Essays in Microfinance: Their Capital Structure and Financial Inclusion

Program: Doctor of Philosophy

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ESSAYS IN MICROFINANCE

ABSTRACT

This study examines three central themes within the MF literature, within the context of the current drive and efforts by governments in sub-Saharan Africa (SSA) to improve institutional and governance quality, whilst implementing Microfinance as a blanket development policy tool. First, within an institutional context, we test for the institutional and firm specific determinants of the funding structure of MFIs. Secondly, we examine the impact of funding/capital structure on MFI financial and social performance. Finally, within the context of unfavourable financial exclusion level in SSA, we question just how much important MFIs are in improving the drive towards financial inclusion on the continent (by examining the impact of MFIs on financial inclusion in SSA). In order to achieve the above aims, this research project utilizes a comprehensive panel dataset for 38 countries in SSA, for the period 2004-2016. A database (MIX Market) specially purposed for MFI reporting and data bank was implemented in collecting the data employed for this research. In addition, World Bank data was employed in collecting country specific, and macro-economic data, whilst data from the heritage index, ease of doing business index, and corruption index were employed as explanatory variables.

This analysis examines key capital structure variables unique to MFIs namely; Leverage and Deposits. The leverage measure for MFIs captures total borrowing (as well as short and long tenure financing), in addition to donated equity, capturing the donations made to MFIs by donors by way of equity, finally, deposits are MFI clients timed deposits. In order to achieve the aims, we utilize a fixed-effect panel data estimation technique for analysis of the obtained data (which includes 778 MFIs with 3,338 data points), in addition to employing dummy variables to further enhance the analysis. The institutional and firm specific variables include; creditor rights, corruption indicators, governance quality, and MFI characteristics variables such as; size, risk and age. The second analysis utilizes MFI social and financial performance dependent variables, against capital structure variables. Finally, the third empirical analysis employs financial inclusion index, in addition to a broad set of independent variables which capture MFI penetration, technology utilization (mobile subscription), geography (population density), institutional quality (public credit registry, and corruption control), macroeconomic

(inflation, gross income), and financial development variables (deposit interest rate, and domestic credit to private sector).

The results for the impacts of the institutional determinants of the capital structure of MFIs reveal that (for both leverage the deposit models) institutional measures are important in determining the capital structure of MFIs. In particular, the measure for investor protection is significant in determining the leverage of MFIs. This is a new finding within the Microfinance literature within the context of sub-Saharan Africa. This confirms the importance of a strong institutional environment in attracting funding for the sector. Further confirming this position are the measures of economic freedom, which appear to be significant in determining the donated equity for MFIs. Specifically, financial freedom is positive and significant, whilst the measure of income GNI per capita is relevant in determining the donated equity of MFIs.

The second analysis examines the influence of capital structure on a comprehensive set of MFI performance. These include financial performance measure such as; sustainability, return on asset, risk and MFI efficiency. On the other hand, social performance captures the outreach of MFIs (measured by percent of female borrowers). In addition the outreach measure is split into two measures capturing both the breadth (number of active borrowers) and depth (average loan balance per borrower) of MFI outreach. Two Major findings are observed here. Firstly, the measure for financial performance MFI sustainability reveal that short-term leverage is significant in explaining MFI sustainability. On the other hand, the measure for social performance (percent of female borrowers), is negatively influenced by short-term leverage, suggesting MFIs operating principally with short-term leverage are less likely to achieve their social performance (often because of the pressure attached to the utilisation of short-term leverage). However, the measure for long-term leverage significantly influences the measure of social performance.

The final analysis utilises a financial inclusion index, with the key regressor variable identified as a measure of MFI activity (MFI penetration rate). Key findings reveal that: MFIs (as measured by their penetration rates) appear to be insignificant in influencing financial inclusion in SSA. More specifically, the relationship appear to be in an inversely related with the measure for financial inclusion. This finding is telling, and a significant new finding within the literature. Perhaps expected, given the operational preferences of MFIs in Africa to focus on urban clients as opposed to rural penetration. Secondly, institutional measures such as;

corruption control, appear to be positive in influencing financial inclusion, reiterating the need for good governance and strong institutions. Worthy of note however is the measure for the information environment as measured by public credit registry. For instance, the results of the analysis showed that the existence of a public credit registry plays a significant role in influencing the financial inclusion in SSA.

Fortunately, the policy implications are somewhat evident. Creating an enabling environment for funders to come into the sector and feel protected should be apriority. Policies that strengthen financial reporting practices, transparency in government, and embracing the absolute power of the rule of law are important for the continent in the short and longer term. From a macro-environment standpoint improving national income via increased productivity of local institutions, is a positive signal to international funders. Governments in SSA and policy makers, are required to create suitable local capital markets and healthy ways of providing long-term favourable financing to MFIs within the SSA region. It is clear from the various models of analysis that long-term leverage on favourable terms on average is crucial for the long-term sustainability and performance of MFIs within the SSA region. Therefore, Implementing a long-term funding strategy via affordable local currency denominated markets will tremendously improve the sector in SSA, and hence, should be the priority for policy makers.. The rationale being that with long-term funding MFIs are able to operate with more scope to expand operations without the pressure of meeting foreign denominated funding repayment obligations.

A key finding for this research is the revelation that MFIs are less impactful in aiding the financial inclusion drive in SSA, as anecdotal evidence would suggest. Conversely, we find that the measure for mobile penetration is highly significant in influencing financial inclusion in SSA. Despite the findings for MFIs, the use of MFIs to achieve this goal could indeed still be attainable, however in their current capacity this is not possible. Therefore, re-tooling MFIs to meet such demands is crucial, and should be of high priority for policy makers and funders of the MFI sector. One of such ways to achieve deeper rural coverage could be an implementation of mobile banking technology in executing financial services. Some of the more important findings indicate that –with some hope- the implementation of financial technology such as mobile money could be of benefit to countries in SSA. Policy makers are therefore better off putting in place sound institutional framework such as strengthening and localising public credit registries. This research analysis indicates that this is significant in

aiding/impacting financial inclusion in SSA. Establishment of functional and efficient public credit registries, will greatly improve the processing of financial information and aid information asymmetry. In addition to this MFIs can then be trimmed down in their operative capacities, so as to aid agility in their operations, to better enable them reach the bottom of the pyramid competently.

TABLE OF CONTENTS

LIST OF TABLES

.

LIST OF FIGURES

.

TABLE OF ABBREVIATIONS

ADB	African Development Bank
ADB	Asian Development Bank
BBC	The British Broadcasting Corporation
BWTP	Banking With the Poor
CGAP	Consultative Group to Assist the Poor
COOP	Cooperative
ECB	European Central Bank
EDA	EDA Rural Systems Private Limited
GMM	Generalized Method of Moments
IMF	International Monetary Fund
(I)NGOs	(International) Non-Government Organizations
MBB	MicroBanking Bulletin
MDGs	Millennium Development Goals
MF	Microfinance
MFIs	Microfinance Institutions
MIX	Microfinance Information Exchange
MM	Miller and Modigliani
NBFI	Non-Bank Financial Institution
OECD	The Organization for Economic Co-operation and Development
OLS	Ordinary Least Squares
PCFs	People's Credit Funds
SSA	sub-Saharan Africa
SWOT	Strengths, Weaknesses, Opportunities, and Threats
UNDP	United Nations Development Programme
UNCDF	United Nations Capital Development Fund
USAID	United States Agency for International Development
US$	USD/ United States Dollar
WB	The Word Bank
MNO	Mobile Network Operators
TELCO	Telecommunications Company
SADC	Southern African Development Community
ECOWAS	Economic Community of West African States
LAC	Latin America and The Caribbean
ECA	Eastern Europe and Central Asia
EAP	East Asia and the Pacific
SA	South Asia
SSA	Sub-Saharan Africa

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DECLARATION

This thesis is submitted in fulfilment of the requirements for the degree of Doctor of Philosophy (Finance) at the Bournemouth University, United Kingdom. I declare that this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that this thesis has not been previously or concurrently submitted, either in whole or in part, for any other qualification at the Bournemouth University or other institutions.

Noah Nzeribe

7th August 2020

DEDICATION

..To Hipolite, Sybil, Ada, Ken, Queen, David, IJ, and to the never ending pursuit of knowledge.

Chapter 1 INTRODUCTION

In the most recent white paper publication (Akkerhuys et al. 2009) of the Department for International Development (DFID), a concurrent narrative thread echoes along the lines of 'Eliminating World Poverty'[1]. According to Manji (2010), the 2002 International Development Act forms the basis of commitment to utilize international development aid from Britain, and indeed most developed economies, for the purpose of poverty reduction. Within this white paper, in addition to other aid agenda (such as; sustaining a common future, building peaceful states and societies and acting together through the international system), emphasis is placed on a commitment to support attempts to increase access to financial services[2] to the poor, in order to create sustainable economic opportunities. The sustainable agenda, according to the DFID, aims to enable developing countries rely less on aid by supporting economic growth in local institutional strengthening, whilst improving their infrastructure through private sector initiatives (Akkerhuys et al. 2009).

Similarly, a 2008 World-Bank (WB) policy research report (World Bank 2008) identifies the need for 'well-functioning financial services' as essential pillars to economic development in the global south, placing this at the core of its development agenda. Specifically pointing to the need for financial sector reforms[3] in order to achieve broader access to financial services. Most importantly, this report links access to financial services to poverty alleviation and economic development, referring to the need for 'financial inclusion' and broadening access to credit for 'the poor' and 'non-poor' in order to reduce income inequalities. In addition, the G-20 (under the leadership of the Chinese) group of economies (under the Global Partnership for Financial inclusion (GPFI), recently endorsed a set of High-Level principles for (encouraging) financial inclusion. Furthermore, a recent publication by The Consultative Group to Assist the Poor (CGAP)[4], empowered by the (Demirgüç-Kunt et al. 2017) Findex database, suggests that as many as 1.7 billion people still lack access to basic financial services, with more than 50%

[1] It is worth noting that since becoming a fully-fledged ministry, all 4 DFID white-paper publications have the title 'Eliminating World Poverty'. With subtitles; 'A Challenge for the 21st Century'; 'Making Globalisation Work for the Poor'; 'Making Governance Work for the Poor'. The most recent publication in 2009 is titled; Eliminating World Poverty: Building Our Common Future. As is evident, the concurrent thread of poverty alleviation has dominated the DFIDs agenda since formal inception (yet poverty and inequality remains rife around the world, most especially in developing countries).

[2] This includes credit.

[3] As part of a general drive towards a concerted approach to improving institutions in Africa.

[4] CGAP is an organisation with a mandate that works to ensure universal access to financial services for all, by building/enabling inclusive financial systems.

of unbanked adults in the poorest of households.[5] Although South East Asia and the Pacific account for a large portion of unbanked adults, it is evident that the most poor, and unbanked form a large concentration in Asia and sub-Saharan Africa (henceforth SSA), with SSA having 17% (350 million) of the total unbanked adult population (Demirgüç-Kunt et al. 2014).

