implemented through the two-stage least squares (2SLS). Hausman and Taylor (1981) show that the group means for variables that are uncorrelated with the individual firm specific effects can serve as instruments for the model to be identified. In their study of the impact of education on wages using panel data in which education is fixed for a short period of time, the authors specified the model as outlined in equation 6.1.

$$Y_{it} = Z_i\gamma + X_{it}\beta + C_i + \varepsilon_{it} \quad (6.1)$$

where

Y_{it} = dependent variable with i and t dimensions of the data

Z_i = time invariant variables

X_{it} = some time variant variables

C_i = MFIs individual unobserved effects

ε_{it} = error term

The IV regression approach requires that the variables be partitioned into endogenous and exogenous sets (i.e., correlated and uncorrelated with C_i). Also, the regression must be transformed using deviations from the mean before GLS techniques can be applied to estimate the parameters. The model is formulated with the possibility that there may be time invariant independent variables. Following this specification, Hartarska and Nadolnyak (2007) applied this model in microfinance to study the impact of regulation on MFIs outreach and sustainability performance using cross-country data. The main shortcoming of this approach is that, by construction, any OLS or GLS estimates obtained from this model will be inconsistent since the model contains variables that are correlated with the random effects. The 2SLS framework distinguishes between regressors and instruments by allowing the two categories to overlap (all variables enter as exogenous regressors). Roodman (2006) pointed out that under such circumstances the estimation problem that arises is how to choose coefficients on the regressors such that the moments of the errors with the instruments are zero. This creates ambiguity in satisfying the moment conditions and the model may not be identified. For instance, if instruments are more than regressors, then equations outnumber the unknowns and the system cannot be solved. Thus, the moment conditions cannot be expected to hold perfectly in finite samples even when they are true asymptotic. Finally, the Hausman-Taylor model cannot contain lagged dependent variables. Nonetheless, the model produces both consistent and efficient estimates after going through a number of transformations. However, Arellano, Bond and Bover (1995) show that more efficiency gains are available by using a larger set of moment conditions, which is made possible using the Generalised Method of Moment (GMM) approach. Furthermore, Anderson and Hsaio (1981) showed that the GMM estimators have negligible finite sample biases and substantially smaller variances than those associated with simple Instrumental Variable (IV) estimators

Based on these limitations, this study uses the GMM approach proposed by Holtz-Eakin, Newey, and Rosen (1988), Arellano and Bover (1995), and Blundell and Bond (1998).

One advantage of the approach is that fewer econometric assumptions are made regarding the data generating processes and it permits the use of more complex techniques in isolating useful information. The general form of the theoretic model is presented as:

$$y = x'\beta + \varepsilon \quad (6.2)$$

$$E[\varepsilon/z] = 0$$

Where β is a column vector of coefficients; y and z are random variables; x is a column vector of k regressors; z is a column vector of j instruments, x and z may share elements and $j \geq k$.

Equation (6.2) can be estimated using either the difference GMM and the system GMM techniques. Difference GMM cannot contain time-invariant regressors and the model operates by transforming all regressors through differencing to expunge fixed effects. The model is said to perform poorly in situations where the dependent variable is close to random walk because past levels convey little information about future changes (Roodman, 2006). On the other hand, system GMM, which is employed in this analysis, can contain time-invariant regressors and uses instruments from level equations which are orthogonal to the fixed effects. Both the difference and system GMM are general estimators designed for short panels and for independent variables that are not strictly exogenous. One difficulty with both approaches (GMM estimation in general) is that it is complicated and can generate invalid estimates unless the user has a clear understanding of the purpose, design, and limitations of the estimators.

The system GMM makes an additional assumption that first differences of instrument variables are uncorrelated with the fixed effects. This enables more instruments to be introduced, with dramatic improvements in efficiency. The instruments contained within the data and the lagged values of the dependent variable and independent variables are used as instruments in the realisation of the current performance of the institutions. This overcomes the need for external instruments and also accounts for unobserved heterogeneity. Roodman (2009) observed that the approach is more suitable for short panels (*small T, large N*) than the difference GMM, a characteristic which fits the dataset used in this analysis. Anderson and Hsaio (1981) showed that GMM estimates using

standard errors of the two-step procedure have downward biased. Windmeijer (2005) suggested a correction term based on a Taylor series expansion that accounts for the weighted matrix. This correction provides correct approximation in finite samples when all the moment conditions are linear. The analysis for this chapter, therefore, is based on the two-step GMM approach proposed by Arellano, Bond and Bover (1995) estimator for dynamic panel data analysis with robust standard errors.

The empirical models estimated takes the general form:

$$y_{it} = \alpha y_{i,t-1} + \beta_1 X_{1it} + \beta_2 X_{2it} + \gamma_1 f_{1i} + \gamma_2 f_{2i} + \varepsilon_{it} + u_i \quad (6.3)$$

where

Subscript ‘1’ denote variables that are uncorrelated with u_i while subscript ‘2’ indicate variables that are correlated with u_i .

y_{it} = Dependent variable

α = constant

$y_{i,t-1}$ = Lagged dependent variable

f_1 = time invariant variables

f_2 = time variant variables

X_1 = a matrix of variables that are uncorrelated with u_i

X_2 = Variables that are correlated with u_i

ε_{it} = error term

u_i = Individual firm specific effects

The choice for the system GMM approach, two-step estimation with clustered standard robust errors, is to firmly deal with the problem of endogeneity, ensure validity and consistency in estimates, and above all obtain more efficiency gains from the data available. Using equation 6.3, this study analysed the effects of financial regulation on

three main dimensions of MFI performance as illustrated in Figure 6.2. The models are specified using sustainability, breadth, and depth of outreach as areas that regulation impact in microfinance. The estimated results from these models are presented in tables 6.4, 6.5 and 6.6 respectively in the results section.

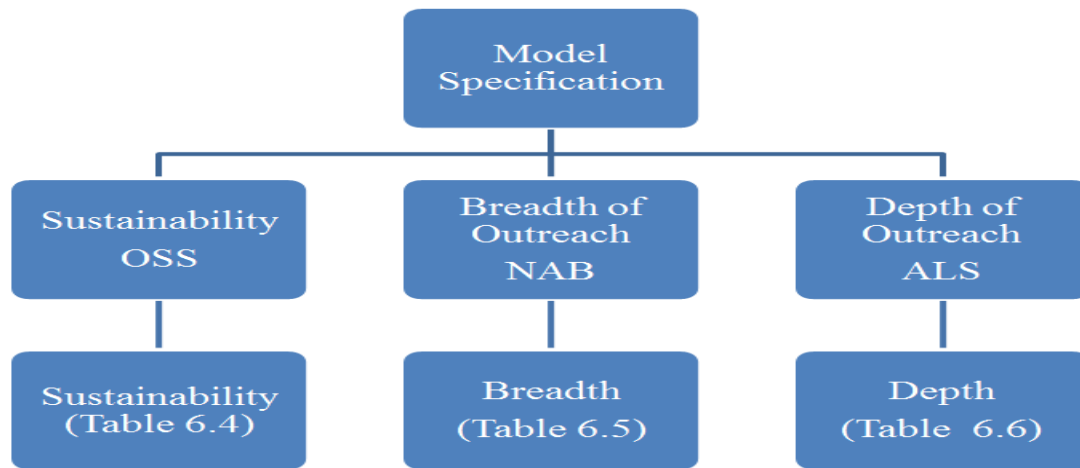


Figure 6.2: Model Specification and Results Chain for Regulation Impact Analysis

Source: Authors Own Illustration

6.5.2 VARIABLES, MEASUREMENT, AND EXPECTED SIGN

From the framework presented in Figure 6.2, the dependent variables used are Operational self-sufficiency (OSS), the number of active borrowers (NAB) and average loan size as a percentage of GNI per capita (ALS). Selection of these variables is based on recent literature on empirical works done by Hartarska and Nadolnyak (2007), Ndambu (2011) and Cull et al. (2015) which focussed on microfinance regulation. These studies have used OSS as a proxy for sustainability and NAB and ALS for outreach in their analysis. Table 6.1a provides a summary of the dependent variables used, their measurements and expected sign.

Table 6.1a Summary of Dependent Variables, Measurement, and Expected Sign

Variable	Measurement	Expected Sign	Data Source
Operational self-sufficiency (OSS)	Total operating financial income/ Fixed cost + total operating cost +loan loss provision	Indeterminate	The MIX 2003-2013
Number of active borrowers (NAB)	(Total active borrowers/ country's total population)*1000	positive	
Average loan size as a percentage of per capita GNI (ALS)	Average loan balance per borrower/GNI per capita	positive	

Source: Compiled from Various Sources

The dependent variables used and the reasons supportive of the choice are outlined below:

OSS = Operational self-sufficiency is defined as the ability of an MFI to cover its operating costs from own revenues generated. It is a standard measure of financial sustainability that is computed without adjustments for inflation and subsidy levels received by MFIs. It provides a fairer basis for comparing firms and it best characterises MFIs operations in SSA than other measures of sustainability (such as financial self-sufficiency) since most MFIs are yet to attain full financial sustainability levels. Ndambu (2011) show that profitability variables (such as return on assets and return on equity) used as proxies for financial sustainability do not reflect differences in regulatory status. OSS is easy to calculate at the firm level and reported data is readily available compared to other indicators of performance. This study therefore used OSS in line recent studies (Ndambu, 2011; Cull et al., 2015).

NAB = Number of active borrowers is a widely accepted proxy used to measure the outreach performance of MFIs. The number of active clients reached by MFIs is easy to determine and previous studies used it as proxy for breadth of outreach. Regulation could have greater implications for the wider outreach of MFIs since it could enhance or impede firm expansion and the kind of financial products to be supplied.

ALS = Average loan size as a percentage of GNI, is the most widely used proxy in assessing the relative poverty level of clients reached by MFIs. The ALS, though argued and described as imperfect in the literature, is still the best available proxy for depth of outreach

assessment. Small size loans have been taken to indicate a greater depth of outreach⁴⁶. It is therefore useful as it gives an indication of clients' poverty level served by MFIs and hence its inclusion in the analysis.