It is within this context that the Universal Financial Access 2020 (UFA 2020) agenda has been heavily paraded by WB (and its partner institutions), UK policy (DFID), the G-7, and G-20 leaders. In this agenda, the key policy of enabling universal financial access (through financial inclusion) for all by 2020 is at the forefront. Central to the actualisation of these goals is Microfinance Institutions (henceforth MFIs), of whom have been identified as a key conveners in facilitating this agenda (Morduch 1999). The UFA 2020 is a project of the WB conceived in 2014. The goal set out to integrate underserved adults into the financial system, largely through improving financial inclusion. This initiative placed focus on 25 countries where 73% of all financially excluded people reside, namely; Bangladesh, Brazil, China, Colombia, Cote d'Ivoire, DRC, Egypt, Ethiopia, India, Indonesia, Kenya, Mexico, Morocco, Mozambique, Myanmar, Nigeria, Pakistan, Peru, Philippines, Rwanda, South Africa, Vietnam, Tanzania, Turkey, and Zambia. of the countries in this sample, an overwhelming 48% are in Africa. South Asia 12%, Latin America 16%, and East Asia Pacific countries 20%.

This ambitious target was to enable 1 billion of these adults gain access to financial services, through partners and targeted intervention policies such as Microfinance. Although there has been questions about WB's metrics for measuring financial inclusion (bank account ownership) (Milgram, 2005; Barr, 2005), it is clear that Africa is a major point of inflection for much of these policies. The current data suggest that of the 400m adults committed to be reached by the WB, 397.8m was projected to be reached by end of 2020. On the other hand of the 600m projected to be reached by the International Finance Corporation (IFC), only 451.4m are projected to be reached by the end of the period, a shortage of 150.8m adults. Whilst these are projections, the actual numbers from 2011 – 2017 suggest that these projections are unlikely to be met, considering the state of the global economy at the turn of the year (see Table 3.1 figures). These projections put increased attention on MF and its preparedness to achieve the stated

[5] In more detail South Asia is home to 31% of the total unbanked adult population, while East Asia & Pacific equates to 24%. Sub-Saharan Africa has 17% of the total unbanked world adult population, 10 % in Latin America & Carribean, Europe & Central Asia 5%, Middle East & Other economies are home to 4% each, whilst High-Income OECD economies equates to 3% (World Bank 2014).

target. We have the sense that in Africa, MF is not quite tooled-up to deliver the type of change required from it by multilateral institutions, and therefore, steps taken to address key issues acting as deterrents to this efforts

The remainder of this research thus follows: the next section (Background and motivation) introduces the context and motivation behind this research project. This is followed by the research questions, aims and objectives. Chapter 2, 3, and 4 presents the literature review, observing the 3 major strands of interest of this study. First, we introduce the literature for Microfinance; which explores the current issues in MF. We examine the institutional environment theory, for use in anchoring the institutional change and upheaval in the current MF industry, and its relationship with funding. This section also goes on to address the literature of MFI performance within the context of MFI funding, with considerable focus on two key areas of MF performance namely; MFI sustainability and MFI outreach. Finally, this section rounds up with the review of the literature on financial inclusion and recent developments in the literature on the role of development financial institutions such as MFIs in this regard.

Chapter 5 presents the methodology, data and develops the hypothesis for analysis for this research project. Whilst chapters 6, 7 and 8 presents the empirical analysis of this project: chapter 3 examines the institutional determinants of MFI funding. Chapter 4 addresses the relationship between MFI funding structure and its financial and social performance. Finally, chapter 5 examines the relationship between MFIs and financial inclusion within the SSA context. The preceding chapter 6 summarises the results observed in the analysis and presents the discussions and conclusions, in addition to the robustness checks. This is followed by the bibliography and appendices.

1.1 BACKGROUND

The UN resolution declaring 2005 the International year of Microcredit[6], was met with generous international acceptance, with the recognition that at least western governments (through development institutions) are beginning to take note of the deplorable levels of poverty and socio-economic depletion and financial exclusion in Africa (especially in SSA[7]) (UN 2006). In this distinct event, special attention was given to Microfinance, highlighting this as an instrument for socio-economic development, with particular reference to sustainable development, in areas such as; access to credit, growth of local financial markets, poverty reduction, eradicating financial exclusion through inclusive financial sectors, and ending extreme hunger. This concerted push towards inclusiveness[8], led by the UN, The World Bank, IMF and other development agencies, is evident by multilateral support of the Sustainable Development agenda (SDGs). Within this agenda, eradicating financial exclusion forms a major core of the SDGs. So intent on tackling this issue that some within the UN have further/actually coined the term financial inclusion as a "right for all" (World Bank, 2014).

Much of the strategy that has been put forward by multilateral development finance institutions[9], have been largely unanimous; the need to improve financial inclusion by empowering low-income excluded persons, through grassroots-led policy programs, such as MF (Milgram 2005, Nations 2006, Njegomir and Stojić 2010, Rahman 2010, Fardoust et al. 2011, Banerjee et al. 2015). Whilst there has been general praise of the adoption of MF as a key tool for the UN in proffering solutions to the African continent (Battilana and Dorado 2010, Banerjee et al. 2015), critics on the other hand highlight the shortcomings of this strategy (Milford 2010). The main concern of which is the notion that simply reaching the poor with

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[6] Specifically, five goals were associated with "The Year" namely:
- Assess and promote the contribution of microfinance and Microcredit to the MDGs
- Increase public awareness and understanding of Microfinance and Microcredit as vital parts of the development equation.
- Promote inclusive financial sectors
- Support sustainable access to financial services, and
- Encourage innovation and new partnerships by promoting and supporting strategic partnerships to build and expand the outreach and success of Microcredit and Microfinance.

[7] Sub-Saharan Africa

[8] Some of the areas of inclusiveness of interest to development institutions such as the UN/EU/WB and IMF include: Social inclusion of the poor, political inclusion of women in decision making, increasing women participation and minority participation in the global development efforts, and financial inclusion of peoples discriminated against from traditional financing.

[9] Including the UN, WB, and USAID

tiny spurts of microcredit will spur-on sustainable economic and social development[10]. Furthermore, questions still remain. For example, more than 10 years on from the declaration, poverty levels and the general socio-economic and economic development levels of countries in sub-Saharan Africa (henceforth SSA) remain dire, in comparison to other regions like LAC and SA etc. Where the above universal declaration of MFIs has long been in implementation, this has yet to be backed up by empirical data, especially in Africa. Pertinent questions still remain unanswered. Most importantly, is the implementation of MFIs as a policy strategy for improving financial inclusion in the continent[11] coherent, considering the level of development accrued to the region? Second, with the funding shortage for MFI financing, can MFIs -by the examination of their capital structure, through the transmission loop of the institutional environment- hold any answers towards determining the funding formula for these cash starved organisations? And finally, if the capital structure is important in the funding of MFIs, can we further explain the sustainability and performance of MFIs through their capital structure formations? These questions appear to be timely when considering the increasing drive towards achieving universal financial inclusion, and also within the broader lens of poverty reduction (eradication). Therefore, providing answers to these questions through empirical enquiry will enrich the literature on MF and financial inclusion.

Despite the obvious problems of governance, corruption, poor institutional quality, and weak institutional framework of many of the countries in SSA, the idea of a universal implementation of Microfinance as a tool for fighting financial exclusion (Aguera 2015, Cătălin and Voica 2017) remains questionable. A policy tool largely bellied on the transactional foundations of banking, of which requires adequate and quality functioning institutional systems, in order to have the desired impact. (Armendariz and Morduch 2010) Even though this strategy has been largely adopted uniformly in SSA (Beck, Demirgüç-kunt, et al. 2007), questions remain on the viability and effectiveness of this (Bateman 2014). These concerns have been further exacerbated by recent collapses in MFIs around the globe. For instance, in Bolivia, between 1999-2000, the microfinance industry experienced a near meltdown, as a result of unfair competition by imposing Chilean MFIs in Bolivia (Rhyne 2001). Subsequently in 2008, a raft of MFIs collapse rocked the industry in Morocco, Nicaragua, Pakistan and India,

[10] An argument based on the stance that the main actors are the poor acting as micro-entrepreneurs, getting involved in tiny income generating activities. This in itself is argues to be an ineffective strategy.

[11] This is considered to be a first step towards real financial integration by all peoples with potential to unlock pockets of economic activity and productive levels

caused as a result of large swathes of client over-indebtedness, growing client defaults, massive client's withdrawal, leading to vital MFI loss making and closures (Chen et al., 2010; Milford, 2010). Following this, the overblown MF sector in Bosnia preceded the near-collapse of the MF sector (Milford 2010), which then preceded the popular collapse of the MF sector in Andra Pradesh India (Milford 2010).

More saliently, the almost universal adaptation of MFIs in the SSA region throws up some questions on the application of this policy, when data reveals that MFIs often suffer from mission drift, this occurs when MFIs abandon their dual (mostly social) mission to pursue a purely financial reward and/or compensation, as a result of neglect of their core users –those at the bottom of the pyramid- (Fehr and Hishigsuren 2006, Augsburg et al. 2010, Armendariz et al. 2012, Bateman and Chang 2012a, Kipesha and Zhang 2013). This is clearly evident in the continent, where the urban presence of MFIs far outweighs those in the situated in rural areas (Martinez and Krauss 2015). Exacerbating this phenomenon is the relative expense associated to operational mandate of MFIs in the rural areas, research puts this as outweighing in comparison to MFIs in urban areas (Bateman, 2012; Dehem and Hudon, 2013). This therefore implies that the penetration of MFIs in the continent is lower than levels needed to really push the needle and advance financial inclusion.

In addition, MFI as a policy instrument seems to have been implemented in SSA without rigorous analysis of the terrain and heterogeneous characteristics unique to the countries in SSA. Therefore, the question remains on why this policy initiative is being favoured and implemented by various governments in SSA. For instance, differences in regional characteristics of developmental financial institutions and make-up legal and institutional environment, all make for a blanket application of MF as a policy tool absurd. For instance, western African development financial institutions largely make-up of cooperatives, in the east of Africa NBFIs are dominant, and in the south unions are credit unions are largely dominant. Furthermore, the differences in financial market[12] characteristics further make for a complicated cocktail, requiring specific solutions to the sustainable development and economic growth of these nations). It is therefore important to situate the intended research within a

[12] For instance, financial market depth, profile and other characteristics

contextual region so as to proffer unique solutions to an ever increasing development challenges in SSA.

1.2 MOTIVATIONS

Access to finance is regarded as one of the key roadblocks facing businesses as well as individuals in need of finance (financial services) to improve livelihood. In order to enable inclusive finance permeate developing market economies, MF has been touted as a tool, not only to enable inclusive finance, but also, to attain a long-term goal of poverty alleviation. The UN development goals of 2020 places considerable effort on MF, and its implementation in order to meet its goals of financial inclusion for all by 2020. In order to meet this lofty target, (Morduch 1999), observes that MFIs have to do more, in order to reach the recipients of these funds by improving their performance. By improving aspects of MFI performance, it is argued that MFIs are likely to impose a wider and deeper reach into sections of society needing its services (Morduch 1999, Charitonenko and Campion 2003, Hamada 2010, Hoque et al. 2011). Finance theory suggests that capital structure can play a role in improving the performance of firms. Hence, this research project seeks to shed much needed light on the impacts of capital structure as related to MFIs and how, this aspect of MFI development could help in improving its performance.