Table 6.1b: Summary of Independent Variables, Measurement, and Expected Sign

Variable	Measurement	Expected Sign	Data Source
Regulatory status (RGS)	Dummy variable :1 if MFI is regulated and 0 otherwise	indeterminate	The MIX 2003-2013
MFI size (TA)	Log of total assets of MFI in US\$ (1000)	indeterminate	
Equity to total assets ratio (ETA)	Ratio of total equity to total assets	positive	
Gross loan portfolio (GLP)	GLP adjusted for write-offs	positive	
Portfolio at risk (PAR)	Outstanding balance, portfolio > 30 days + renegotiated portfolio/ adjusted gross loan portfolio.	negative	
Age of MFI (AGE)	Number of complete years of experience in operation by MFI	indeterminate	
<i>Governance variables</i>			
Regulatory quality (RQ)	A measure of the incidence of market-friendly policies.	positive	WGI- World Bank 2003-2013
Rule of law (RL)	A proxy for the quality of contracts, the police, and the courts, as well as the likelihood of crime and violence.	positive	
Governance effectiveness (GE)	An indicator of the competence and the quality of public service delivery	positive	
Human Development Index (HDI)	Composite index that measures average achievement in three basic dimensions of human development: a long and healthy life, knowledge and decent standard of living	positive	UNDP 2003-2013
<i>Complementary business environment measures</i>			
Index of business freedom (IBF)	The score is based on 10 factors, all weighted equally, using data from the World Bank’s doing business indicators (2014)	positive	Heritage Foundation 2003-2013
Index of property rights (IPR)	Composite index ranging from 10 (private property is rarely protected) to 100 (private property is guaranteed by the government)	positive	
<i>Macroeconomic variables</i>			
Inflation Rate (INF)	Inflation, consumer prices (annual %) in period <i>t-1</i>	indeterminate	World Bank (WDI)
GDP per capita (GDP)	Gross Domestic Product (at current US\$) divided by midyear population in period <i>t-1</i>	positive	

Source: Compiled from Various Sources

⁴⁶ See, for example Cull, Demircuc-Kunt and Morduch (2009). However, limitations on the use of these proxies is detailed in Agier and Szafarz (2013, p. 177)

Table 6.1b shows that a wide range of MFI-specific and country level variables has been used as independent variables assumed to have an influence on MFIs sustainability and outreach performances. The choice of these variables is informed by previous studies that analyse regulation of MFIs. The main MFI-specific variables included are regulation status (RGS), total assets (TA), ratio of total equity to total assets (ETA), gross loan portfolio (GLP), portfolio at risk (PAR), and age of the institution (AGE). The inclusion of these variables is very much in line with recent studies (Assefe, Hermes, & Meesters, 2013; Cull et al., 2015). Details on the measurements and expected signs of these variables are presented. The Table (6.1b) also shows that a number of governance, business environment, and macroeconomic factors are included as independent variables to help capture their effects on MFI sustainability and outreach performance. Evidently, the macro environment within which MFIs operate matters in their development (Ahlin et al., 2011). The choice of the independent variables included is detailed below

RGS= Regulatory status is the key variable of interest in this analysis since most MFIs are still not regulated and there is increasing need to understand whether pursuing regulations has any real effects on MFI outreach and financial performances. The regulatory status dummy captures the regulatory regimes in different countries in which the MFIs operate. Though various studies have used regulatory status as a dummy variable, its use poses some limitations given the differences in the level of regulation across the different geographical areas. Regulated MFIs enjoy public trust in deposit mobilisation which helps them to overcome liquidity constraints. However, meeting regulatory costs (technology, innovation, security) remains a challenge as such costs could outweigh the benefits derived from regulation (Hardy, Holden, & Prokopenko, 2003). The effect of regulation on MFIs financial and outreach performance has remained mixed but recent studies largely point to no direct effects (Hartarska & Nadolnyak, 2007; Mersland & Strom, 2009). Yet, indirect effects exist and positively impacts on MFIs' sustainability and outreach is expected.

TA= Total assets are used to capture the size of MFIs. Regulation involves meeting capital adequacy requirements and larger MFIs are more likely to be able to meet this criterion and get regulated than small-sized MFIs. Regulation, therefore, is likely to have an effect on the asset base of MFIs with likely impacts on outreach and sustainability performance.

The level of total assets of an MFI is posited to be positively correlated with outreach and sustainability performance, due to economies of scale.

ETA= Total equity to total assets ratio is a time-varying explanatory variable which is included in the model to measure the impact of donor equity on MFI performance. Most MFIs in the study still received funding from donors and it is necessary to assess how regulation could affect the flow of capital for investments in the microfinance sector. A positive relation is expected with both sustainability and outreach dimensions.

GLP= Gross loan portfolio is used to measure the size of the MFI and is influenced by the number of borrowers or the average loan size. The size of MFI affects the level of outreach positively. Since the goal of MFIs is to provide microcredit, delays in debt recoveries could affect greater outreach adversely and hence sustainability. Positive impacts can be expected on outreach and sustainability.

PAR= Portfolio at risk is the risk of default beyond a specified period of time. It is included to measure the quality of an MFI's loan portfolio as this affects the sustainability and outreach of these institutions. Timely collection of loans is critical in extending loans to more clients (both old and new). On the other hand, poor loan recoveries affect the funding structure of MFIs and points to management inefficiency with likely effect on their performance. Portfolio at risk (PAR) is included to assess management performance in recovering loans and a negative relation is expected with MFI sustainability and outreach.

AGE= Age is thought to be positively correlated with MFI performance since older institutions have had more time extending credit to borrowers and therefore enjoy economies of scale as they expand. Age is included to capture the potential for expansion in MFIs. A positive relationship is anticipated due to learning curve effects. However, negative effects could arise due to younger firms leapfrogging older ones (Mersland & Strom, 2009).

RQ= Regulatory quality (RQ) measures the ability of government to formulate and implement sound policies and regulations. It is included in the analysis to assess the level of private sector development in respective countries and how that impacts on MFI performance. High-quality regulation implies the absence of excessive rules, and that the rules are efficiency enhancing. The burden of government regulations, inefficiency in the legal framework in settling disputes, and challenging regulations all contribute implicitly to

higher MFIs costs. Nonetheless, a positive relationship between RQ and MFIs outreach and sustainability is predicted.

RL = Rule of law (RL) measures the confidence level of various agents in abiding by the rules of society, particularly the criminal and judicial justice system. This variable is very relevant in microfinance due to the nature of contracting. The effectiveness and predictability of the judiciary, therefore, matters in helping MFIs build trust and create new business transaction relationships for growth (Johnson, McMillan, & Woodruff, 2002). The judiciary is vital in enforcing contracts and creating a stable environment for micro-borrowers to operate. Protracted participation in court proceedings and the prevalence of corrupt activities indicate weaknesses in the rule of law and this impact on business investment decisions (Long, 2010). Quality legal systems have been reported as having positive impacts on firm size (Laeven & Woodruff, 2007). Rule of Law (RL) is expected to relate positively to MFI sustainability and outreach.

GE= Governance effectiveness (GE) measures the quality of public service delivery by governments in the area of policy formulation and implementation, independence from political pressure and government commitment to stated policies. Good governance is necessary to the securing of property rights, contract enforcements and the supply of adequate public goods (Dixit, 2009). The incentives to invest, public safety, political stability, transparency, and designing and implementing loan contracts are critical issues in microfinance likely to impact on MFI performances. Hence the inclusion of GE to capture these important dimensions. A well-functioning enforcement agency may enhance the growth prospects of MFIs by enforcing loan contracts (Messick, 1999). Meanwhile, the global competitiveness report of 2009-2010⁴⁷ shows that inefficiency in governance poses a challenge for doing business in most African economies due largely to host country beaurocracy. Nonetheless, a positive association between governance effectiveness and MFI outreach and sustainability is anticipated.

HDI= The Human development index (HDI) of respective countries is included to cater for the differences in the level of human development which would be likely have an impact on MFI operations. HDI is a composite index measuring average achievements made by countries in three basic dimensions of human development: a long and healthy life, knowledge, and a decent standard of living. The inclusion of this variable may help

⁴⁷ see <http://www.weforum.org/>

capture MFIs' institutional differences. Positive effects on outreach and sustainability are expected.

IPR= Index of property rights, a composite index ranging from 10 (Private property is rarely protected) to 100 (Private property is guaranteed by the government). It is a complementary business environment measure which is included to capture the aspect of institutional development that protects private property in businesses. Previous studies on microfinance regulation have used it (Muriu, 2011; Hartarska & Nadolnyak, 2007) and a positive relationship is anticipated.

IBF= The index of business freedom measure reflects the ability to start, operate and close a business and represents the overall burden of regulation as well as the efficiency of government in the regulatory process. This variable is included to capture efforts by individual governments in promoting the right business environment for MFIs to thrive. Evidence shows that businesses operations are anchored in the right environment and previous microfinance studies included this variable with satisfactory outcomes (Muriu, 2011; Mersland & Strom, 2009; Hartarska & Nadolnyak, 2007). A positive relationship is anticipated with MFI sustainability and outreach.

INF = Inflation is a country-level macroeconomic variable that has been found to influence MFIs' social and financial performances in various country contexts (Cull et al., 2015; Ahlin et al., 2011, Vanroose, 2008). INF is included to capture country-specific economic performance on MFI sustainability and outreach performance. A negative relation is anticipated.

GDP= Gross Domestic Product is used to measure the size of each country's economy. The inclusion of this variable will enable comparison to be made of MFIs in different countries with more accuracy and reliability. This variable is expected to have positive effects on MFI sustainability and outreach performance, and previous studies in microfinance have utilised it (Muriu, 2011; Cull et al., 2015b)

6.5.3 DIAGNOSTIC TESTS AND ESTIMATION

Prior to model estimation, a number of diagnostic tests relevant to dynamic panel model estimations were conducted to ensure the accuracy of the results. This first is related to

the stationarity level of the variables using the panel unit root test. The null hypothesis that ‘all panels contain unit root’ was tested against the alternative hypothesis ‘all panels are stationary’ using the Fisher-ADF test. Details of the Fisher-ADF test are provided in section 3.4 for reference to avoid duplication. The test results which are presented in Table 6.2 show that with the exception of the variable age, all other variables are significant at 1 percent. This means acceptance of the null hypothesis that there are unit roots which render the panel series non-stationary. This provides a case for first differencing to be done in order to make the series stationarity before proceeding with model estimations.

Table 6.2: Results of Unit Root Test using Fisher-ADF

Variable	Statistic
Log of operational self-sufficiency (OSS)	278.2312***
Log of number of active borrowers (NAB)	1213.3658***
Average loan size as a percentage of GNI (ALS)	1224.4730***
Log of total assets (TA)	1284.7292***
Total equity to total assets ratio (ETA)	318.2002***
Log of gross loan portfolio (GLP)	1199.6412***
Portfolio at risk (PAR)	341.2095***
Age of MFI (AGE)	389.6113
Regulatory quality (RQ)	1148.1158***
Rule of law (RL)	1396.8016***
Governance effectiveness (GE)	1286.8327***
Human development index (HDI)	664.6417***
Index of business freedom (IBF)	419.8405***
Index of property rights (IPR)	247.0570***
Log of inflation (INF)	638.1634***
Log of GDP per capita (GDP)	1217.2575***

Source: Estimation from the data

Significance level: ***, <0.01; **, <0.05 and *, <0.10

The second test relevant in dynamic model estimation is the test for individual effects in autoregressive models. This test was first proposed by Holtz-Eakin (1988) who devised a simple test of individual effects in dynamic panel data models. The null hypothesis of “no individual effects” is tested under orthogonal conditions. Intuitively, the test for individual effects is a test of whether the sample moments corresponding to the restrictions imposed are sufficiently close to zero, contingent upon imposing the

orthogonal condition $E(y_{i,1} (u_{i,3} - u_{i,2})) = 0$. Holtz-Eakin (1988) generalises the AR (p) where p is unknown and applied it to the wage equation based on 898 observations. He found evidence of individual effects and this supports the need to control for heterogeneity in dynamic models. Similarly, Jimenes-Martin (1998) used a Mont Carlo experiment to test the presence of individual heterogeneity effects. The test results show that as AR coefficients approach unity, the presence of additional regressors sharply affect the power and size of the test. He concluded that the power of the test is higher when: the variance of the specific effects increases; sample size increases; the data set is balanced; regressors are strictly exogenous.

Post-estimation tests for autocorrelation were implemented for all models estimated. Both first order, AR (1) and second order, AR (2) serial correlations were tested and the results reported in Tables 6.4, 6.5 and 6.6. This test is relevant when lags are used as instruments and the consistency of the GMM estimator relies heavily on these tests. Proposed by Arellano and Bond (1991), the null hypothesis that there is ‘no serial correlation’ in AR (1) and AR (2) for the disturbances of the first difference equations is tested. Thus, $[E(\Delta v_{it} \Delta v_{it-1}) = 0; \text{ and } E(\Delta v_{it} \Delta v_{it-2}) = 0]$ respectively. These hypotheses are true if the v_{it} are not serially correlated or follow a random walk. Robust standard errors were used to control for possible heteroscedasticity and autocorrelation across multiple observations from the same MFIs as suggested by Wooldridge (2002). The diagnostic tests show that the models were well fitted with a statistically significant test for first-order serial correlations, AR (1). This means that there is no serial correlation and the instruments used are valid. However, the tests were statistically insignificant for the second order serial correlations, AR (2).

Furthermore, the Sargan test for over-identifying restrictions was performed as suggested by Arellano and Bond (1991) for dynamic panel models. Roodman (2006) warns that the Sargan test should not be relied upon faithfully because it is prone to weaknesses. Intuitively, the test becomes weaker as the number of moment conditions increases. Bowsher (2002) finds that the use of too many moment conditions causes the Sargan test for over-identifying restrictions to be undersized and have extremely low power. In longer panels (T large, N small), the Sargan test never rejects.

A crucial assumption for the validity of GMM models is that the instruments are exogenous. Invalid instruments cannot be detected if the model is exactly identified. In over-identified models, a test statistic for the joint validity of the moment conditions (identifying restrictions) usually falls outside the GMM framework. Proposed by Sargan (1958), the null hypothesis for the test is that ‘over-identifying restrictions are valid’ and this was tested against the alternative that overidentifying restrictions are invalid. The results of the test which are located in Tables 6.4, 6.5 and 6.6, show clearly that the tests were significant in all models estimated. This means that the instruments used in the estimation are valid and the estimated results are very reliable. This outcome is further reinforced by the significance of the Wald test reported on in the same tables. This shows that the joint validity of the vector of empirical moments was randomly distributed around zero.

Estimation was done using the system GMM approach to dynamic panel data analysis due to the numerous econometric challenges posed by such relationships. The presence of unobserved country-specific effects, possible endogeneity where orthogonal conditions may not be met, and the use of lagged dependent variables as regressors, makes the classical OLS method inappropriate. The two-stage least squares (2SLS) estimation approach also suffers from a lack of efficient and exogenous instrumental variables. Furthermore, the absence of perfect instrumental variables to address the strict endogeneity means that more careful consideration is required in the analysis. The system GMM, therefore, offers a unique solution to these challenges and produces more efficient estimates (Roodman, 2006).

The GMM methodology involves two stages in the transformation process. The data was transformed through first differencing to tackle the issue of country-specific fixed effects of the series. However, first differencing in the presence of endogeneity and the lagged dependent variable often leads to downward bias and inconsistent estimates (Nickel, 1981). The second transformation in the estimation process addresses the possible endogeneity problem by using lagged variables as instruments (Newey & Rosen, 1988; Roodman, 2006).

Using operational self-sustainability (OSS), breadth of outreach (NAB) and depth of outreach (ALS) as dependent variables, five models with different specifications were estimated for each dependent variable. To be able to capture the key drivers and their effects, five (5) models are estimated. In all cases, Model [1] serves as the base model which captures the effects of only MFI specific factors. Model [2] captures the effects of quality institutions on MFI sustainability and outreach performance. Model [3] captures the effects of governance and human development on MFI performance. Model [4] includes complementary business environment factors to assess their effects on MFI performances. Finally, Model [5] includes country-specific macroeconomic factors to determine their effects on MFI performance. These different specifications also serve as a robust measure for the models estimated; the results are presented in Tables 6.4, 6.5 and 6.6 under the results section.

6.6 EMPIRICAL RESULTS AND DISCUSSIONS

The empirical results obtained from the analysis are presented and discussed in four major sub-sections. The descriptive statistics are discussed in sub-section 6.6.1. This is followed by the effects of regulation on MFI sustainability in sub-section 6.6.2. The next sub-section (6.6.3) presents and discusses the effects of regulation on MFI breadth of outreach. The effects of regulation on MFI depth of outreach are presented and discussed in the final sub-section, 6.6.4.

6.6.1 DESCRIPTIVE STATISTICS

Table 6.3 presents the descriptive statistics of the variables used in the estimation. The mean of many of the variables can be interpreted as the percentage of firms in the category. Table 6.3 shows that all the MFIs considered in the study are operationally self-sufficient, since the mean is greater than one (1.065). This means that the MFIs are able to cover their operating costs from the revenues that they generate. This is desirable as it gives hope for sustained service delivery to clients. The mean number of active borrowers

for an MFI is 56,242 but the range varies widely from 72 persons to 801,809. This level of outreach is low, suggesting that microfinance penetration in the region is small. The average loan size offered by MFIs also varies widely from US\$29 to US\$5,705 with a mean of US\$ 539. These figures show that the loan sizes offered are small to effectively support microenterprise development in the region.

Table 6.3: Descriptive Statistics of Variables Used in the Estimation

Variable	Nobs	Mean	Standard Deviation	Minimum	Maximum
OSS	619	1.0656	0.4897	0.0331	8.4158
NAB	619	4.2218	0.7091	1.8573	6.1017
ALS	619	0.3136	0.5432	0.0029	0.5705
RGS	619	0.7463	0.4354	0.0	1.0
TA	619	6.8543	1.0095	-0.3555	9.6309
ETA	584	5414.721	93177.38	-0.7294	1782490
GLP	619	0.426828D+08	0.220366D+09	12678.0	0.341780D+10
PAR	538	0.0898	0.1100	0.0005	0.8300
AGE	619	12.3602	3.0462	3.0	19.0
HDI	337	2.1857	31.1868	0.3210	573.0
RQ	585	-0.3792	0.3864	-1.3228	0.7783
RL	585	-0.5810	0.3568	-1.3228	0.2372
GE	585	-0.4855	0.3518	-1.2006	0.6831
HDI	337	2.1857	31.1868	0.3210	573.0
IBF	619	60.2788	15.1168	10.0	92.2000
IPR	619	34.6116	8.2610	30.0	50.0
INF	618	0.7763	0.4141	-0.7642	1.4261
GDP	619	7.0585	3.9619	-2.1613	33.7357

Source: Based on MIX market data

Regulation of MFIs is very important to donors as it helps to secure their investments. 74.8 percent of the institutions studied were under regulation either by their respective central banks or other regulatory agencies. This could enhance transparency in their

operations and impact positively on their performance as they collect deposits from the public and try to raise funds from commercial sources to augment their operations. The ownership structure of MFIs in the region is well balanced in the sample. It can be seen that NBFIs (40.3 percent) and NGOs (34.5 percent) dominates the sampled MFIs considered in the industry, while 11.3 percent of MFIs were Banks, and 13.7 percent were made up of Credit Unions. This shows that MFIs of all types coexist in the region, with good performances as reflected in the rating agency reports. The minimum and maximum values of the human development index (HDI) show that the country context within which MFIs operate varies widely. The institutional differences of these MFIs may be explained by the inclusion of the HDI in the analysis.

6.6.2 IMPACT OF REGULATION ON SUSTAINABILITY

Regulation of MFIs is posited to have an effect on the operational sustainability level of these institutions. Table 6.4 reports results of the model specification using operational self-sufficiency (OSS) as the dependent variable for MFI sustainability. The coefficient of the lagged dependent variable is about 0.23 and significantly greater than zero in all models. This suggests that some level of persistence of MFI sustainability exists in the microfinance sector in SSA. The plausible interpretation is that any observed shock in the microfinance industry for the current year will likely result in a 23 percent carry-forward (persistence) effect on sustainability in the following year. For instance, in Model [1], a percentage point increase in the previous period's sustainability of MFIs increases the current sustainability level of the institutions by 0.242 percentage points.

The regulatory status of MFIs is seen to have significant positive effects on their sustainability. Deposit-taking by regulated institutions, which serves as a cheaper source of funds can be said to have significant impacts on MFIs operations. This result provides supportive evidence to Fidrmuc and Hainz's (2013) finding that regulatory differences have long-term effects in the banking sector. Regulation leads to integration through cross-border lending and cross-border mergers. The microfinance industry in SSA, therefore, can be said to be on a sustained growth path similar to that of its peers in Latin America, where regulation is reported to have significantly impacted on MFI development in the early stages of growth (Christen & Rosenberg, 2000).

Table 6.4: The Impact of Regulation on MFI Sustainability (Dependent Variable: OSS)

Variable	Variant of model specification: Dependent variable (OSS)				
	[1]	[2]	[3]	[4]	[5]
Lagged OSS	0.2422*** (6.62)	0.2331*** (6.33)	0.2383*** (6.45)	0.2256*** (6.13)	0.2374*** (6.51)
RGS	0.1669*** (3.32)	0.1523*** (2.90)	0.1711*** (3.36)	0.1591*** (3.18)	0.1368*** (2.63)
TA	0.0091 (0.60)	0.0114 (0.75)	0.0092 (0.60)	0.0157 (1.03)	0.0159 (1.03)
ETA	-1.57e-07*** (-5.23)	-1.52e-07*** (-2.45)	-1.57e-07*** (-2.53)	-1.55e-07*** (-2.51)	-1.48e-07*** (-2.34)
GLP	0.1116*** (5.35)	0.1165*** (5.52)	0.1123*** (5.38)	0.1306*** (5.96)	0.1291*** (5.78)
PAR	0.0330 (0.50)	0.0283 (0.43)	0.0320 (0.48)	0.0318 (0.48)	0.0279 (0.42)
Age	-1.0983*** (-9.62)	-1.1176*** (-8.67)	-1.1179*** (-9.46)	-0.9883*** (-5.19)	-0.7656*** (-3.79)
RQ		-0.1076** (-1.99)			
RL		0.0891 (1.43)			
GE			-0.0189 (-0.48)		
HDI			-0.0001 (-0.37)		
IBF				-0.0068** (-2.29)	
IPR				0.0042** (2.22)	
IFL					-0.0025 (-0.12)
GDP					-0.0437** (-2.08)
Constant	-0.9103*** (-3.39)	-0.8246*** (-3.53)	-0.8735*** (-2.59)	-0.8740* (-1.69)	-1.1725** (-2.30)
Wald Chi2 test	251.10 (0.0000)***	256.73 (0.0000)***	250.90 (0.0000)***	262.59 (0.0000)***	257.74 (0.0000)***
Sargan-test	227.2597 (0.0000)***	224.9883 (0.0000)***	229.9164 (0.0000)***	223.6751 (0.0000)***	231.1726 (0.0000)***
AR(1)	-2.1621 (0.0306)**	-2.1755 (0.0296)**	-2.2475 (0.0246)**	-2.3142 (0.0207)**	-2.3403 (0.0193)**
AR(2)	0.0079 (0.9937)	-0.0144 (0.9885)	-0.0241 (0.9808)	0.0169 (0.9865)	0.0625 (0.9502)
Number of Instruments	108	110	110	110	110

Source: Estimation

NOTE: *t-statistics* are in parenthesis while *p-values* are in square brackets. Significance level: ***, <0.01; **, <0.05; and *, <0.10. Sargan Test of over-identifying restrictions: H₀: over-identifying restrictions are valid. 1st and 2nd order autocorrelation for Arellano-Bond test for zero

autocorrelation in first-differenced errors. H_0 : no autocorrelation. In all models, the number of observations is 551.

However, this finding contradicts studies by Hartarska and Nadolnyak (2007), Ndambu (2011), and Cull et al. (2015) in the microfinance sector. These studies found that regulatory involvement by MFIs does not have a direct impact on their financial and deposit intermediation role. The policy relevance of the result lies in the utilisation of the revealed knowledge on how regulation affects financial performance in the design and enforcement of regulatory policies to help overcome the challenges facing the industry.