Microfinance has emerged as an important strategic instrument for fighting financial exclusion in Sub-Saharan Africa. About three-quarters of the adult population in SSA lack access to formal banking services (Demirgüç-Kunt et al. 2014). Against the backdrop of this, Microfinance institutions are promoting financial inclusion through provision of financial services to the poor. Since inception, microfinance industry has evolved and so are its products. The new innovative products besides microcredit and micro-savings includes: Micro-Consignment, Micro-Franchise, Micro-Insurance, Micro-Leasing and Mobile Money Transfer (Van Kirk 2010). Despite, the enormous effort achieved by the MFIs in the past two decades, many MFIs in Sub-Saharan Africa underperform and struggle to survive. The collapse of Pride Zambia[13] in 2009, and the failures of over 30 microfinance institutions in 2013, in Ghana, brought the topic of financial sustainability of microfinance industry to a broader public debate. Even after these events, many microfinance institutions in SSA still depends on significant

[13] Pride Zambia was the largest donor funded MFIs in Zambia operating under the project agreement of Pride Africa sponsored by Swedish International Development Cooperation Agency (SIDA).

donor funding to survive, which means they are not financially sustainable (Schreiner, 2000; Hermes and Lensink, 2011a). It has been argued that failing MFIs are harmful to the industry has a whole.

The above events have further brought the performance of MFIs into glaring view. For instance, Microfinance Information eXchange (MIX)[14] data reveal that MFIs in SSA are empirically the least sustainable, and least efficient. Whilst the existing literature suggest that MFI financial sustainability is the prerequisite of institutional sustainability (Hollis and Sweetman 1998), evidence remains scant. For instance, empirical literature on factors affecting performance of microfinance institution in SSA is still limited. This is due to the youth of the microfinance industry itself, which started making significant process in the early 2000s. There are few available studies focusing on the performance of MFIs in SSA, for example; Tehulu, (2013) investigates the determinants of financial sustainability of microfinance institutions in East Africa[15] from period covering 2004 to 2009 using ordered and binary probit regression models, Kinde, (2012) investigates factors affecting the financial sustainability of 14 MFIs in Ethiopia for period 2002 to 2010 applying a random effect regression technique in estimating the balanced panel data. Finally, Ayayi and Maty, (2010) use Ordinary Least Squares (OLS) regression technique to estimate MFI performance.

The three studies by Tehulu (2013), Kinde (2012), Ayayi and Sene (2010) suffers from two methodological weakness. Firstly, they use a very narrow range of variables that could lead to omitted variables bias. For instance Tehulu (2013), Kinde (2012) omit key variables like age of MFIs and return on asset, whilst Ayayi and Sene (2010) omitted deposits and return on asset. These omitted variables could undoubtedly influence the financial sustainability of microfinance institutions. Secondly, these studies did not apply econometrically coherent regression techniques, which could have addressed the endogeneity concern. Additionally, Tehulu (2013) and Kinde (2012), did not perform further tests to establish the robustness of their results. If MFIs are to attain their goals, it is therefore vital to investigate what influences the performance of MFIs, with particular focus on SSA.

[14] For further information about MIX visit http://www.themix.org
[15] The East African countries consist of Burundi, Kenya, Rwanda, Tanzania and Uganda.

This research project -in line with the wider view of the current debates and issues in developing finance literature in sub-Saharan Africa-, aims to fill the gaps observed from current MFI literature by examining the determinants of the capital structure of MFIs through an institutional framework, its links with MFI performance, and its impacts on financial inclusion. More specifically, we addresses the question of how adequately MFIs help in breaking down barriers to financial inclusion. More succinctly three lines of question emerge to address this. First, secondary data on microfinance penetration in SSA was analysed to examine the institutional determinants of the funding of MFIs. Secondly, we ask the question of the impacts of funding choices on the performance of MFIs. Finally, from a policy perspective, we examine the impacts of MFIs on Financial Inclusion (FI) in the SSA region, so as to ascertain whether in areas of MFI operation, they address barriers to access by serving financially excluded persons.

We argue that an appropriate way to tackle the problem would be to focus on institutional strength and according governance for the framework of MFIs. For the financial inclusion debate, we indicate that much of the financial inclusion problem can be improved when technology is embraced in order to aid financial policy input. This is because, with much lower need for cash-based transaction, the entire cost of sustaining an inclusive financial system is cheaper, less cumbersome and readily available to all, especially through the help of mobile technology.

The next section provides insight into the aims and objectives identified for the purpose of this research project.

1.3 RESEARCH AIMS, QUESTIONS AND OBJECTIVES

1.3.1 Research Questions

This research project is aimed at unfolding the relationship between MFIs and financial inclusion; MFI capital structure funding, and its institutional determinants, and finally, impacts of capital structure on MFI performance within the sub-Saharan African region
This opens up three lines of enquiry:

Firstly, what are the institutional determinants of the capital structure of MFIs in SSA?

- Do firm specific characteristics influence the capital structure of MFIs in SSA?
- Do institutional factors; the institutional environment, Macro-economic, and external factors (such as the level of financial development) influence the capital structure of MFIS in SSA?
- Do the theories of MFI financing (life-cycle theory and profit incentive theory) play a determining role in the ability of MFIs to attract robust funding?

Secondly, are there any significant influences of capital structure on the social and financial performance of MFIs in SSA?

- What are the directional influences of funding choices, such as; grants, debt, equity and deposits on the financial performance (including sustainability, efficiency and MFI portfolio risk) of MFIs in SSA?
- What are the directional influences of funding choices, such as; grants, debt, equity and deposits on the Social performance (including depth and breadth of MFI outreach) of MFIs in SSA?

Finally, has the penetration of Microfinance Institutions in SSA influenced Financial Inclusion amongst countries in SSA?

- What is the directional influence of MF in improving financial inclusion in SSA?
- Do other factors help in improving/aiding financial inclusion in SSA other than MFIs?
- If so, are these more efficient than MFIs in meeting the target of Financial Inclusion for all by 2020 (UFA 2020)?
- How important is the role of other local financial institutions such as; having an efficient public credit registry in improving Financial Inclusion in SSA?

- How effective is MFI as a policy tool implemented in improving Financial Inclusion levels amongst countries in SSA.

1.3.2 Objectives

To achieve the above aim, the following objectives will help to satisfy the question of this research project:

- Perform a comprehensive review of the existing literature on MFI funding choices, the changing landscape of funding capital available for MFIs, capital structure decisions for MFIs and MFI performance in the sub-Saharan African region.

- Document available evidence and literature surrounding the area of financial and social performance of MF in the region. Discussions of the current state of financial and social performance of MF as a whole within SSA region.

- The life-cycle theory posits that age (of an MFI) is the key factor responsible for an MFIs ability to acquire attractive funding. We examine the relevance of this theory in the SSA context. If this holds true; how does more attractive funding alter the capital structure of MFIs, and what are the implications of this on performance of MFIs within the region.

- Using descriptive analysis of the available data to shed light on the various capital structure forms prevalent amongst MFIs in the SSA region, further enhancing knowledge on available funding sources robustly utilised by MFIs in the SSA region.

- Employ econometric analysis on collected data, to perform tests for each of the outlined MFI capital structure (leverage) variables against selected institutional, macro-economic and firm-specific determinants (gleaned from theoretical and empirical studies) of MFI capital structure, so as to ascertain the critical institutional factors that influence MFI capital structure decisions.

- Employ econometric analysis on collected data, to perform tests for each of the outlined MFI performance indicators against explanatory capital structure variables, MFI

characteristics variables and macro-economic variables, to determine the impacts of financial leverage on each of the four facets of microfinance performance (Efficiency, Sustainability, Portfolio Quality, and Outreach).

- Employ econometric analysis on collected data, to perform tests on the penetration rate of MFIs against the Financial Inclusion index for countries within SSA.

Chapter 2 LITERATURE REVIEW

2.1 MICROFINANCE, FINANCIAL INCLUSION AND SUSTAINABILITY

The history of microfinance can be traced back to early African developments in rotating savings and credit associations (such as; susu), (Seibel 1984). However, recent history of the practice existed in 18th and 19th century in European mercantile system/practice/development. Early characterisation of this practice was characterised with charities and cooperatives administering credit to poor farmers and agricultural labourers (Seibel 2005). The charities and cooperatives were entirely funded by donations and interest free loans, from altruistic individuals (Hollis and Sweetman 1998). In spite of the substantial evolution of the microfinance industry, its core principle of credit provision in addition to providing other essential financial services to the very poor in society has been preserved.

The modern microfinance movement re-emerged in the 1970s in Bangladesh as a small local experiment undertaken by Grameen Bank and its founder Dr Muhammad Yunus. The idea pioneered by Yunus of funding small amounts of un-collaterised loans to microenterprises quickly attracted global audience. By early 1990s the concept of microfinance was the centre of discussion in many gathering of the international development communities. The founding role of microfinance was to alleviate poverty via financial inclusion and advancing economic needs of the low-income households. Recent empirical studies confirm that microfinance services enhance household savings, help diversify household income and allow consumption smoothing (Ananya 2010, Banerjee et al. 2015).

Overtime, the microfinance founding principle of poverty alleviation has eroded and slowly being replaced with the neoliberal for-profit model. Since the mid-2000s, the for-profit model has become dominant in the microfinance industry. For example, Grameen Bank established in early 1980 as a not-for-profit microfinance institution converted in 2002 into a profit-oriented institution. The commercialisation of the microfinance industry reached greater heights in 2007 when the Mexican microfinance institution, Compartamos, launched an Initial Public Offering (Bateman and Chang 2012a).

In the last decade, the microfinance industry has attracted investments not only from traditional donor communities but also from venture capitalists and wall street banks[16] (Janda and Svárovská, 2010). The flow of funds has unquestionably amplified the commercialisation of the industry (see Figure 1 below). In addition, the majority of newly established MFIs are now profit oriented (Roberts 2013). Institutionalists argue that commercialisation of microfinance industry cuts the umbilical cord of donor dependence and promote institutional sustainability (Woller 2002, Brau and Woller 2004). On the other hand, others argues that commercialisation of microfinance industry actually exacerbates the poverty levels of the borrowers (Janda and Svárovská 2010).

MFI Growth

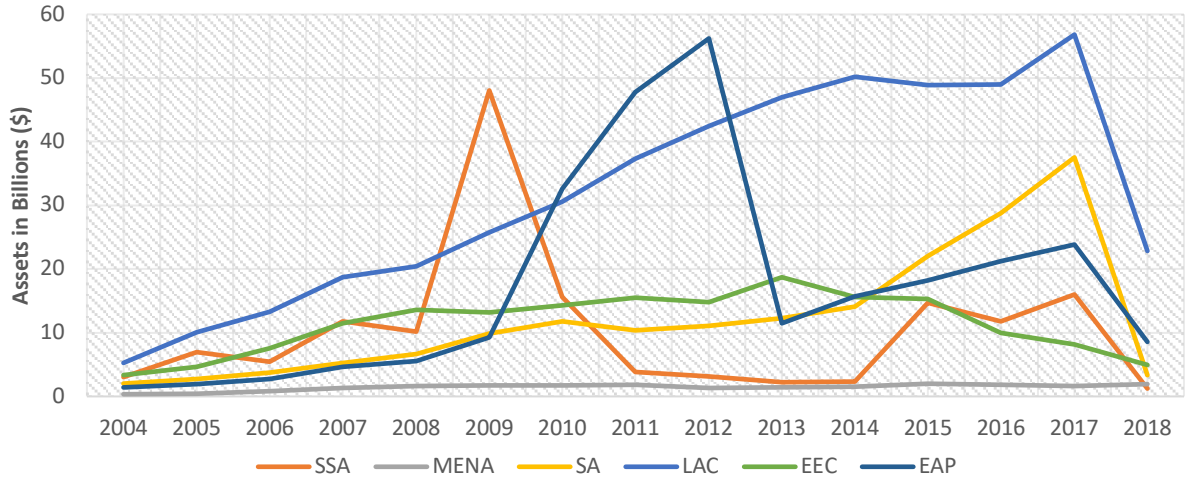

Figure 1: Total MFI Asset Growth across Regions: 2004-2018.