Furthermore, the results show that the size of total assets is positively related to operational sustainability, as expected, though not statistically significant. This supports empirical findings in the field of microfinance by Zacharias (2008) and Demsetz and Strahan (1997) who found large specialised microfinance banks more profitable and financially sound due to diversification and economies of scale. The insignificance of this result could be attributed to the small size of MFIs in SSA. Besides, the fact that the greater proportion of MFIs considered in this study have legal status⁴⁸ more oriented toward social mission also explains the observed insignificant result.

The capital base of any financial institution is related to its sustainability. This is necessary not just for reasons of risk mitigation, but in ensuring the long-term supply of financial services to clients. The empirical results in Table 6.4 show that the equity-to-total assets ratio is significantly related to MFI operational sustainability. However, the magnitude of the effect in real terms as depicted in all models is very marginal. This means that capital ratio affects the financial performance of MFIs and more leveraged institutions will most likely have better sustainability levels. This contradicts the finding of Hartarska and Nadolnyak (2007) who found less leveraged MFIs to have better operational sustainability. This suggests that donor equity received by MFIs does not enhance their sustainable operations and that donors may have an unwillingness to provide equity to less sustainable institutions. Although debt reduces verification costs

⁴⁸ The ownership structure of MFIs in the sample is made of: NBFIs (40.3 percent); NGOs (34.5 percent); Banks (11.3 percent); and credit Unions (13.7 percent).

(Townsend, 1979) and has wider preference over equity in financing, equity may be a better funding instrument for MFIs in SSA due to the high transaction costs associated with granting smaller loans to clients. Empirical evidence provided by Muriu (2011) shows that debt-to-equity ratio, however, has positive impacts on MFI profitability in SSA. The results further reveal that the size of the institution has no significant impacts on sustainability.

Another new finding that emerged from the analysis is that the loan portfolio of MFIs positively and significantly drives operational sustainability in SSA. This is evident in all the models estimated. For instance, model [2] shows that a percentage point increase in the gross loan portfolio (GLP) increases operational self-sustainability (OSS) by 0.116 percentage points. This is expected in view of the fact that the ability of MFIs to grant future loan is tied to their current loan recovery levels. Low loan recoveries in the current period will mean that fewer loans will be offered to clients in subsequent years since the size of the loan portfolio will be reduced.

Additionally, the age of MFIs is found to have significantly negative impacts on operational self-sustainability in all the models estimated. For instance, it is shown in Model [2] that a percentage point increase in age leads to a decline in operational self-sustainability (OSS) by 1.117 percentage points. Thus, as institutions grow and mature, inefficiency in operations may set in due to size effects and monitoring challenges leading to a sub-optimal combination of resources. Learning curve effects by aging institutions, therefore, have little impact on their sustainability drive. This result supports that of Muriu (2011) who found insignificant effects of age on MFI profitability. However, the finding is in contradiction to Oliver and Uhdeb (2009) who posit that more experienced firms, through their years of operation, enjoy learning-curve effects as they go through trial-and-error processes.

Moreover, the results show that institutional environment matters for MFI sustainability. The quality of institutions affects the sustainability of MFIs in SSA. A significantly negative relationship is found between regulatory quality (RQ) and operational sustainability, which contradicts the general theoretical prediction. Evidently, model [2] in Table 6.4 shows that a percentage point increase in RQ results in 0.107 percentage

points decline in the operational sustainability of MFIs in SSA. This suggests that the regulatory burden of governments may not result in improvement in the sustainable performance of these institutions. However, the rule of law (RL) has positive effects on sustainability though the results are insignificant. If profitability is interpreted to mean sustainability in the microfinance industry, then this result contradicts Muriu (2011) who found positive impacts of the rule of law on MFI profitability in SSA.

Neither governance effectiveness nor the human development index derives MFI sustainability in SSA. The effectiveness of governments is often presumed to impact positively on the cost of doing business both to MFIs and micro-borrowers. The negative and insignificant result for governance effectiveness is in line with the global competitiveness report of 2009/2010 which notes government inefficiency as a key obstacle facing African economies for doing business in the continent. Also, the finding is consistent with Ahlin et al. (2011) who found the influence of governance on MFI operational self-sufficiency to be insignificant. Further supportive evidence is provided by Cull et al. (2009b). One major area of improvement of the current study over these previous studies is the control of endogeneity which has the potential to bias estimated results.

The ease of doing business which is proxied by the index of business freedom (IBF), in the region has significantly negative impacts on sustainability. Model [4] in Table 6.4 shows that a percentage point increase in IBF leads to a decline in operational self-sustainability (OSS) by 0.006 percentage points. This means that MFIs in the region actually operate under constrained business environments, which is likely impact adversely on their ability to attract needed funding. However, the protection of property rights (IPR) is found significant with positive impacts on sustainability. When investors are assured of the safekeeping of their investments by the host government they are likely to augment their funding base and extend more credit to MFIs to consolidate and sustain their operations. This result is consistent with Hartarska and Nadolnyak (2007) but contradicts that of Muriu (2011) who found no evidence that a complementary business environment measure of property rights drives MFI profitability. The results are also inconsistent with those of Hallward-Driemeier (2009) who found that inefficiency in

government serves exists in analysing the business climate of 27 countries in Eastern Europe and Central Asia.

Furthermore, the results show that country context matters in the attainment of sustainability by MFIs in the region. The size of a country's economy as measured by GDP has significant impacts on MFI sustainability. It is shown in Model [5] in Table 6.4 that a percentage point increase in a country's GDP will result in a decline in MFI operational sustainability of 0.043 percentage points. On the other hand, inflation is found to worsen the sustainability efforts being made by MFIs. This is reflected in the high cost of borrowing which leads to larger consumer loans being offered to clients by MFIs. At such high interest rates, clients may decide not to apply for the loans. Others pick up the loans with the intention of not repaying (strategic defaults) thereby worsening the portfolio quality, leading to the unsustainability of MFIs.

The results of models 1 to 5, therefore, show convincingly that the regulatory status of MFIs greatly influences their sustainability levels in SSA. The hope and belief of various stakeholders (supervisory authorities, governments, donors and financial institutions) involved in microfinance are that undergoing regulation should lead to increased sustainability of the institutions. This supports the hypothesis that the regulatory status of MFIs in SSA positively influences their financial performance. This may be firm ground for agitators who have recently been calling for MFIs transformation (to become regulated institutions) as a way to enhance their financial performance.

6.5.3 IMPACT OF REGULATION ON BREADTH OF OUTREACH

The study postulated that the regulation of MFIs does not have significant impacts on their social mission. To investigate this, the number of active borrowers (NAB) is used as a dependent variable for a breath of outreach and its relationship with regulation analyse. The results are contained in Table 6.5.

Table 6.5: The Impact of Regulation on MFIs Breadth of Outreach (Dep. Variable: NAB)

Variable	Variant of model specification: Dependent variable (NAB)				
	[1] nab	[2]	[3]	[4]	[5]
Lagged NAB	0.1105*** (6.12)	0.1019*** (5.51)	0.1104446*** (6.01)	0.1060*** (5.52)	0.1220*** (6.60)
RGS	-0.2449*** (-5.16)	-0.2664*** (-5.45)	-0.245074*** (-5.14)	-0.2964*** (-6.01)	-0.2863*** (-5.89)
TA	-0.1174*** (-6.63)	-0.1191*** (-6.58)	-0.117386*** (-6.61)	-0.0836*** (-4.47)	-0.0648*** (-3.46)
ETA	2.96e-09 (0.04)	-7.17e-09 (-0.10)	3.07e-09 (0.04)	4.94e-08 (0.68)	-6.58e-09 (-0.09)
GLP	0.7377*** (30.73)	0.7379*** (29.51)	0.7375509*** (30.67)	0.7729*** (29.57)	0.7886*** (31.59)
PAR	0.1034 (1.49)	0.1091 (1.54)	0.1037729 (1.49)	0.0989 (1.39)	0.0733 (1.04)
Age	-0.1818* (-1.83)	-0.0031 (-0.02)	-0.179761* (-1.68)	0.2676** (1.77)	1.3381*** (8.33)
RQ		-0.1268** (-1.98)			
RL		0.2880*** (4.79)			
GE			0.0011 (0.03)		
HDI			0.0001 (0.20)		
IBF				-0.0197*** (-7.93)	
IPR				0.0071*** (4.11)	
INF					0.0752*** (3.53)
GDP					-0.2271*** (-11.96)
Constant	-1.9563*** (-4.71)	-2.0983*** (-4.26)	-1.96215*** (-3.92)	-2.6647** (-2.20)	-2.4267*** (-2.77)
Wald Chi2 test	33681.57 (0.000)***	32549.89 (0.000)***	33552.67 (0.000)***	1891.15 (0.000)***	32522.50 (0.000)***
Sargan-test	424.2318 (0.0000)***	387.8187 (0.0000)***	422.6858 (0.0000)***	337.9238 (0.0000)***	(257.967 (0.0000)***
AR(1)	-1.88 (0.0601)*	-1.7324 (0.0832)*	-1.8202 (0.0687)*	-2.1253 (0.0336)**	-2.1987 (0.0279)**
AR(2)	-0.5146 (0.6068)	-0.6503 (0.5155)	-0.4885 (0.6252)	-0.3220 (0.7474)	-0.3159 (0.7520)
Number of Instruments	108	110	110	110	110

Source: Estimation

NOTE: *t*-statistics are in parenthesis while *p*-values are in square brackets. Significance level: ***, <0.01; **, <0.05; and *, <0.10. Sargan Test of over-identifying restrictions: H₀: over-identifying restrictions are valid. 1st and 2nd order autocorrelation for Arellano-Bond test for zero autocorrelation in first-differenced errors. H₀: no autocorrelation. In all models, the number of observations is 551.

The coefficients of the lagged dependent variable for breadth are positive in all the models and are statistically significant. This shows that on average, any shock in the microfinance industry is likely to have a persistent effect on outreach efforts for the following year. For instance, the results in Model [1] shows that a percentage point increase in the number of active borrowers of an MFI in the previous year will likely result in a 0.110 percentage point increase in outreach in the current year. This can be explained by the increased awareness of the potential impacts of MFIs and the untapped market available for these institutions to exploit. Evidently, one key reason for the fast expansion of the microfinance sector has been the accumulated effectiveness of successful programme implementation over the years and this result is in line with this development.

Table 6.5 shows that regulation has an impact on MFIs' social performance in SSA. The coefficient of the regulatory variable in model [1] is negative and statistically significant and the results are robust even after incorporating several environmental variables into the model. For instance, model [1] shows that a percentage point increase in regulation will lead to a 0.244 percentage point decline in the breadth of outreach by MFIs. This means that regulatory status could have negative impacts on MFIs broader social mission of reaching out to more underserved clients with financial services. This could be explained by the high costs associated with complying with regulatory guidelines. Since most MFIs are already having funding constraints meeting registration and capital adequacy requirements certainly leaves very little capital left in their loan portfolio for lending activities. Another view is that as MFIs mature they tend to transform to become microfinance banks. Typically of banks, their focus on the poor declines as they shift attention to wealthier clients with larger loans aimed at minimising their operating costs and increasing profitability levels (mission drift). Under such circumstances, wider outreach could decline following transformations by MFIs into banks and regulated entities. This result provides supportive evidence to the findings of Cull et al. (2015) who found better developed regulatory and supervisory structures to be associated with less lending to women. However, the result contradicts the previous finding by Hartarska and Nadolnyak (2007) who observed that deposit-taking institutions had broader outreach and concluded that regulation has indirect benefits in enabling MFIs to expand.

In addition, the size of MFIs as measured by total assets influences their wider outreach to clients adversely. The significantly negative results observed in all models show that size of institution affects outreach but the magnitude of the effect, however, declines with improvements in the operating environment. For instance, from Model [1] in Table 6.5, the magnitude of the effect of MFI assets on outreach is 0.117 compared to 0.064 in Model [5] which takes into account inflation and the GDP of host countries within which they operate. The negative relations between firm size and wider outreach suggest that MFIs enjoying economies of scale are likely to diversify their portfolios rather than broadening their financial inclusion goal. Furthermore, the high proportion of institutions with NGO status in the sample could explain the observed result. As argued by Basley and Ghatak (2005) the non-profit status of institutions is sufficient to affect performance since donors believe it guarantees the mission of MFIs and are more willing to support their course. This means that though much emphasis is on outreach, donors will make it less of a priority to make equity available to MFIs with better outreach.

The results further show that gross loan portfolio (GLP) has significant and positive impacts on MFIs' wider outreach, as expected. For instance, Model [1] show that a percentage point increase in gross loan portfolio (GLP) will lead to 0.737 percentage point increase in outreach to a large number of clients by MFIs. The observed positive impacts are consistent in all the models estimated. Proper loan portfolio management, therefore, implies greater outreach to poor clients with the needed financial services. Loan recovery on a timely basis has been found crucial in extending more loans to both existing and new clients and also enhances the prospects of MFIs attracting funding from external sources. However, this remains one area of controversy in the microfinance literature as some argue that high repayment rates are insufficient to drive the microfinance evolution (Deheija et al., 2005). Nonetheless, the available evidence here points to the fact that proper management of the loan portfolio has beneficial impacts on wider outreach.

Evident in Table 6.5 is that the portfolio at risk (PAR) is positive but insignificant in all models. This is contrary to expectations since poor loan recovery will naturally limit the outreach efforts of MFIs.

Experience which is gained through operations over time is said to improve MFIs outreach performance through learning-curve effects. Evidence from the results shows mixed effects of age on the breadth of outreach of MFIs in SSA. Thus, while Models [1] and [3] show significantly negative effects of age on outreach, significantly positive impacts are recorded in models [4] and [5] which incorporated environmental factors such as inflation, GDP, index of property rights and the ease of doing business in countries. This suggests that a good macroeconomic and institutional environment matters in MFIs outreach efforts. The negative significant results support previous findings by Cull et al. (2011) that prudential regulation is associated with less outreach to women borrowers. On the other hand, the positive significant results are in line with the findings of Hartarska and Nadolnyak (2007) who reported positive significant impacts of age on MFI outreach in their analysis of 114 MFIs across 62 countries. The situation of younger MFIs leapfrogging older institutions and at the same time some older MFIs using their past experience to propel outreach sustainably is demonstrated by the results.

Consistent with the findings on sustainability, regulatory quality (RQ) has a significantly negative impact on MFI wider outreach and at the same time significant positive impacts on the rule of law (RL), as revealed in Model [2]. The results show that a percentage point increase in RQ will lead to a 0.288 percentage point increase in the outreach of MFIs. Safe political and legal environment should enable MFIs to operate efficiently and enhance their sustainability and outreach. As contracting is cardinal in MFI operations, the role of law courts is seen as vital in ensuring access to financial services by poor clients. The effective functioning of legal institutions does help in retaining public confidence and is yielding some positive benefits. The outreach performance of these institutions suggests that legal bottlenecks and contractual disputes may be receiving appropriate attention from institutions mandated to address them. This supports the observation by Ahlin et al. (2011) that institutional context matters in enhancing MFI outreach and financial performance.

Table 6.5 further shows that governance effectiveness (GE) and the human development index (HDI) of respective countries do not significantly influence MFIs' wider outreach efforts. The estimated coefficients are positive, as expected. This, therefore, underscores

the need for governments in SSA to design and effectively implement policies aimed at improving the business environment in respective countries.

Similarly, complementary business factors are found to influence MFI outreach performance in SSA. A significantly negative association exists between the ease of doing business (IBF) and MFIs' wider outreach performances. Model [4] shows that a percentage point increase in IBF will lead to a 0.019 percentage point decline in the outreach of MFIs. Barriers to entry into the microfinance industry and the unfavourable operating environment that characterises most countries make MFI outreach lag behind. This may be explained by the low interest of institutional investors in investing in microfinance due to high risk and high operating environmental conditions. However, the results show a significantly positive impact on protecting the property rights (IPR) of individuals and institutions and their outreach performance. This means that MFIs operating in environments with better protection of property rights are able to reach more borrowers including those who are relatively poor. This suggests that when there is greater protection for a property with vested rights to the utilisation of such properties the outreach performance of institutions delivering microfinance services will be enhanced. These results strengthen the findings of Hartarska and Nadolinyak (2007) but contradict that of Demirguc-Kunt, Laeven, and Levine (2004) who reported that banking regulation becomes insignificant when controlling for national indices of economic freedom and property rights.

Finally, the macroeconomic environment of countries is shown to have an impact on MFIs' breadth of outreach performance. Meanwhile, Muriu (2011), in analysing microfinance profitability in SSA, concluded that the macroeconomic environment was not significant in explaining profitability. Model [5] in Table 6.5 shows that a percentage point increase in inflation will lead to a 0.075 percentage point increase in the breadth of outreach of MFIs. This result, though contradictory to economic theory, is in conformity with the strategic loan default hypothesis which posits that under very high interest rates, some individuals deliberately take loans with the intention of not paying them back. Under such circumstances, broader outreach can result and it is not a surprising outcome considering the recent incidence of clients borrowing from multiple sources and over-

indebtedness in the industry (Schick, 2013). Furthermore, the results show significantly negative impacts of the size of a country's economy (GDP) with MFIs' wider outreach performance. Specifically, Model [5] shows that a percentage point increase in per capita GDP of a nation will lead to a decline in MFIs wider outreach to the poor by 0.227 percentage points. This suggests that small-size economies are more likely to achieve higher outreach performance, and that contraction in a country's economy could limit the outreach efforts by institutions in delivering services to the poor. This result supports previous findings by Cull et al. (2015a) who found negative effects of GDP growth rate on lending to women but contrasts with those of Hartarska and Nadolnyak (2007) who reported positive impacts of per capita income on outreach with a diminishing effect following the introduction of savings and loan ratios into their analysis.

In sum, Models [1] to [5] show convincingly that regulation has significant negative impacts on MFIs wider outreach. The policy relevance is for the government to improve the infrastructure base and create a more conducive business-friendly environment. Although most African economies are reported to be on a growth path, challenges in the quality of service delivery still remain, due to limited infrastructure.

6.5.4 IMPACT OF REGULATION ON DEPTH OF OUTREACH

The average loan size as a percentage of GNI is used as a dependent variable for depth of outreach in line with some recent studies (Cull et al., 2015a). The coefficient of the lagged dependent variable for depth shows that any shock to the microfinance industry is likely to have a 45 percent persistent effect in reaching out to the relatively poor in the subsequent year. These impacts on outreach, however, are lower (31 percent) when environmental factors are taken into account (see Models [1] and [5] in Table 6.6 respectively). This suggests that the microfinance industry in SSA is less robust to shocks even though on a growth trajectory. This is contrary to the widely held view that the industry was very robust during the 2008 global financial crisis as previously suggested. Thus, deterioration could have set in, which would have had greater policy implications for MFIs serving the relatively poor.

Table 6.6: The Impact of Regulation on MFIs' Depth of Outreach (Dep. Variable: ALS)

Variable	Variant of model specification: Dependent variable (ALS)				
	[1]	[2]	[3]	[4]	[5]
Lagged ALS	0.4553*** (11.05)	0.3965*** (9.43)	0.4325*** (10.36)	0.3380*** (8.0)	0.3120*** (7.65)
RGS	0.4282*** (4.68)	0.3689*** (3.97)	0.4371*** (4.81)	0.3912*** (4.56)	0.2310*** (2.71)
TA	-0.0395 (-1.30)	-0.0207 (-0.69)	-0.0359 (-1.19)	-0.0249 (-0.87)	-0.0022 (-0.08)
ETA	-8.77e-08 (-0.75)	-1.31e-07 (-1.14)	-1.11e-07 (-0.95)	-1.98e-08 (-0.18)	-8.05e-09 (-0.08)
GLP	0.0697** (1.92)	0.1042*** (2.87)	0.0764** (2.11)	0.1404*** (3.90)	0.1979*** (5.44)
PAR	0.1710 (1.50)	0.1302 (1.16)	0.1666 (1.47)	0.1216 (1.14)	0.1133 (1.10)
Age	-0.5481*** (-3.46)	-0.9922*** (-4.80)	-0.7716*** (-4.35)	0.6242*** (2.78)	1.0059*** (4.06)
RQ		-0.5229*** (-5.30)			
RL		0.1627 (1.55)			
GE			-0.1987*** (-2.72)		
HDI			0.00003 (0.09)		
IEF				-0.0330*** (7.39)	
IPR				0.0027 (0.91)	
INF					-0.0816*** (-2.61)
GDP					-0.2435*** (-7.83)
Constant	-1.7439*** (-3.43)	-1.7722*** (-3.75)	-1.9798*** (-4.08)	-1.9678*** (-2.53)	-0.9828 (-1.17)
Wald-test	185.56 [0.0000]***	222.47 [0.0000]***	194.88 [0.000]***	272.24 [0.000]***	303.63 [0.000]***
Sargan-test	223.5973 [0.0000]***	203.2203 [0.0000]***	220.3017 [0.0000]***	194.5691 [0.0000]***	202.5146 [0.0000]***
AR(1)	-2.7062 [0.0068]***	-2.8774 [0.0040]***	-2.7302 [0.0063]***	-2.5633 [0.0104]***	-2.4634 [0.0138]***
AR(2)	0.9156 [0.3599]	0.6476 [0.5172]	0.8021 [0.4224]	0.7593 [0.4477]	0.6600 [0.5092]
Number of Instruments	108	110	110	110	110

Source: Estimation

NOTE: *t*-statistics are in parenthesis while *p*-values are in square brackets. Significance level: ***, <0.01; **, <0.05; and *, <0.10. Sargan Test of over-identifying restrictions: H₀: over-identifying restrictions are valid. 1st and 2nd order autocorrelation for Arellano-Bond test for zero autocorrelation in first-differenced errors. H₀: no autocorrelation. In all models, the number of observations is 551.

Table 6.6 shows that regulatory status impacts positively and significantly on the relative poverty level of clients (depth). This result is of interest to MFIs that are committed to serving the relatively poor and at the same time want to become regulated entities. Model [1] shows that a percentage point increase in regulatory status will lead to a 0.455 percentage point increase in outreach to the relatively poor. This suggests that beyond the much-argued reasons of commercialisation and deposit-taking, MFIs' transformations into regulated entities can greatly impact on their social mission of serving poorer clients.

Total assets (TA) of MFIs are shown to have negative insignificant impacts on serving poorer clients. Similar negative insignificant results are observed for the total equity to total assets ratio (ETA). This suggests that the assets base of MFIs do not drive their outreach to the poor in SSA. This is relevant in view of the fact that most MFIs in the region are classified as being small in size.

Gross loan portfolio (GLP) has positive and significant impacts on the depth of outreach of MFIs, as shown in Table 6.6, for all models estimated. For instance, Model [1] shows that a percentage point increase in the gross loan portfolio (GLP) of an MFI will lead to a 0.069 percentage point increase in the depth of outreach. Consistent with the results on the breadth of outreach, portfolio at risk (PAR) has no significant impact on the depth of outreach. The fear that poor people may not be able to repay their loans on time is therefore not supported by these results.