Sub-Saharan Africa (SSA), Middle East and North Africa (MENA), South Asia (SA), Latin America & the Caribbean (LAC), Easter Europe and Central Asia (EEC), East Asia the Pacific (EAP).

Source: Authors own. Data collected from MIX Market database 2018.

2.1.1 Microfinance Overview

MFIs provide financial services to low-income and financially excluded households in developing countries around the world. In the minds of many, microfinance and microcredit are synonymous (Helms 2006). However, microfinance refers to an array of financial services that include credit, savings, and insurance, while microcredit is the provision of credit which is usually used as capital for small business development. MFIs can operate as non-

[16] For example large banks like Citigroup, Deutsche Bank, and HSBC have separate microfinance divisions financing and supporting the activities of microfinance institutions.

governmental organizations (NGOs), credit unions, nonbank financial intermediaries, or commercial banks (Milford 2010). Access to finance is therefore crucial, such that; it provides the underserved with opportunities to take active roles in the economy (Morduch, 1999a; Armendáriz de Aghion and Morduch, 2004). To cushion themselves from perceived repayment risks, MFIs therefore charge very high (30%–60%) nominal interest rates (Bogan 2008). In addition, the loans are short term, with very small average loan size, and only a few programs require borrowers to put up collateral. Furthermore, loans can be as small as $75, repaid over one year. Globally there are more than 67 million households served by microfinance programs (Dehejia et al. 2012).

Microfinance overtime has transitioned into a useful tool, designed not only to meet the financial needs of the poor, but also to engage in non-financial services such as education, health and nutrition (Baye 2013). Clearly, microfinance is a long-term process which encourages the poor to save and accumulate their small incomes to reduce the impact of economic vulnerability (Cull *et al*., 2014). It is no surprise that financial inclusion, poverty reduction and sustainable economic development is the top priorities of governments in most developing countries (Lele and Adu-Nyako 1991). Microfinance therefore, is considered a policy tool for poverty reduction in developing countries, where most of the world's underserved are located (Christen *et al.*, 2004: Awaworyi Churchill, 2018b). Consequently, in order to provide positive social outcomes MFIs often aspire to attain financial independence (non-reliance on donor funding to meet operational needs). Therefore, in addition to meeting outreach goals, MFIs often aim to be sustainable. In this light, MFIs have been referred to as hybrid institutions (Littlefield et al. 2003). This is often as a result of their double bottom mandate of financial performance and social outreach goals/missions (Mersland and Strøm 2010, Kar 2012). Within the literature MFIs who achieve both often go through a transformation process (Fernando, 2004; D'Espallier *et al.*, 2017). Transformation generally results in an improved governance and ownership structure and is the only way an MFI can commercialise or "manage on a business basis" ((Cull et al. 2014). By doing this, MFIs can expand their outreach by increasing the number of clients served, improving customer satisfaction and loan repayment and stabilising the sources of funds to create a viable business.

2.1.2 Critiques of Microfinance

Microfinance is currently considered one of the most important tools for international development and poverty alleviation. Despite numerous empirical inquiries, the actual effects of microfinance on economic and gender variables relative to poverty remain unclear, and a number of critiques have challenged the efficacy of microfinance at promoting women's empowerment and alleviating poverty. Moreover, since the 1970s, microfinance has grown and transformed into a largely commercial financial sector that connects capital investors with poor borrowers at a significant scale. Nonetheless, through its business success, microfinance has also engendered a series of over indebtedness crises, most notably the one in India in 2010. These crises, as well as the strong critiques levied against microfinance, have prompted the sector to search for new methods and a new mission as well as new markets to conquer (Drake and Rhyne 2002).

Although, MF is often touted as a possible way to spur economic development in rural areas (grassroots'), by affording access to financial services for micro-entrepreneurs. The rate of bankarization in Sub-Saharan Africa is estimated today at less than 15% of the population (vs. over 90% in Europe and vs. 40% in Latin America) (Demirgüç-Kunt et al. 2015, 2017). This clearly demonstrates the necessity for more financial services addressing the needs of the lower segments of the population, particularly in rural areas. Whilst providing financial services in isolation is no panacea for development, it is however an important step to this end.

The usefulness of MF as a tool for providing financial services to the bottom of the pyramid is indeed helpful; first in the form of credit delivery to expand businesses, but also for savings, money transfers, and payment services (Armendáriz et al. 2010). It is gleaned that this type of inclusion is essential to creating more integrative economic development (Demirgüç-Kunt 2014). Therefore, this relationship with the bottom of the pyramid is the rationale behind the proponents of the use of MFIs as a development policy tool (Barr, 2005; UN, 2006). This ultimately creates a unique closeness that helps MFIs initiate widespread and regular contact with the unbanked poor population. This therefore means that their unique proximity to reach and extend to the bottom of the pyramid –by way of their mandate- is second to none. However, this is hardly the case in SSA, the profile of most MFIs in SSA suggest the opposite. With a large number unable to collect and mobilise deposits, and most operating as NGOs with purely a micro-credit delivery function (United-Nations 2013). It is no surprise that these institutions are struggling to meet development challenges in SSA.

This could be put down to few reasons. Firstly, research indicates that MFs are more likely to be situated in the urban areas, in comparison to rural areas (Mader 2016). For instance, within SSA, even though most (70% of the population) of the continent resides in rural areas (of which more than 80% are poor), MFIs are predominantly known to be situated in urban areas as opposed to being in rural areas (Mokaddem 2009). In addition to the above, this is also due to the development overtime of a familiarity of lending in urban areas as opposed to rural areas.

Secondly, the issue of mission drift; a form of principal agency problem, which occurs when MFIs concentrate focus on clients above the poverty line, thereby neglecting their social mission. This ultimately could lead to a sector stagnant, bereft of adequate funding, thus failing to attract the right type of funding to meet the needs of its missions. Thirdly, the cost of financial services delivery to the poor –in rural areas- in comparison to urban areas could further be a deterring factor for MFIs (Mokaddem, 2009; De Haan and Lakwo, 2010)[17]. Finally, funding constraints, general investor apathy, and a general poor market and implementation infrastructure of the operating environments of MFIs in developing markets (Milford 2010).

The problem however, remains that the global adoption of MF as a tool for improving financial inclusion needs a rethink. Various policy initiatives for eliminating the issue of exclusion largely involves the use of MFIs (Demirgüç-Kunt et al. 2017). The effective implementation of such, is argued, will be key to alleviating financial exclusion and eventually eradicate poverty. However, a closer look at the activities of MFIs –especially in SSA- clearly reveals that this strategy is not only incoherent, but not enough[18], if financial inclusion is to be eradicated by 2020[19]. A rethink of the policies for improving financial inclusion levels is necessary, and this should aptly lead to a re-visit of relevant policies that tackle this problem.

[17] The obvious way to reduce these transaction costs is to move towards technology platform that can enable banking transactions without the physical presence of the customers. These initiatives have either been towards opening and maintaining bank accounts through enhanced technologies (initiatives by Self-Employed Women's Association [SEWA], Indian Bank in Puducherry and Dharavi) or through prepaid instruments (Oxicash) (Gangopadhyay *et al*., 2005). However, all these efforts have focused more on the process (how to make banking transactions less costly).

[18] For instance, the share of the poor served by MFIs have been in a steady declining state.

[19] According to the World Bank's UFA 2020 development goals and initiatives.

If MF is to be the answer, a radical shake-up of the sector in SSA is needed. For instance the operational capability of MFIs is still largely situated in urban areas as opposed to operation in rural areas (Mokadem 2009; De Haan and Lakwo, 2010). Secondly, the issue of who MFIs serve; largely the literature suggests that MFIs –in SSA- still do not serve those at the bottom of the pyramid (Krauss et al. 2015). This has been largely attributed to the cost of credit-disbursement, and delivery costs, in addition to operating costs in rural areas (Bogan 2008). Further, the premise of an entrepreneurial driven economy –as employed in many western economies- is one that largely informs the application of MF in SSA (UN, 2006). However, the countries in SSA might be ill-equipped for this type of growth. As researchers suggest, this is possible in economies that have strong institutions; ones that respect the rule of law, and ensures rights of market participants are held-up (Hwang and Powell 2005, Amoros 2009, Boettke and Coyne 2009, Estrin et al. 2011, Braunerhjelm and Henrekson 2013, Smith 2015, Chowdhury et al. 2019, Fuentelsaz et al. 2019).

This line of argument relies on the premise of an entrepreneurial driven economic renewal and growth. When we look at the SSA region, an overwhelming majority of these economies do not have strong institutions, this is confirmed by the poor ranking in the institutional development indexes, and human capital development indexes of many of this nations. If this is then the case, why is this policy still being implemented? Perhaps, a policy which supports local manufacturing, and affords the rural population the opportunity to work and earn a living is more suitable than offering the idea of entrepreneurship through MFIs as a sustainable solution. Secondly the lack of infrastructural development in a lot of these countries least supports the idea of an entrepreneurial driven growth (Boettke and Coyne 2009, Estrin et al. 2011). For instance infrastructural deficiencies like power, energy and poor transport/road networks largely limits the enterprise of local businesses. This leads to other schools of thought, which advocates for the supply of job opportunities through increased implementation of basic infrastructural services (such as power, water, gas and healthcare) through a sound institutional environment, in addition to investment in human capital, which entrepreneurs can then thrive in (Milford 2010). The process of sustained institutional and sound infrastructure path, however cannot be circumvented by the use of MF as a equalising strategy to achieve an inclusive society. We argue that MF should be one of many enablers of inclusive growth, and not a “silver bullet” as thought by many governments in Africa.

MFIs can indeed be an effective development tool, however, in its current implementation, it is still inefficient in achieving its mission objectives (De Haan and Lakwo 2010, Abdulai and Tewari 2016, Azad et al. 2016). A radical shift toward policy making that strengthen the institutional environment which could further foster economic sustainability and complement development finance efforts such as MFIs could be more appropriate (Bateman 2011). However, in the short-term, if MFIs have to play a role –as suggested-, a better understanding of these institutions as applies specifically to the SSA region is needed. We aim to achieved this through this study. MFI capital structure presents a good initiating point, whilst the limitation on funding is becoming a persistent issue for MFIs in SSA, the question remains on how can these institutions be best positioned for a changing funding environment in order to stay relevant? Furthermore with the increased clamour for improved institutional environment and governance in SSA, what could be the potential impacts of the institutional environment on the capital formation of MFIs? A natural follow-on form this is to ask the question; will an improved institutional and governance environment improve the capital structure of MFIs? How does this also hinge/impact on the social and financial performance of these firms? And finally, what does this mean for financial inclusion within the context of MFIs within SSA? Microfinance could well be an important tool to address the issue of poverty eradication. However, in its current state, little is left to re-assure any hope. Hence, these questions are pertinent to improve the debate on the current understanding of Financial Inclusion, MFI (sustainability), and the role of the institutional environment in alleviating this phenomenon.