The age of MFIs is found to be a significant driver in serving poorer clients. However, consistent with the findings on the breadth of outreach, mixed effects (both positive and negative) are observed with environmental factors playing a positive role in the depth of outreach performance of MFIs. For instance, Model [1] shows that a unit increase in the age of MFIs will lead to a 0.548 percentage point decline in their outreach to poorer clients. This suggests that learning curve effects have little impact on serving poorer clients by MFIs. On the other hand, sound macroeconomic environments enhance deeper outreach by older MFIs operating in the market. These results are consistent with Cull et al. (2015) who found prudential regulation of MFIs to be associated with less outreach to the relatively poor. The authors further reported that regulatory practice, a framework for

deposit taking, and the operation of non-regulated MFIs were positive significant factors that influence the depth of outreach.

Additionally, consistent with the findings on sustainability (Table 6.4), state agencies and environmental factors negatively and significantly drive down the efforts of MFIs to reach the relatively poor with financial products and services. Institutional factors such as regulatory quality, governance effectiveness and the index of economic freedom are all found to have significant negative impact on the depth of outreach. For instance, Model [2] shows that a percentage point increase in regulatory quality will lead to 0.529 percentage point decline in serving poorer clients. Obviously, this runs contrary to the expectations, suggesting that improvements in regulatory quality are yet to have any direct effects on MFI service delivery to the relatively poor. This could be explained by the numerous regulatory bottlenecks that exist in the microfinance sector.

Furthermore, macroeconomic factors such as inflation and GDP per capita are shown not to have positive impacts on the depth of outreach. For instance, Model [5] in Table 6.6 show that a percentage point increase in inflation will result in a decline in the depth of outreach by 0.081 of a percentage point. Theoretically, higher inflation is posited to have negative welfare impacts. This negative coefficient for inflation is therefore in line with theory. This, therefore, has a significant policy implication in ensuring that the welfare of the poor is maintained.

In sum, the available evidence from model estimations shows that regulation has positive and significant impacts on MFI serving their poorer clients. This is relevant for donors and MFIs that focus more on attaining their social mission. It also shows that the move by non-regulated MFIs to gain regulatory status is in the right direction and needs to be supported by management. It can, therefore, be concluded that regulation has significant value not just for the MFIs but for all their potential clients.

6.6 CHAPTER SUMMARY

The chapter has advanced the existing literature on microfinance regulation by empirically analysing the effects of regulation on MFIs' financial and social performance. How regulation impacts on MFIs' sustainability and outreach efforts has largely remained theoretical, especially in SSA where the transformation of non-profit organisations into deposit-accepting institutions (regulated) is being advocated. The chapter presented and discussed literature on the theoretical framework, the various theories that underpin regulation, and empirical studies that have analysed the impact of regulation on microfinance performance. The review revealed a gap in the empirical literature for SSA as limited studies could be traced on the impacts of regulation on MFIs financial and social performance.

The dynamic Generalised Method of Moment (GMM) was utilised to analyse 551 observations. This framework is considered more appropriate in recent econometric analysis in view of the endogenous nature of most firm and macro level variables used in the study. Five models with different specifications were estimated for each of the three dependent variables chosen for sustainability and breadth and depth of outreach. Model [1] was seen as the best and was therefore used as the base model in discussing the results. More robust empirical evidence supporting the results is provided by incorporating several environmental and institutional factors (governance effectiveness, Inflation, rule of law, regulatory quality, and index of property rights) into the analysis. Indeed, the application of dynamic panel modelling does yield much better results compared to the static panel models used in previous studies.

Focusing on regulation status as the key variable of interest, the chapter presented and discussed the empirical results and key findings. The results show convincingly that regulation has positive impacts on both the sustainability and outreach efforts of MFIs in SSA. Furthermore, both institutional and environmental factors influence the operational sustainability and outreach of MFIs. Specifically, while the age of an MFI and gross loan portfolio (GLP) significantly impact on its depth of outreach, total assets (TA) impact on the breadth of outreach of these institutions. The next chapter presents the summary of the study, key findings, main conclusions and policy recommendations.

CHAPTER 7

SUMMARY, CONCLUSIONS AND POLICY RECOMMENDATIONS

This chapter concludes the thesis by providing an overall synthesis of the six earlier chapters, a summary of the study, main findings, policy implications and ideas for extending this research. The chapter also links the major results from the study to the overall and specific objectives outlined by the study. The first section of the chapter presents the main summary of the study. This is followed by the main findings and conclusions of the study which are presented in four sub-sections and tied to the study objectives. The policy implications that emanated from the study are presented in section three following the sub-themes covered in the study. The chapter concludes with recommendations and ideas on how the research can best be extended.

7.1 SUMMARY OF THE STUDY

This study analysed the performance of microfinance institutions (MFIs) in Sub-Saharan Africa (SSA) covering the period 2003 to 2013 with 620 observations across 71 institutions. It analysed comprehensively the current challenges that confront the performance of MFIs along four key themes: outreach, sustainability, efficiency and regulation. While previous studies have made attempts to analyse some aspects of these themes, no comprehensive study have been done encompassing all areas of the industry. The exponential growth of the industry, which reached over 211 million clients in 2013, has made sustainability, efficiency and regulation topical in the industry and warranting research attention.

The overall aim of this study was to conduct a cross-country analysis of microfinance institutions (MFIs) in Sub-Saharan Africa (SSA) in terms of outreach, sustainability, efficiency and regulation. More specifically, the study was intended to achieve the following objectives:

1. To conduct a general review of the performance of MFIs in SSA.
2. To analyse the determinants and extent of outreach and sustainability of microfinance institutions in SSA.
3. To investigate the level of operational efficiency of MFIs in SSA and analyse the factors influencing their efficiency.
4. To analyse the effects of regulation of MFIs on their sustainability and outreach performance.

A number of panel data models were formulated and used in the study. The models used were: (i) the static fixed effects model (ii) the static random effects model (iii) the stochastic frontier analysis model and (iv) the dynamic generalised method of moment (GMM) method. The linear equations for the fixed effects (FE) model were used to examine the determinants of MFI outreach performance, while the random effects (RE) model was employed in studying the determinants of sustainability and the trade-off relations that exists between outreach and sustainability. The cost efficiency of MFIs and the factors that influence efficiency levels were established using the stochastic frontier analysis (SFA) model. Finally, the impact of regulation on MFIs sustainability and outreach performance was analysed through the application of the dynamic GMM model.

Both descriptive and econometric techniques were employed in the estimation. The first objective (*To conduct a general review of the performance of MFIs in SSA*) was achieved through a review of relevant literature gathered from various sources: peer-reviewed journals, books, microfinance blogs and various microfinance networks. A systematic review of the available materials was done following a framework commonly used by rating agencies in assessing the performance of MFIs. The framework, Strategic Management and Reporting Technique (SMART) were chosen based on the relevance of the elements covered which conventional reviews in the microfinance literature hardly take into consideration, such as issues of consumer protection.

The second objective of the study (*To analyse the determinants and extent of outreach and sustainability of MFIs in SSA*) was addressed using both the static fixed effects and

random effects models of panel data estimation. As observed by Greene (2005), these two approaches are commonly used within a panel framework with satisfactory results. Estimation was done by first specifying the models using linear equations and calculating the coefficients using the computer software programme Stata version 14 package. Prior to actual estimation, all relevant diagnostic tests (unit root tests, variance inflation factor test, and Hausman test) were performed to confirm model fitness and accuracy of the estimated results. Correlation analysis was employed to study the trade-off relations between outreach and sustainability dimensions of the institutions (MFIs).

The third objective (*To investigate the level of operational efficiency of MFIs in SSA and analyse the factors influencing their efficiency*) was achieved by applying the stochastic frontier analysis model. The approach requires the selection of a functional form that represents the underlying production technology and making assumptions regarding the distribution of the composed error term. A cost function with Cobb-Douglas specification was chosen to represent the production technology of MFIs in the industry. A truncated normal distribution was assumed for the estimation of the cost frontier. Following the Battese and Coelli (1995) family models, a time-dependent stochastic frontier model was estimated using the one-step approach which permits simultaneous estimation of the cost frontier as well as the correlates that explain inefficiency. Estimation was innovatively accomplished using the LIMDEP version 10 software package.

Finally, objective four of the study (*To analyse the effects of regulation of MFIs on their sustainability and outreach performance*) was achieved through the application of the dynamic GMM methodology. The strength of this approach is that it overcomes issues of endogeneity inherent in most micro and macro level variables included in the analysis and complements the major weaknesses observed in static panel data models. The model is specified taken into consideration correlated and uncorrelated factors as well as an endogenous and exogenous set of variables. This enables the system to effectively utilise the available endogenous variables as well as lagged values of the dependent variables as valid instruments for model estimation. Tests of over-identifying restrictions, first order autocorrelation AR (1), and second order autocorrelation AR (2) were conducted in addition to unit roots tests to ensure the accuracy of the estimated parameters. All

estimations were based on the system GMM using the Stata version 14 programme. Robust estimations were carried out using the robust standard errors to obtain the parameters. Different model specifications including different variables were also undertaken to check the robustness and sensitivity of the estimated coefficients.

7.2 DISCUSSION OF MAIN FINDINGS AND CONCLUSIONS

The findings of the study are presented in four categories, reflecting the objectives of the study.

7.2.1 REVIEW OF MICROFINANCE INSTITUTIONS' PERFORMANCE IN SUB-SAHARAN AFRICA

Using the Strategic Management and Reporting Technique (SMART) framework as the basis to support the review, a number of findings were revealed relevant for consideration. Firstly, studies focusing on issues of consumer protection in SSA were found to be very scarce. This suggests that a number of MFIs hardly take consumer protection issues on board when formulating and designing microfinance products needed by the poor. Alternatively, if consideration is given to consumer protection issues, empirical research on the effective implementation of the consumer protection principles and other guidelines are missing. This gap requires research attention in the microfinance literature. Secondly, evidence shows that individual-based lending is gradually being favoured by MFIs over group-based lending even though both approaches are still being pursued. This is partly explained by the high repayment rates and the drive by MFIs to cut down the high costs associated with administering small loans to groups. Gradual commercialisation of the industry as evidenced by the rapid transformation of NGO MFIs into specialised microfinance banks, is another reason for the rise in individual lending in recent times. Thirdly, systematic analysis of impact studies on microfinance interventions in SSA appears scanty from the review. A case study of specific microfinance projects still dominates among the regional studies covered. Limited data availability on microfinance interventions is one key reason for the few impact studies as most MFIs still do not report to the available microfinance databases. Finally, the review shows that there

are growing numbers of MFIs who are adopting ICT in their operations. However, the cost of adoption of these technologies remains a barrier especially to small-sized MFIs due to the high capital outlay. Also, the deficient human resource base remains an unresolved issue since specialised personnel in this area are limited and most ailing MFIs are unable to recruit and retain them due to the competitive remuneration package that comes with their engagement.

7.2.2 MAIN FINDINGS AND CONCLUSIONS ON MICROFINANCE OUTREACH

Knowledge on which firm-level factors drive microfinance outreach in SSA remains out of the spotlight despite the exponential growth of the sector. This study has highlighted the trade-off between the depth and breadth of outreach as well as the firm level factors that drive microfinance outreach in SSA. The study used correlation and random effects regression methodology to study the outreach performance of MFIs. The findings provide supportive evidence to the higher operating costs proposition for MFIs in the industry. The results clearly show that most MFIs still struggle to cover their costs, with small returns and serving relatively poor clients making these institutions inefficient. This has implications for industry sustainability, efficiency and outreach to the poor.