2.1.3 Microfinance Challenges

Microfinance has come under scrutiny as an appropriate tool for achieving the ambitious target of poverty reduction via financial inclusion (Mader 2016) . Mokaddem, (2009) argues that simply offering microcredit is a panacea for capital destruction, and is by no means a sustainable means of reaching the poor, and even more, reducing poverty in order to reach the Millennium goals. One of such criticism is the untenable nature of current MF practices (Mader 2016). This has been backed by recent studies that reveal that MFIs need to move out of heavily subsidized operations and into commercialization to achieve efficiency and financial sustainability (Drake and Rhyne 2002, Olivares-Polanco 2005, Bihari 2011). Since donor funding is becoming insufficient to meet the continual demand for well-designed financial products from new and existing clients, access to commercial funds tends to help MFIs improve their performance (Milford 2010). Furthermore, the recent implosion of MFIs across the world has received concern (Bateman 2010). For MFIs in SSA, the risk of a breakdown in difficult

operating environment is particularly salient in mitigating credit risk. For instance, research indicates that one way to mitigate the unfavourable impact of MFI credit risk, would be to make improvements in institutional quality, such as improving the quality of regulation. For example, Tingbani et al., (2019) examine regulation and the impacts of credit risk of MFIs in SSA. They provide evidence that; improved quality and efficient regulation can reduce credit risk in MFIs, in regions with low competition (SSA).

2.1.4 Microfinance and Poverty Reduction

This section provides a review of the literature on the impact of microfinance on poverty reduction. This sheds light on the importance of commercial microfinance (commercial funds) in the MFI developmental stages. This is achieved by first examining whether or not microfinance really helps the poor. Secondly, this literature will ask who benefits from microfinance.

2.1.5 Does Microfinance Really Help the Poor?

The literature on the impact of MF on the poor has been mixed. Many studies have been conducted and have come to different conclusions concerning the impact of microfinance on poverty reduction. Most studies provide evidence supporting the positive effects on increasing the income of the poor. For instance, (Ledgerwood and White 2006), Wright (2000), Morduch and Haley (2002), Pande et al. (2012). Other strands of literature further propose a reduction in the vulnerability of the bottom of the pyramid. For instance, Zaman, (1999), Wright (2000), Zaman (2000), McCulloch and Baulch (2000), Develtere and Huybrechts, (2005), and Swain and Floro (2012). Finally, a number of studies with largely conclusive and positive evidence on health, nutritional and education (Wright 2000).

It is widely accepted that poverty is a social problem one that fuels inequality and other social ills in society (Pare and Felson 2014). Poverty reduction, therefore, is ideally a long-term process integrating numerous financial and non-financial programs for generations of poor households (Aigbokhan, 2008). Lack of money, access to financial service, and low personal income are basic measures and symptoms of poverty. Therefore, from a theoretical standpoint, lending small amounts of money to the bottom of the pyramid should in essence, have some positive impact on poverty reduction. According to IFAD (2011), and Roodman and Morduch (2013a), , small scale lending could help the vulnerable overcome hunger to survive and also provide opportunities to conduct small businesses for future cash flows to

improve their standards of living. Consequently, studies questioning the motives and impacts of MF remain relevant to the sector. For instance, (Aigbokhan 2008) and Mader (2017), observe that the implementation of MF is poor at best. Amidst this, it is not clear as to the real impact of MF on poverty reduction. This therefore, is a salient point for policymakers in implementing poverty reduction strategies.

There have been numerous empirical studies conducted to examine the effects of MF in different countries by using the double difference approach or panel data with the fixed effect model. The results show that the personal incomes of borrowers are different with or without microfinance programs in different areas. Gertler et al. (2009) test for a relation between access to finance and consumption shortfalls associated with ill health. Their results show that microfinance is likely to reduce vulnerability and access to finance tends to help the poor smooth their consumption in the face of a decline in health. In the area of personal income, a significant positive impact is found in personal income and consumption, indicating a reduction in the vulnerability of the poor.

Despite the success and popularity of microfinance as mentioned above, there is no clear evidence that microfinance has a positive impact on poverty reduction. For instance, studies that examine the impacts of microfinance using rigorous quantitative techniques often find that rigorous quantitative evidence of microfinance impact is still scarce and inconclusive (Armendáriz de Aghion and Morduch, 2004; Gertler et al., 2009). Furthermore Armendáriz De Aghion and Morduch, (2010) show that overall, it is widely acknowledged that no substantial study robustly shows any strong impacts of microfinance. Finally, according to Dichter (2007), the impact of microfinance seems unrealistic based on the recent experience of developed countries, where microfinance might leave some poor people worse off, as in case of credit cards and mortgages.

Many studies have found that there was an insignificant and negative effect of MF on consumption, and no effect on new business creation, education or women's empowerment. For instance, Karlan and Zinman (2010) and Duflo et al. (2013) find that no evidence of an impact from a number of large-scale MFIs. Roodman and Morduch (2013) took a different tack, revisiting the works of Pitt and Khandker (1998), and reported that there was very little solid evidence which showed the real role of microfinance in poverty reduction in measurable ways. Thus on balance, whilst anecdotal evidence of MF impact on the poor exist. Impact

studies, reveal that it is extremely difficult to separate and measure the contributions of microfinance to poverty reduction, since poverty is a significant social problem that permeates every dimension of culture and society (Khandker, 2005; Bateman and Chang, 2012; van Rooyen et al., 2012). In addition, there are strong potential synergies between microfinance and the provision of other non-financial programs since the benefits derived from these programs are interconnected (Milford 2010).

In conclusion, these results tend to suggest that microfinance cannot immediately turn the poor into non-poor. The point is that microfinance is a long-term process which tends to support the poor financially so that they can combine their skills, knowledge, experience and financial capital to break away from poverty and change their lives for a better and brighter future.

2.1.6 Who Benefits from Microfinance?

In view of the overarching goals of MF as a policy tool, debate has been in the forefront as to who benefits from MF. Although proponents argue that the poor at the bottom of the pyramid benefit from MF adoption, donor funding is becoming insufficient to meet the continual demand for well-designed financial products from new and existing clients. As a result, MFIs tend to access commercial funds to improve their performance and also achieve a targeted outreach (Morduch and Haley 2002). This therefore elicits an interesting question of the recipients of MF services, the poorest or just the poor near the poverty line. Whilst, there has been some discussion about the incentives to serve the poorest of the poor. Several MFIs tend to serve the poor who are near or just above the poverty line, instead of the poorest. It is sometimes argued that whilst MF has contributed positively to the well-being of the poor in general, it has however failed to reach the poorest in particular. Although Ledgerwood and White (2006), Morduch and Haley (2002), insist that microfinance can be effective for the poor, including the poorest. However, well designed financial services are unlikely to have a positive effect on the poorest, unless they specifically seek to reach them (Wright 2000). The poorest will be missed or they will tend to exclude themselves since they do not see the programs as being for them (Navajas *et al.*, 2000).

Microfinance programs in Bangladesh have succeeded in reaching only half of this population (Hashemi *et al.,* 1996). Based on a case of BRAC's Rural Development Programme, 40% of those eligible did not participate in any development activities, microfinance or otherwise (Navajas *et al.,* 2000). Concerning non-financial development services, almost 75%

of the poorest did not participate (Rahman and Razzaque 2000). The poorest tend to exclude themselves from microfinance activities since they do not have the capacity to be accountable for regular, sustained repayments or husbands do not permit their wives to join.

Although microfinance is clearly aimed at helping the poor access financial services and taking part in local economic activities to improve their lives, it has become increasingly apparent that it rarely serves the poorest. For instance, findings by Morduch and Haley (2002), Hammill et al., (2008) and Adjei, J. K. and Arun (2009), Kohn (2011) suggest the unsuitability of products, and services aimed at those at the bottom of the pyramid. Other research further indicates that microfinance is generally most appropriate where ongoing economic activity and sufficient household cash flow already exist (Isern and Porteous, 2005). However, this is hardly the case in most rural communities in SSA. Therefore, rather than exclusively reaching the poorest, MFIs tend to reach the economically active poor or the non-poor who hover above the poverty line based on their participation in economic activities.

2.1.7 Over-indebtedness

The problem of over-indebtedness has plagued the MF sector over time. Although the ultimate aim of an MF policy initiative is aimed at improving the lives of the poor, the converse effect of indebtedness bring to question the moral stance of providers in this sector (Armendáriz De Aghion and Morduch 2010). Whilst this remains an issue in the sector, the nature of MF loan disbursement coupled with weak governance infrastructure often fosters this problem (Ghosh 2013). For instance, studies indicate that MF credit disbursement and loan-size depends largely on the consumption needs of those at the bottom of the pyramid, which fall into three categories: domestic spending, small business operations (working capital), and smoothing emergency consumption[20] (Shetty and Veerashekharappa 2009a). Thus, the relative small loan sizes often lead to small and numerous loan applications from borrowers, a possible problem of moral hazard therefore exist. Such that, the demand for larger loan sizes exceed the repayment ability of MFI clients. Disbursing larger loans could therefore lead to the over-indebtedness of some borrowers (Schicks 2013; Mader 2017). Conversely, if loan sizes are small such that clients' needs are not met, this could lead to multiple borrowing by MFI clients from various sources, thus, ultimately leading to over-indebtedness.

[20] These include issues of health, and other related emergency expenses.

This often lead the poor into considerable debt in many cases unpayable (Kappel et al., 2010). Over-lending and multiple borrowing are the most important early signs of over-indebtedness, amongst MFI users (Isern and Porteous 2005). According to (Armendáriz De Aghion and Morduch 2010), credit bureaus are suggested as a useful mechanism to track the borrowers from other institutions, which share credit data with the bureaus. However, credit bureaus provide only a partial answer because it is difficult to gauge the level of indebtedness and to judge whether the poor are over indebted.

2.1.8 Microfinance Crisis and Recent Collapses

The problem of MFI collapses has attracted attention following multiple collapses of MFIs across the sector. The first known microfinance crisis, which occurred in Bolivia in 1999, was caused by consumer lending and multiple borrowing (Bold et al., 2012). Within the literature, factors such as poor consumer lending, relaxed credit policies together with the rapid growth of MFIs have often contributed to the crisis in Morocco and the Punjab (Pakistan) (Burki 2009). Furthermore, the case of Zambia shows that the relaxing of the standards of loan officers' responsibilities are the main reasons (Dixon et al., 2007).

Based on a cross-country analysis and the crises in microfinance, (Dixon et al., 2007) conclude that over-indebtedness is typically caused by many factors, such as: the existence of multiple borrowing; the growth targets of MFIs; overstretched MFI systems and controls; an erosion of MFI lending discipline; weak policies and practices of assessing customer repayment capacities, and the absence of effective credit information systems. In addition, the global financial crisis of 2007/2008, politically motivated movements and non-repayment movements are aggravating factors, but not the root cause of crises, such as in Nicaragua, Pakistan, Morocco and Bosnia and Herzagovina (Chen et al., 2010). Chief amongst the root causes of the recent microfinance crises are multiple borrowing and the poor quality of loans provided to the poor as a result of the rapid growth of MFIs (Mader 2017). Finally, the recent microfinance crisis in the southern Indian state of Andhra Pradesh was caused by a concentrated market, further exacerbated through MFI lofty growth targets, loans were provided to the poor who were indebted to other financial organisations (Shetty and Veerashekharappa 2009b). While many MFIs have suffered losses and still continue to face uncertainty, clients face the real impacts.

2.2 MICROFINANCE PERFORMANCE

2.2.1 Microfinance Performance

The performance of MFIs is typically measured in four main critical areas: outreach, financial sustainability (profitability), efficiency, and portfolio quality. These core indicators are categorised into two groups: financial and social performance. Sustainability, efficiency and portfolio quality are indicators of financial performance. On the other hand, outreach captures the social performance of MFIs. These indicators do not capture all the relevant aspects of performance for internal management but they ideally represent the minimum performance areas for the basic investigations of external investors (Rosenberg, 2009).

2.2.2 Sustainability

The hybrid nature of MFIs often implies that they have a dual mission (achieving financial and social goals) (Mersland and Strøm, 2010). Financial goals entails meeting financial sustainability goals (through improving performance metrics such as ROA, ROE and OSS), whilst social goals often entails reaching the poorest of the poor –outreach- (Copestake et al. 2005, Copestake 2007; Mersland and Strøm, 2010). However, a look at the data suggest that this is not often the case. Sustainability generally refers to the ability of MFIs to continuously carry out activities and services in pursuit of its objectives, thereby pursuing economic viability (Hermes et al., 2011). The most common measure of profitability in commercial institutions is return on assets (ROA), which reflects an organisation's ability to deploy its assets profitably, and return on equity (ROE), which measures the returns produced on the owners' investments (Lafourcade et al., 2005).

Operational self-sufficiency (OSS) measures operating revenue as a percentage of operating and financial expenses, including loan loss provision expense. It generally includes all the cash costs of running a MFI, depreciation and the loan loss reserve. Therefore, it becomes one of the major goals for MFIs to achieve in order to maintain viability and further grow their operations. OSS is calculated as follows:

$$OSS = \frac{Total\ Fianncial\ Revenue}{Expense + Loan\ Loss\ Provision + Operating\ Expense} \qquad \text{(Equation 2.1)}$$

$$OSS = \frac{Total\ Fianncial\ Revenue}{Total\ Operating\ Expenses} \qquad \text{(Equation 2.2)}$$

On the other hand, financial self-sufficiency (FSS) is the ability to cover all costs on an adjusted basis and indicates the ability to operate without ongoing subsidy or losses. This ratio is calculated as in equation 2.3 below. According to (Lafourcade et al. 2005) out of the approximately 10,000 MFIs worldwide, it is estimated that only 3 to 5% have achieved full financial sustainability. Therefore, OSS is preferred by several studies when investigating the effects of financial structure on the financial performance of MFIs.

$$FSS = \frac{Adjusted\ Operating\ Income}{Adjusted\ Operating\ Expenses} \qquad \text{(Equation 2.3)}$$

This research focuses on the OSS of MFIs as a performance measure. This is because, for MFIs, attaining operational self-sufficiency is the first step in attaining sustainability. Secondly, the data reveals that financial self-sustainability has not been widely achievable by MFIs in SSA so far. The MIX data suggest that only a small fraction of MFIs worldwide have been financially sustainable (D'Espallier et al., 2013).

The issue of MFI sustainability and the importance of this on the ability to improve financial inclusion is still a talking point within the literature. According to Hermes and Lensink (2011), providing microfinance services is a costly business due to high transaction and information cost. Thus, the combination of high transaction cost, and operational cost poses a unique challenge for MFIs. Furthermore, a large number of MF programs are still reliant on some form of donor subsidies to meet operating costs (D'Espallier et al., 2013), indicating that largely MFIs are not financially sustainable. Within the context of continual reliance on donors, the issue of sustainability of MFIs is therefore important to consider. According to the 2011 state of microcredit summit campaign report (Maes and Reed 2012), MFIs are playing an increasingly important role in the financial system in developing countries, although results of impact studies are controversial in determining the effectiveness of MF in alleviating poverty and fighting financial inclusion (van Rooyen etal., 2012; Roodman and Morduch, 2013). However, there is some consensus that, large-scale outreach to the bottom of the pyramid on a long-term sustainable basis cannot be guaranteed if MFIs are not sustainable (Quayes 2015).

Microfinance is at the core of this transmission mechanism at the bottom of the pyramid, although the evidence suggests a mixed picture. For instance, Hartarska and Nadolnyak, (2008b), Becchetti and Castriota (2011), and Rai and Ravi (2011) show evidence of MFIs ability improve the welfare of population and alleviate small business financing constraints.

However, these research papers only examine mature MFI markets within a global context. Conversely, Banerjee *et al.*, (2015), find heterogeneous effects of MF on financial inclusion. Whereas Earne and Nelson (2013) argue that funding is crucial in improving FI. Funding is therefore deemed critical for the long-term sustainability of MFIs and their portend hybrid goals (Jansson 2003). It is along these (financing/funding) lines that we begin this enquiry. The literature suggests that adequate funding ensure MFIs have the resources needed to expand through increasing the number of clients served and geographical and product diversification. Furthermore, it is also argued that efficient MFIs that have access to cheap external funding may thus offer cheap loans to poor borrowers and to income-generating activities and micro enterprises, thereby promoting and supporting their development (Ghosh and Van Tassel 2011).

The capital structure examination of MFIs is important within the context of MFI sustainability and financial inclusion goals, because the evolvement of these institutions over time require such analysis. MFIs have evolved in recent years as a policy tool for fighting poverty, improving financial inclusion, and promoting sustainable financial development. However, recent analysis to gauge their efficacy for this has been wanting. Understanding their operation is -therefore- critical to examine these claims in addition to procuring solutions to improve their operations (Kyereboah-Coleman 2007). Recent developments warrant this examination. For instance, MFIs continue to take advantage of an evolving regulatory environment, beginning in 2004, which allowed them to transform into regulated deposit taking institutions (Wagenaar 2012).

Evidence from Cull *et al.,* (2007), suggest that majority of MFIs operate on a subsidized basis. This is especially the case in SSA where majority of MFIs still require subsidies for their operations. With the prevalence of a subsidized MFI sector in SSA, the question is whether the over-imposing nature of subsidies act as a barrier (undermines) to the emergence of a sustainable MF industry. For example, Bogan (2012a) show that MFIs in SSA are the least sustainable of all regions. In addition to Morduch (1999) questioning the staying-power of subsidies, there is increasing argument that if MF really is the answer, Africa needs more sustainable, and efficient MFIs (Morduch 1999), yet this is not the case. For instance, studies have shown the reverse/opposite. For instance Bogan (2012) reveals that MFIs in SSA are the least sustainable of all the observed regions.

The argument for the sustainability of MFIs is ever more important considering the position these institutions play in credit smoothening[21], deposit and savings mobilization[22] and credit provision, in addition to enabling financial inclusion. It is argued that sustainability of MFIs is a vital step if indeed these institutions are essential for the goal of UFA 2020[23]. Therefore, the sustainability of MFIs[24] is important in the fight against poverty. However little has been done to contribute to this area of the MFI literature in recent years. The handful of papers such as: Kyereboah (2007), Tehulu (2013), that examine this phenomenon, all use smaller sample sizes, small period spans and relatively no focus on SSA region. Therefore, caution is to be taken on findings from existing research in application to SSA. An overview of the sustainability of global MFI sector can be seen in Figure 2 below.

MFI Sustainability

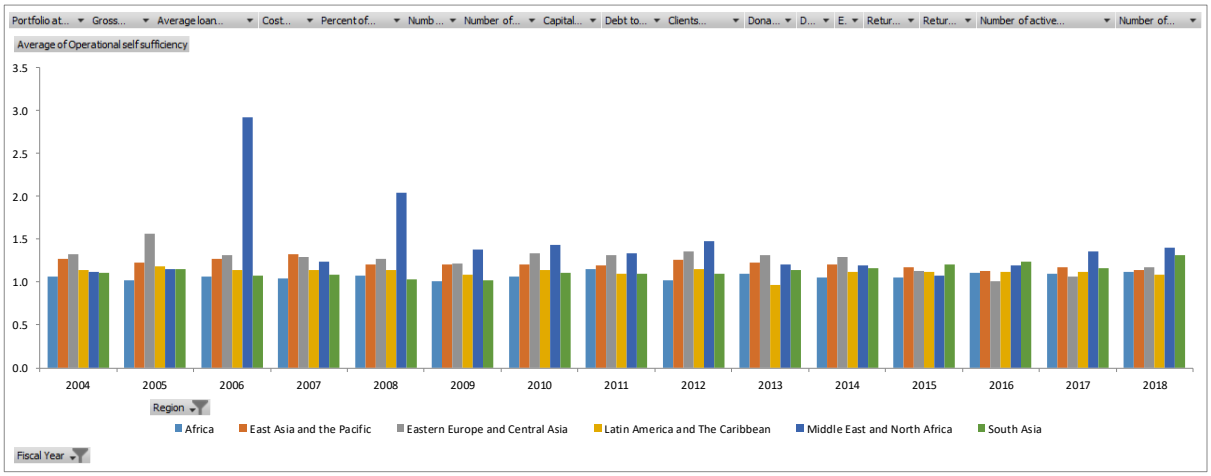

Figure 2: MFI Operation Self Sufficiency All Regions

Source: Authors Own

[21] See Ullah & Madiha 2017
[22] See Anbrasu (2016), Kundu (2017), & Hartaska et al (2011)
[23] See World Bank (2008)
[24] This (sustainable MFIs) is adjudged to be the first step in achieving financial inclusion, amongst many other development goals.

2.2.3 Outreach

MFI outreach is largely concerned with the social mission[25], measured by the percentage of MFI female borrowers (see Figure 3 below) (Rosenberg, 2009). The two most discussed aspects of outreach in the literature are its depth and breadth. Depth of outreach refers to the poverty level of the clients served, while breadth of outreach refers to the scale of operations of an MFI (Rosenberg 2009). Expanding outreach is an ultimate goal of almost all MFIs, but rapid expansion sometimes proves to be unsustainable, especially during an MFI's early years, when designing its products and building systems. It has very seldom been useful for funders to pressurise MFIs for rapid expansion, as in the case of current MFIs failures. The most common indicators recommended to measure outreach are average loan balance per borrower (ALPB) and number of active borrowers (NAB), representing the social performance and the depth and breadth of outreach (Lafourcade et al., 2005; Rosenberg, 2009; Littlefield and Kneiding, 2009).

The disagreement between the benefits of depth vs breadth of MFIs has been a contentious point within the literature (Adams and Tewari 2017). On the one hand, non-profit MFIs would rather reach out to the poorest; thereby placing importance on the depth of outreach is more important. On the other hand, according to the breadth logic, MFIs should have large-scale outreach in order to make a difference to the world's poverty levels. Some argue that shallow depth can be compensated for the breadth of outreach or that it is even more important than depth for instance: (Navajas et al. 2000, Robinson 2001a). Therefore, the common approach has been to study outreach by investigating the impact of microfinance and how to achieve this outreach.