Furthermore, the results show convincingly that a trade-off exists between the depth of outreach and the breadth of outreach of MFIs in SSA. This has clear policy implications: MFIs that focus attention on reaching the relatively poor with financial services are unlikely to reach out to a large number of borrowers. This highlights the cost implication involved in reaching the poor and designing financial products that meet their needs. Balanced planning in the attainment of the social mission of MFIs is, therefore, a pre-requisite for ensuring sustained outreach by institutions.

Additionally, the study revealed a number of firm level factors that strongly influence the outreach performance of MFIs. The main drivers of MFI outreach in SSA are the gross loan portfolio, the interest rate, the operating expenses to assets ratio, return on assets and return on equity. While the portfolio at risk only drives MFI depth of outreach, staff

productivity impacts on only the breadth dimension of outreach. This is relevant to MFIs managers who are keen to improve the outreach performance of their institutions in the region and beyond.

7.2.3 MAIN FINDINGS AND CONCLUSIONS ON MICROFINANCE SUSTAINABILITY

This study examined the presence of trade-off between MFIs sustainability and outreach and established the key determinants of sustainability in SSA. Using the institutionist framework, the study tested the presence of trade-offs for outreach and sustainability through correlation analysis. The findings show a negative correlation between sustainability and depth of outreach but the relation is statistically insignificant. Intuitively, this suggests the absence of a trade-off between sustainability and depth of outreach. However, a positive association exists between breadth of outreach and sustainability and the results are robust and consistent using both the number of active borrowers (NAB) and the percentage of female borrowers (PFB) as dependent variables for outreach in the analysis. Furthermore, using return on assets (ROA) as an alternative measure of sustainability the study found a significantly negative relationship between sustainability and depth of outreach, suggesting the existence of a trade-off. Other trade-offs that emerged from the analysis are that between sustainability (OSS) and portfolio at risk (PAR) as well as between OSS and operating expenses to assets ratio (OEA). Both are statistically significant at 1 percent. The nature of trade-off between sustainability and outreach, therefore, depends very much on the variables used.

The second key finding is related to the determinants of sustainability using the fixed effects regression analysis with operational self-sufficiency (OSS) and returns on assets (ROA) as dependent variables for sustainability. The main determinants of MFI sustainability in SSA, as revealed by the analysis, are average loan size as a percentage of GNI, gross loan portfolio, portfolio at risk, operating expense to assets ratio, governance effectiveness, and interest rate. Average loan size had the highest coefficient in absolute terms and also significantly and positively influences sustainability. This suggests that

targeting clients with larger loan sizes and with competitive interest rates could contribute to MFI sustainability. However, this has greater implications for the social performance of MFIs since it has the tendency to further exclude many more poor people from accessing financial services. In addition, the results show that the age of MFIs, cost per borrower, debt-to-equity ratio and number of active borrowers do not significantly influence MFI sustainability. Learning curve effects on MFI financial performance in SSA are therefore yet to be translated into sustained operations in a statistical sense.

7.2.4 MAIN FINDINGS AND CONCLUSIONS ON MICROFINANCE EFFICIENCY

The study investigated the cost efficiency of MFIs in SSA and the factors that influence their efficient operations using the stochastic frontier analysis approach. Estimates of cost efficiency and the determinants were simultaneously done using the one-step approach proposed by Battese and Coelli (1995). The first key finding is the overwhelming and convincing evidence that inefficiency exists in the operations of MFIs in SSA. The results show that the MFIs examined currently achieved an average of 40.9 percent level of cost efficiency. This gives an indication that substantial cost reduction possibilities exist in the industry which firms need to exploit by improving their management strategies. A wide variation also exists among firms, which reflects the diverse nature of MFIs in the industry. While some firms achieved a 94 percent level of efficiency, the majority (74.96 percent) of firms were found to be operating at the low end of the efficiency scale with efficiency scores below 50 percent. Subsidies could have played a role in this outcome since the analysis simply pooled MFIs together without accounting for subsidy levels received.

Another interesting finding revealed by the study is the annual declining performance level of MFIs in the region. The year-wise average cost efficiency calculations showed that MFI efficiency levels have been declining since 2004 in SSA. At the same time, the operating cost of institutions has been increasing as evidenced by the larger loan loss

provisions that MFIs had to set aside to meet the costs of unrecovered loans. This interesting interaction has implications for industry sustainability and outreach.

In the efficiency model estimation, the significance of SAL, R, and GLP in all the models estimated provides supportive evidence for the assertions that operating costs of MFIs are too high and that for these institutions to attain sustainability and efficiency levels, commercialisation is necessary. As pointed out by Hermes et al. (2011), commercialisation may induce MFI efficiency. The high average loan loss provision of 3.3 percent observed lends further support to the need for MFIs to re-examine their risk-taking strategies and improve on loan collections.

Results from the inefficiency model show that the main factors influencing MFI efficiency are the size of the institution, outreach variables, cost factors and those related to risk management. Total assets (TA) and operating expenses to assets ratio (OEA) positively and significantly influence MFI efficiency. This shows the effect of MFI size in attaining cost efficiency and also highlights the cost advantages arising from economies of scale, as noted in both theoretical and empirical works. The results show that MFIs depth of outreach is negatively and significant related to cost efficiency, as expected. This shows that serving the poor and reaching out to the marginalised have greater cost implications for MFIs. The high cost involved in administering small loans over geographically dispersed locations is one reason for the observed inefficiency in outreach. This further explains why most profit-oriented MFIs prefer to operate in the cities at the expense of rural areas. The study also revealed that focusing on women is a cost efficient strategy. This has policy implications for balanced social development. Furthermore, the negative and significant result for staff productivity (BSM) points to the need for MFIs to invest in staff development through training programmes and to offer incentives aimed at enhancing productivity and cost-efficient operations. The determinants of MFI efficiency in SSA, therefore, are total assets (TA), average loan balance as a percentage of GNI (ALS), the percentage of female borrowers (PFB), operating expenses to assets ratio (OEA), and borrower per staff member (BSM).

7.2.5 MAIN FINDINGS AND CONCLUSIONS ON MICROFINANCE REGULATION

The study focussed on the impact of regulation on MFIs' sustainability and outreach using 551 observations. The analysis employed the dynamic Generalised Method of Moment (GMM) methodology which is more suitable in the contemporary econometric analysis in order to circumvent the issues of endogeneity prominent with most firm and macro level variables.

The results show convincingly that regulation of MFIs influences their sustainability and outreach performance in SSA. This is explained by a number of factors: (i) regulatory status increases public confidence, especially by small depositors, in the financial system since the safety of their savings/investments is paramount and must be guaranteed, (ii) regulation increases transparency in the eyes of donors and funders and enhances the chances of these institutions raising funds from external sources, (iii) it gives formal qualification to MFIs to mobilise funds internally to support the accomplishment of their social mission of reaching out to poorer clients. In general, both institutional and environmental factors are found to influence the operational sustainability and outreach of MFIs in SSA. Specifically, while the age of MFIs and gross loan portfolio (GLP) significantly impact on their depth of outreach, total assets (TA) drive the breadth of outreach. In addition, MFI specific factors that influence the level of operational sustainability of MFIs in SSA are equity to assets ratio (ETA), gross loan portfolio (GLP) and age of institution.

Furthermore, the results show that institutional and macroeconomic factors significantly drive MFIs sustainability and outreach performances in SSA. While regulatory quality (RQ) was found to have adverse negative impacts on both MFI sustainability and outreach, the rule of law (RL) impacts positively on both dimensions of institutional performance. This points to the need to improve the justice system in countries in the sub-region as they appear to function sub-optimally in their administration of justice. Public confidence in the judiciary thus appears to be low in dealing with issues arising out of contractual agreements. The results also show insignificant impacts of governance effectiveness on both sustainability and outreach performance of MFIs. This means that

more needs to be done to create the right business environment needed to boost growth and investment in the microfinance sector and the economies at large. The ease of doing business report (2016) ranking for countries in the region equally provides support for this result. Similarly, the index of economic freedom (IEF) variable show negative and insignificant impacts on MFI sustainability and outreach while the index of property rights (IPR) relates positively to all performance dimensions.

Controlling for country-specific macroeconomic factors, the results show that inflation is positively and significantly related to MFI sustainability but negatively related to both depth and breadth dimensions of outreach. The sustainability result suggests that higher rate of inflation are generally more likely to result in unsustainable operations by institutions. This outcome is in conformity with the strategic loan default hypothesis which posits that under very high interest rates, some individuals deliberately go in for loans knowing very well that they will not pay them back. Under such circumstances, positive results can emerge. This is understandable in view of the problems of multiple borrowing and client over-indebtedness reported in recent times by various studies (Schicks & Rosenberg, 2011; Guha & Chowdhury, 2013). On the other hand, the observed negative relationship between inflation and outreach is in line with theoretical predictions. The negative impacts naturally reflect in high cost of borrowing and low investments in micro enterprises in most countries. Finally, the size of the economy (GDP) is found to have negative and significant influences on both the sustainability and outreach performance of MFIs. This suggests that countries should focus more on improving productivity levels for improved welfare especially for the poor.

7.3. POLICY IMPLICATIONS AND PRESCRIPTIONS

The policy implications of the results of the study, and ideas on how to extend this work are presented in this section. The presentation follows the four main themes discussed in the study.

7.3.1. MICROFINANCE OUTREACH

The correlation analysis of the relationship between depth and breadth of outreach shows that there is a trade-off between the two dimensions of outreach performance. This means that MFIs that focus on one dimension do so at the expense of the other. The policy implication is that MFI managers need to do proper planning and goal monitoring to ensure that both dimensions of social performance are achieved. Also, various governments need to strengthen existing complementarities in their social programme implementation to ensure judicious use of resources and balanced national development.

From the determinants of outreach analysis the results show a trade-off between depth of outreach and breadth of outreach. The policy implication is that MFIs that concentrate efforts in reaching out to a large number of clients do so at the expense of reaching out to the core poor in society with the needed financial services and products. Again, this has implications for income inequality in society. Access to financial services by the relatively poor is assumed to make working capital available to them so that they can invest in microenterprises development through which they can get out of the poverty trap. Conversely, focusing on deeper outreach will mean limiting wider outreach. The implication is that the number of clients without access to microfinance services will be made worse, as over 80 percent of the populations do not currently have access to any form of financial service in the region. This, therefore, calls for balanced planning and conscious efforts must be made to ensure the attainment of the social mission of MFIs in accomplishing both the depth and breadth dimensions of outreach. Proper planning and efficient goal monitoring from management are central to this end.

7.3.2 MICROFINANCE SUSTAINABILITY

The presence of trade-off means that MFIs are abandoning their social mission of serving the relatively poor in search of wealthier clients capable of taking bigger loans as a way to cut down their cost of operations. This will not only worsen the well-being of the poor but will put great pressure on the existing social programmes being pursued by governments. Also, the existing income inequality gap between the rich and poor in

society is likely to become wider instead of being bridged and this has great implications for the livelihood of the poor.

The study revealed that the main determinants of MFI sustainability are the cost side variables: operating expenses to assets ratio, cost per borrower, the yield on the loan portfolio and portfolio at risk. This means that MFIs in SSA would be able to achieve higher levels of sustainability in their operations if there are proper cost control measures in place and well implemented. Managers of MFIs and decision-makers (boards of directors, regulators) therefore need to focus more on improving productivity and adopting cost-effective and efficient strategies. This can be achieved by strengthening staff appraisal systems, incentivising hard-working staff, stepping up monitoring to improve on loan collections, and adopting appropriate information communication technologies to help increase outreach and reduce the cost of operations.