[25] Reaching the bottom of the pyramid, and poverty alleviation mandate.

MFI Outreach

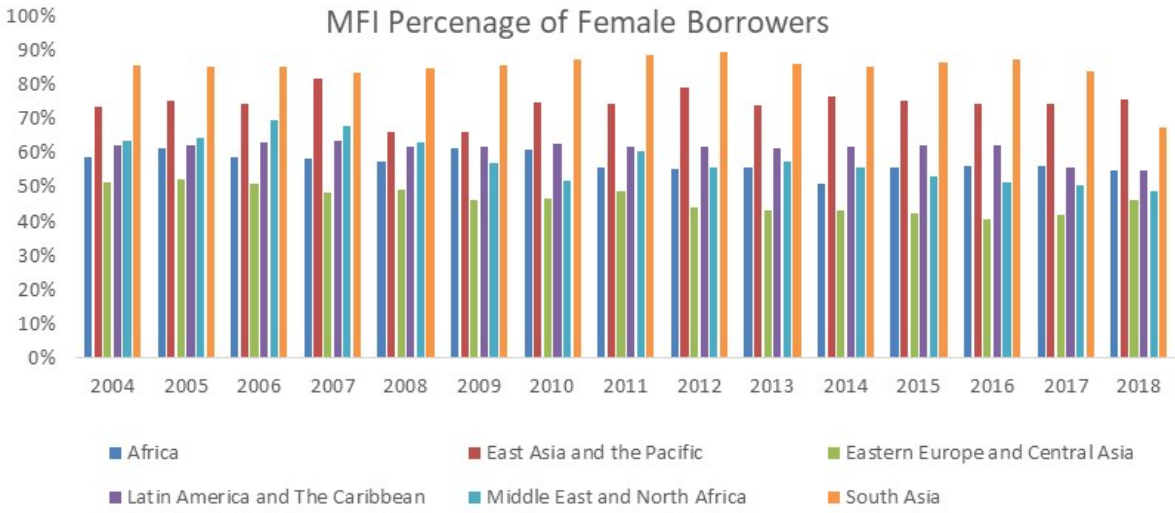

Figure 3: MFI Outreach: Percentage of Female Borrowers.

Source: Authors Own

This research project adds a further dimension of outreach to the literature, captured by number of active borrowers (NAB) (see figure 11 below). The NAB of MFIs indicates the ability of MFIs to capture a large rung of the poor in any economic system. Examining this measure will provide an insight into the literature of MFIs especially in the often overlooked SSA region.

2.2.4 Efficiency

Efficiency of MFIs signals the ability of MFIs to meet their objectives goals in an efficient manner. There are many indicators recommended to measure whether an MFI is cost effective, such as cost per borrower, cost per loan, or operating expense ratio (Rosenberg 2009). MFI efficiency ratios allow for comparison between the portfolio yield and its personnel and administrative expenses - how much it earns on loans versus how much it spends to make and monitor them. Therefore, the chosen indicator (cost per borrower–see Figure 4 below) measures how much it costs MFIs to serve each client, as it does not penalise MFIs for making smaller loans.

MFI Efficiency

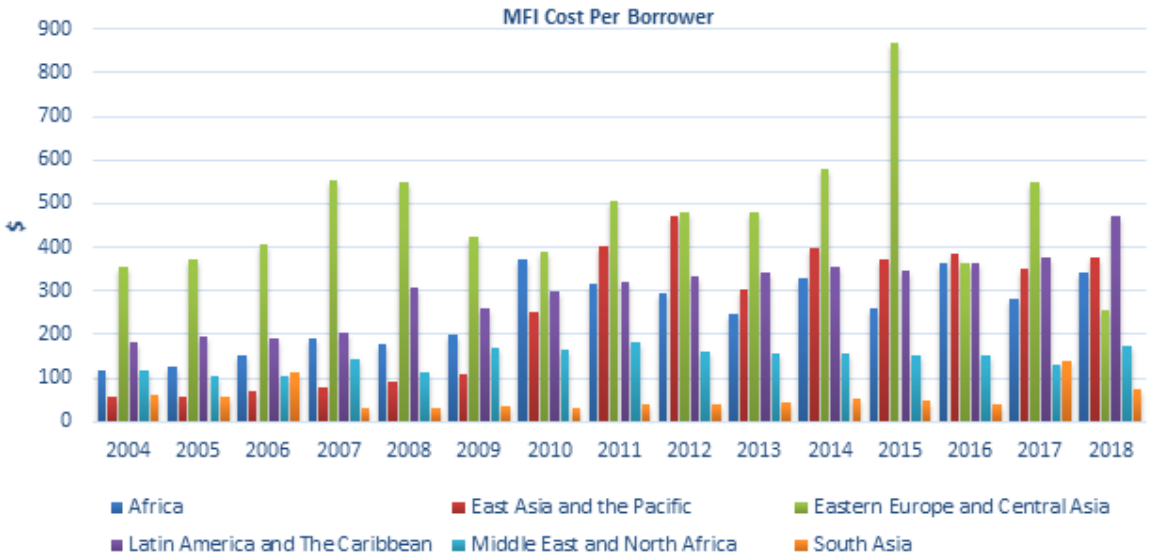

Figure 4:MFI Cost per Borrower all Regions

Source: Authors Own

2.2.5 Portfolio Quality

Repayment of an MFI loan is a crucial indicator if performance, therefore, an MFI must have the ability to collect loans for its success: if delinquency is not kept to very low levels, it can quickly spin out of control (Rosenberg, 2009). Furthermore, loan collection has proved to be a strong proxy for general management competence. Long experience with evaluating microfinance has shown that very few successful projects have bad repayment, and very few unsuccessful projects have good repayment. More than any other indicator, MFI measure of risk, deserves special attention to ensure meaningful and reliable reporting. The standard international measurement of portfolio quality in banking literature is the portfolio at risk. For MFIs, this is measured using the value for portfolio at risk 30 days in arrears (see Figure 5).

MFI Risk

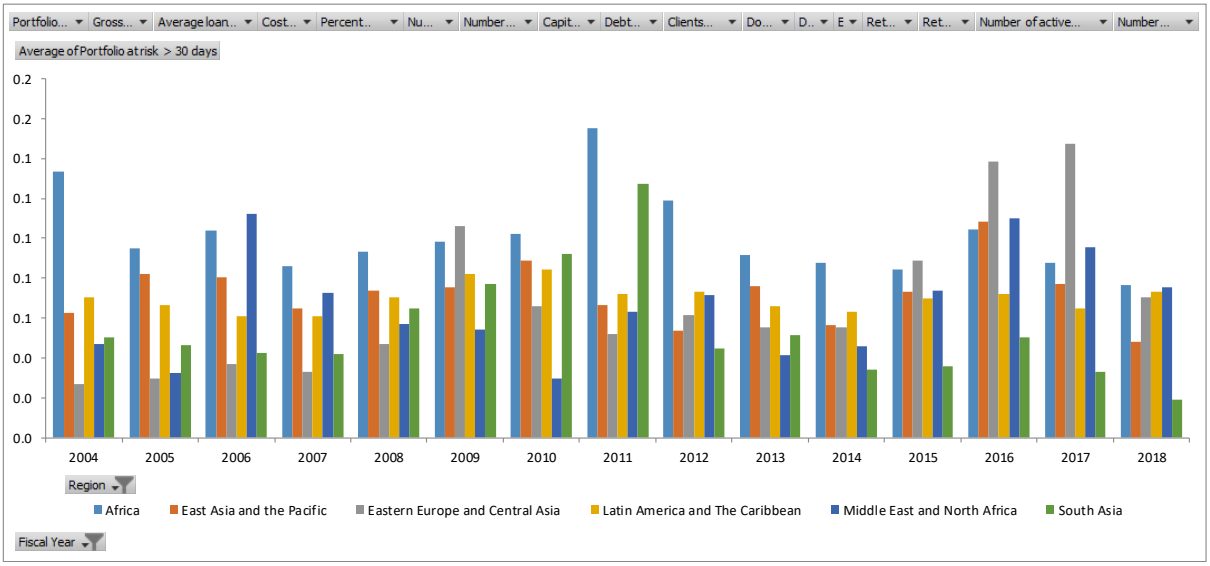

Figure 5: MFI Portfolio at Risk >30 days.

Source: Authors Own

2.2.6 Sustainability vs Outreach

Financial Sustainability in Microfinance ultimately denotes a shift away from donor funding of the sector. Whilst this has been a crucial debate in recent years (especially following the recent credit squeeze), the move away from donor funding to other forms of financing for MFIs have been gaining traction (Armendáriz et al. 2010). This further puts the issue of meeting the social mission of MFIs into question (Abrar and Javaid 2014). This is because donor focused MFIs often focuses on the underserved. On the other hand, commercially funded MFIs often do not reach the poorest of the poor (Arrassen 2017).

The onus on achieving the combined goals of MFIs is therefore often dogged with the problem of a trade-off between social performance and financial performance (Kipesha and Zhang 2013). Whilst there is some consensus that MFIs can improve their financial performance (i.e. achieve sustainability) in order to achieve a targeted outreach (Ngo et al. 2014). Consequently, sceptics point to a trade-off between financial sustainability and social mission (Wagenaar 2012). The social mission refers to the developmental objective of governmental and non governmental players in microfinance (Hossain and Knight, 2010). This mission may be achieved by the number of target borrowers from subsidised or non-profit programs that focus on using microcredit primarily provided to the poor, particularly to the poorest at subsidized interest rates. However, there are some arguments as to whether

subsidising interest rate is justified (Gonzalez-Vega and Graham, 1995; Morduch, 2000; Hossain and Knight, 2010).

Financial sustainability of MFIs places much importance on economic viability. This emphasizes the ability of MFIs to cover all administrative costs, loan losses, and financing costs from the operating incomes (Arsyad 2005). The importance of sustainability of MFIs often stems from the understanding that MFIs need to be economically viable and sustainable in the long run in order to meet their social goals. For instance, some studies have found that there is a strong link between financial sustainability and the achievement of the social objectives of MFIs (Ledgerwood and White 2006). The poor tend to borrow from financially viable MFIs (Zeller and Meyer 2002), which seems to suggest a win-win situation in which MFIs and the poor can earn profits. For those reasons, MFIs ideally focus on viability by reaching the economically active poor with small potential profit businesses instead of focusing on the number of borrowers (Hammill et al.2008). However, the social mission of MFIs can often lead to over-lending in certain situations (i.e. achieve mass outreach) by not providing microfinance to the right people.

The advocates of the social approach would argue that the poorest cannot afford higher interest rates; therefore, financial sustainability in microfinance goes against the aim of serving large groups (Woller *et al*., 1999). The empirical evidence neither shows that the poor cannot afford higher interest rates, nor that there is a negative correlation between the financial sustainability of the institution and the poverty level of the clients (Hermes and Lensink 2007). However, the financial approach is focused more on near-bankable people than on non-bankable people. Clearly, the balance between these approaches is also recognized by Charitonenko and Campion (2003) who argue there are still existing profit and non-profit programs in microfinance.