Furthermore, governance effectiveness is indicated as an essential element in propelling MFIs to achieve sustainability levels. Therefore policy should be directed at creating the appropriate enabling environment for these institutions to thrive and function effectively. Various national governments should lend more support to the microfinance industry through the creation of attractive business environments and allocating more of their national budgets to the sector to support pro-poor initiatives by MFIs for complementary development. This has the potential to attract more investors into the microfinance sector and make capital available to institutions to expand on their outreach and sustainability drives. This means a greater impact on the living conditions of the poor.

7.3.3. MICROFINANCE EFFICIENCY

The estimates of the degree of operational efficiency of MFIs show that the institutions are cost-inefficient in their intermediation role. This means that more cost reduction possibilities exist for institutions to tap into as they try to operate at an efficient level. The wide variation in efficiency levels within the institutions surveyed calls for management to re-examine their input mix in the face of cost constraints. Practitioners and managers of MFIs, therefore, need to improve on technical training in the area of portfolio quality

and offer diverse financial services and products innovatively so as to minimise the cost of operations and enhance efficiency. Also, other cost control measures such as effective loan collection and client screening for loans need to be jointly pursued by management as well as focusing on staff welfare issues for enhanced productivity. Finally, efforts should be made to transform institutions currently not taking deposits to become deposit-accepting institutions since this serves as a relatively cheap source of funds for organisations and could help reap positive size effects and address funding constraints.

7.3.4 MICROFINANCE REGULATION

The study revealed that regulation impacts on MFIs social and financial performance. One policy response to this would be to encourage institutions that are unregulated to transform and become regulated entities so that they can benefit from these effects. Management of MFIs and those involved in their governance (boards of directors, investors, regulators) should support efforts and provide direction to unregulated institutions on the entire transformation process. This will require a lot of education and encouragement but will not only qualify them to mobilise deposits from the public to help strengthen the attainment of their social goals but will also deepen transparency and boost the public confidence needed to attain sustainability levels.

Furthermore, respective country governments should work to remove barriers to entry, easy registration of businesses and timely resolution of disputes that arise from contracts. This would have the potential of attracting more foreign direct investment especially into the microfinance sector which is now fully recognised as a meaningful strategy for attaining the sustainable development goals (SDGs) of eradicating poverty by 2030. This will involve passing legislation that complements the microfinance sector.

Finally, mechanisms to help control inflation and improve productivity at the national level need to be given priority. Relevant macroeconomic factors need to be carefully monitored to minimise adverse effects on poor households. Pro-poor social interventions deserve greater budget allocations and income redistribution policies need to be pursued to cushion poor households who suffer most from these harsh economic conditions.

7.4 LIMITATIONS OF THE STUDY AND IDEAS FOR FUTURE RESEARCH

The results of this study are very consistent with a priori theoretical expectations. Nonetheless, the study did suffer certain limitations which need mentioning. Firstly, although the study focussed on microfinance institutions in general, not much distinction was made between the various types, subsidy levels received, technological diversities in terms of ICT usage, and consumer protection. Future studies could capture these issues in assessing the performance of MFIs in the region for more diversified results.

Secondly, the study used the static panel data approach in econometric modelling to study outreach and sustainability of MFIs. The Hausman test for model specification though widely applied in this setting has been found to be biased in favour of the fixed effects model in most cases. The use of an instrumental variable approach such as the two stages least squares approach could yield much better results. Also, the use of alternative specification (DEA) in the efficiency analysis with a focus on the application of its extensions such as the input congestion approach could add new insights when compared with the SFA results considered in this study. Exploring alternative methodological approaches thus remains an option for future consideration.

Thirdly, the quality of data from Africa remains a challenge and the situation is an important one for the microfinance sector. Few microfinance institutions in the region currently report to the known databases available and the quality and completeness of these datasets poses a limiting factor in performance analysis. However, the number of reporting institutions has been shown to be increasing and better quality data may be available in subsequent years. Using an expanded recent data in panel form as well as increasing the sample size to cover more institutions in the region is a viable option for future study. Relaxing the selection process to cover institutions with low disclosures (rated below 3 diamonds) could give another useful perspective on the performance of these institutions in the region. Similarly, a comparison could be made between these low disclosure institutions and the high disclosure institutions considered in this study.

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APPENDICES

Appendix A: Global Outreach of Microfinance Institutions

Table A-1: Outreach Figures of Microfinance Institutions as of December 31, 2013

Number of MFIs reporting (1997-2013)	3,725
Number of MFIs reporting in 2014 only (data from 12/31/14)	439
Percentage poorest clients represented by MFIs reporting in 2014	83%
Total number of clients (as of 12/31/13)	211,119,547
Total number of women (as of 12/31/13)	157,695,359
Number of poorest family members affected*	571,557,930
Total number of poorest clients (as at 12/31/13)	114,311,586
Total number of poorest women (as at 12/31/13)	94,388,701

Source: Microfinance Summit Campaign Report (2014)

*Estimated based on an average family size of five (5).

APPENDIX B: Consumer Protection

Table B-1: Areas of Major Consumer Protection Concerns by Level of Financial Sector Development

	Low-Income Countries	Middle-Income Countries	High-Income Countries
Exotic mortgages			X
Securities		X	X
Collective investment funds		X	X
Private pensions		X	X
Life insurance		X	X
Debit/credit cards	X	X	X
Data protection	X	X	X
Consumer credit	X	X	X
Ponzi schemes/pyramids	X	X	X
Microinsurance	X		
Microcredit	X		
Remittances/payments	X		

Source: World Bank (2010)

Appendix C: Regulation of MFIs

Table C-1: Regulatory Thresholds of Activities by Type of Microfinance Institution

MFI Type	Activity that Determines Regulatory Status	Proposed Form of External Regulation, if Required	Regulatory Agency
CATEGORY A MFIs			
Type 1 Basic Nonprofit NGO	Making microfinance loans not in excess of grants and donated/concessional funds.	None – Voluntary registration with Self-Regulatory Organization.	None, or Self-Regulatory Organization.
Type 2 Nonprofit NGO with limited deposit-taking	Taking minor deposits, e.g. forced savings or mandatory deposit schemes, from microfinance clients in community.	None – Exemption or exclusion provision of banking law; compulsory registration with Self-Regulatory Organization.	Self-Regulatory Organization.
Type 3 NGO transformed into Incorporated MFI	Issuing instruments to generate funds through wholesale deposit substitutes (commercial paper, large-value certificates of deposit, investment placement notes).	Registration as a corporate legal entity; authorization from securities & exchange agency, with limitations on size, term and tradability of commercial paper instruments.	Companies' registry agency; Securities & Exchange agency.
CATEGORY B MFIs			
Type 4 Credit Union, Savings & Credit Cooperative Society	Operating as closed- or open-common bond credit union or savings & credit cooperative society; deposit-taking from member-clients in the community, workplace or trade.	Notification to and registration with Cooperatives Authority or Bank Supervisory Authority; or certification and rating by a private independent credit rating agency.	Cooperatives Authority, or Bank Supervisory Agency or Credit Rating Entity.
CATEGORY C MFIs			
Type 5 Specialized Bank, Deposit-taking Institution, or Finance Company	Taking limited deposits (e.g. savings & fixed deposits) from general public beyond minor deposits exemption in banking law. Microfinance activities more extensive than NGOs but operations not on scale of licensed banks.	Registration and licensing by Bank Supervisory Authority, with a limitation provision (e.g., savings & fixed deposits, smaller deposits/capital multiple, higher liquidity reserves, limits on asset activities and uses).	Bank Supervisory Authority.
Type 6 Licensed Mutual-Ownership Bank Type 7 Licensed Equity Bank	Non-restricted deposit-taking activities, including generating funds through commercial paper and large-value deposit-substitutes, from the general public, investors and other banks.	Registration and full licensing by Bank Supervisory Authority as a mutual-ownership or equity bank; compliance with capitalization / capital adequacy requirements, loan loss provisioning and full prudential regulations.	Bank Supervisory Authority.

Source: Adopted from van Greuning, Gallardo, and Randhawa (1998, p.11)

Table C-2: Type of Microfinance Legislation and Policy reforms in Sub-Saharan Africa

Type of Legislation	Countries		
Specialized Microfinance Laws (29)	Burundi CEMAC countries (6) Comoros DRC Djibouti Ethiopia	The Gambia Guinea Kenya Madagascar Mauritania Mozambique	Rwanda Sudan Uganda WAEMU countries (8) Zambia
Drafting Specialized Microfinance Laws (5)	Cape Verde Liberia	Malawi Sierra Leone	Zimbabwe
MFIs implicitly or explicitly fall under the broader banking or non-banking financial institutions legislation (15)	Angola Botswana Ghana Lesotho Liberia	Malawi Mauritius Namibia Nigeria Sao Tome	Sierra Leone Somalia South Africa Tanzania Zimbabwe
No Legislation/No Framework (3)	Eritrea	Swaziland	Seychelles

Source: CGAP (2009)

CEMAC stand for Economic Community of Central African States with 6 member countries (Cameroon, Central African Rep., Chad, Congo, Equatorial Guinea and Gabon). Also, WAEMU stands for Western Africa Economic and Monetary Union with 8 member countries (Benin, Burkina Faso, Guinea-Bissau, Ivory Coast, Mali, Niger, Senegal, and Togo).

Two main regulatory models were being implemented. The PARMEC law that regulates credit unions, mutual institutions and supervised MFIs. These institutions enjoyed tax exemptions and were obliged to sign contractual agreements with the ministry of finance. The framework spelled out the registration and operation conditions though not uniform depending on the lobbying capacity and circumstance of each MFI (Lolida-Ramin, 2005).

With the introduction of the Microfinance law in WAEMU, things changed though the classification of institutions by size/scope remains. Key features of the law include the application of licensing to all MFIs, a common framework for accounting, mandatory membership of all MFIs to recognized national microfinance associations, annual external audit for all major MFIs and supervision of all MFIs by the Central Banks.

Appendix D: List of MFIs and Study Countries

Table D-1: List of Microfinance Institutions and Countries Included in the Study

1. Ghana		2. Benin	
APED	ID Ghana	ACFB	MDB
ASA Initiative	KSF	ALIDA	PADME
CFF	OISL	CMMB	PARME
First Allied Savings & Loans	Snapi Aba Trust	FACECAM	Vital Finance
Grameen Ghana	WWB Ghana	RENECA	
3. Burkina Faso		4. South Africa	
GRAIN Sarl	RCPB	Capitec Bank	SEF-ZAF
LSK		Opportunity Finance	SIZA Capital
5. Nigeria		6. Kenya	
Access Bank	AMfB	BIMAS	KPOSB
Grooming Centre	D'EC	Equity Bank	KWFT
Hasal MFB	LEPO	Faulu MFB	Opportunity- Kenya
SEAP		Juhudi Kilimo	PAWDEP
		K-Rep	SMEP
		Vision Fund Kenya	Yehu
			SISDO
7. Uganda		8. Cameroon	
BRAC-Uganda	UGAFODE	A3C	CEC-PROM mature
FINCA-Uganda	Finance Trust	CamCCUL	SOFINA
Vision Fund Uganda		MCA ²	RENAPRO
9. Ethiopia		10. Tanzania	
ASCI	Gasha	BRAC-TZA	Opportunity-TZA
Buusaa Gonofaa	SFPI	FINCA-TZN	SEDA
Eshet	Wasasa		
PEACE			

Source: Extracted from MIX market