Most studies focus on financial sustainability and the effects of sustainability on outreach, or more specifically on the number of borrowers (breadth) and the socioeconomic level (depth) (Goldberg, 2005). Goldberg (2005) summarize the evidence in Asia and Latin America, while Lafourcade et al. (2005) focuses on Africa. They provide mixed evidence regarding depth of outreach. The existing studies do not systematically explain differences, nor do they explicitly explore whether there is a trade-off between the depths of outreach versus the struggle for financial sustainability (Hermes and Lensink, 2007). Cull et al. (2007) provides a new

dimension of literature on the financial performance of MFIs based on an extensive comparison of 124 MFIs from 49 countries, providing further empirical evidence of a trade-off between the depth of outreach and MFI profitability.

In summary, the literature shows that neither financial sustainability nor outreach (social mission) is better or more important for MFIs. Rather, it is necessary to have the right mixture because they are typically similar to each other. Ultimately, this combination assures that an MFI can make profits which are reinvested into the business, so it may operate longer. The crucial intention of microfinance is not to have a return on equity but to help the poor to alleviate poverty by making them bankable. Nevertheless an MFI has to take many aspects into account and decide, even before setting up a business, which goals should be achieved. This suggests that good governance is the first step to a sustainable enterprise that can only become sustainable with profitable elements.

2.3 A FOCUS ON MICROFIANCE IN AFRICA

This section of the literature commences with an examination of key MFI performance and outreach indicators, comparing across world regions and African sub-regions. The growth of Microfinance in SSA has been somewhat steady, providing relevance to the sector. For instance, whilst the asset growth has largely declined post 2017, prior yearly data indicates a steady growth on average (see Figure 6 below). Indicators providing information on MFI performance emerge along two main divisions namely; MFI's financial performance and social performance. MFI financial indicators include; Operational self-sufficiency (OSS), Return on Asset (ROA), Portfolio at Risk falling within 30days and 90 days (PAR>30, PAR>90). Conversely, MFI social performance indicators include: the percentage of borrowers who are female; (3) average loan balances; and the number of active borrowers.

MFI Growth

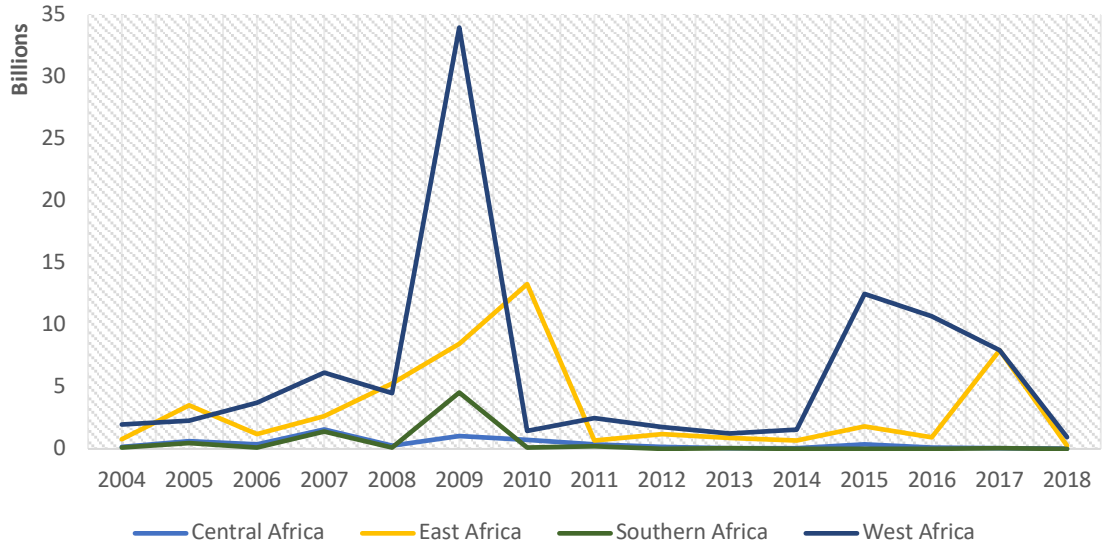

Figure 6: MFI Asset by Regions in SSA: 2004-2018.

Source: Authors own. Data collected from MIX Market database 2018.

2.3.1 MFI Outreach

Africa's microfinance industry has been growing steadily, as evident by the increase in the continent's total asset the last decade. On the whole, MFIs seemed to have weathered the financial crisis better than most industries until 2010, when we look at the industries asset growth rates. Although, in 2010 asset growth rates not only slumped but also contracted and have yet to returned to their pre-crisis growth levels (see Figure 6 above; MIX 2018). However, banks, such as Equity Bank in Kenya and Capitec in South Africa, have garnered special attention over the last years, holding roughly US$1.7 billion and US$2.1 billion, respectively, in 2010.

2.3.2 Outreach to the Bottom of the Pyramid (below National Poverty Lines)

The data reveals that the total assets of microfinance institutions have been growing, despite this, the overall reach of the industry has remained poor in comparison to growth. In the overall picture of the worldwide MF sector, MFIs in Africa make up only a small part of total assets compared with the MFIs in other world regions (Figure 7 below). The existing data reveals that MFIs in Africa currently has just 10million borrowers, from a peak of a peak of nearly 35 million clients in 2016. In comparison, South Asia (SA), MFIs currently serves over 30 million clients, from a peak of nearly 80 million in 2017.

Global MFI Outreach

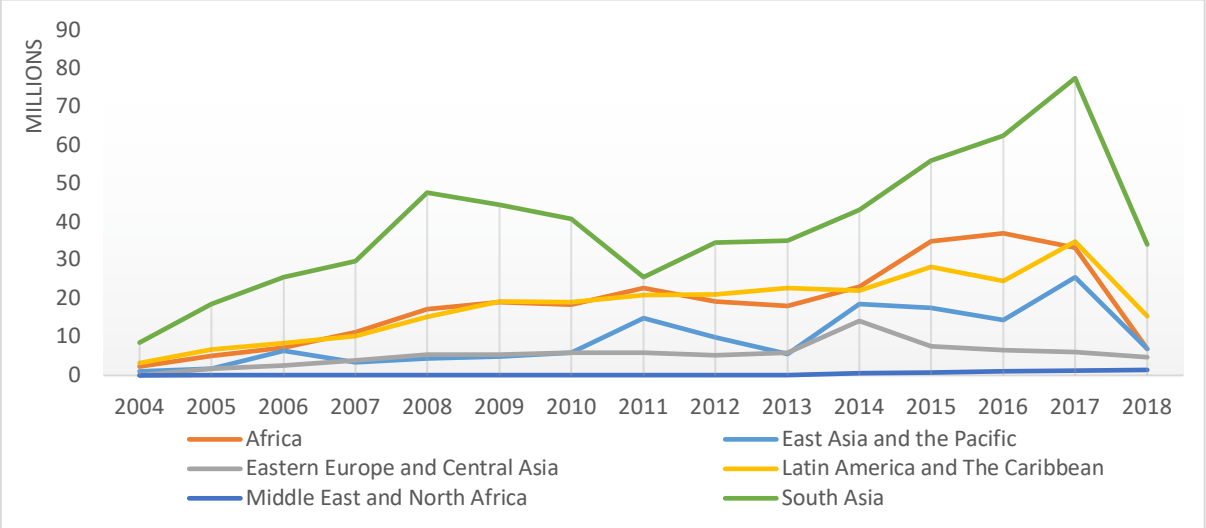

Figure 7: MFI Active Borrowers by Region.

Source: Authors own. Data collected from MIX Market database 2018.

2.3.3 Urban versus Rural Supply of Microfinance

Microfinance has been applauded for reaching into areas and providing access to customers that other financial services have left out. All across Africa, the rural population is vastly underserved by financial institutions. Unfortunately, thus far microfinance has not been the exception to this trend. According to data from the Consultative Group to Assist the Poor (CGAP) and World Bank (2010) on branches across Africa, the distribution of rural microfinance services—such as ATMs and POS locations—is rather slim compared with urban ones.

In much of SSA, the distinction between the urban and rural poor lies in the nature of productive activities both sets engage in. In urban areas, productive activities often comprises units of small and large scale organised industrial activity[26]. Whilst, the transactional nature of labour offer wage dependency for urban dwellers, Economic activities in urban areas improve the purchasing power, and further translates into regularity of income for much of the urban dwellers. In contrast, rural dwellers predominantly engage in lower productive subsistence agriculture, with less predictable income capacity. This distinction -the unpredictability of income- makes this portion of society an ideal target audience for MFIs. However, this same distinguishing factor contributes to a general desertion by MFIs from rural to urban markets, often competing with commercial banks for clients[27]. The Economic activity and productive nature of labour in urban areas translates into increased, and more importantly, sustainable and predictable income generating power for urban dwellers.

Rural economies in SSA are generally mixed; with the rural farming and non-farming population earning its living form both agricultural and non-agricultural activities. The agricultural and non-agricultural labour markets are interdependent, competing with each other for available labour resources, especially during peak agricultural season. Therefore, exchange of labour in rural areas takers a variety of forms. For example; wage labour, agency contract, provision of personalised services, self-employment, and trade. Smallholder production, commercial agriculture, nonfarm activities and migration (Leavy and White 2000).

[26] Such as; Manufacturing and services sectors
[27] This, in addition to high transaction costs associated with micro-banking activities in rural areas

An applicable model of structural economic growth and development offers a coherent path towards a sustainable transition from rural to urban markets. For instance, the Lewis development model outlines the progress from a traditional economy to an industrialized one. Specifically, this model of structural change comprise of a dualistic economy, consisting of rural agriculture and urban manufacturing sectors. Initially, the majority of labour is employed upon the land, which is fixed resource. Labour is a variable resource and, as more labour is put to work on the land, diminishing marginal returns eventually set in. This therefore leads to insufficient tasks for the marginal worker to undertake, resulting in reduced marginal product and underemployment. Conversely, urban workers engaged in manufacturing tend to produce a higher value of output than in comparison to rural workers. The resultant higher urban wages might therefore tempt surplus agricultural workers to migrate to cities and engage in manufacturing activity. High urban profits would encourage firms to expand and hence result in further rural-urban migration.

Reaching out, MFIs face the same costs as banks, in addition, infrastructure deficiencies make this effort costlier in Africa than in other world regions. Undoubtedly, MFIs have various ways to reach out to their rural clients—not only through extending their branch networks. Loan officers can travel to disburse loans or at least make trips to collect payments on loans, hence improving access for rural customers. Measuring the number of rural clients rather than the rural branch network would thus capture the "real" distribution of MFI services to those areas. Unfortunately, the data on MFI rural and urban client distribution, collected and openly available on MIX (Microfinance Information Exchange), do not show even these methods of outreach to have been outstandingly successful. A look at the median MFI shows that most clients are from urban and semi-urban areas; only 37 percent of all clients come from rural areas. Although this distribution is not representative—so far only a few MFIs report to this relatively new database—it shows that in order to reach more rural clients, new ways have to be explored.

2.3.4 A Special Focus on Female Borrowers in Africa

One of the most obvious reasons why microfinance has focused on women, especially in its infancy, is the disproportionate effect of poverty and financial exclusion on women within the continent.

MFI Active Borrowers

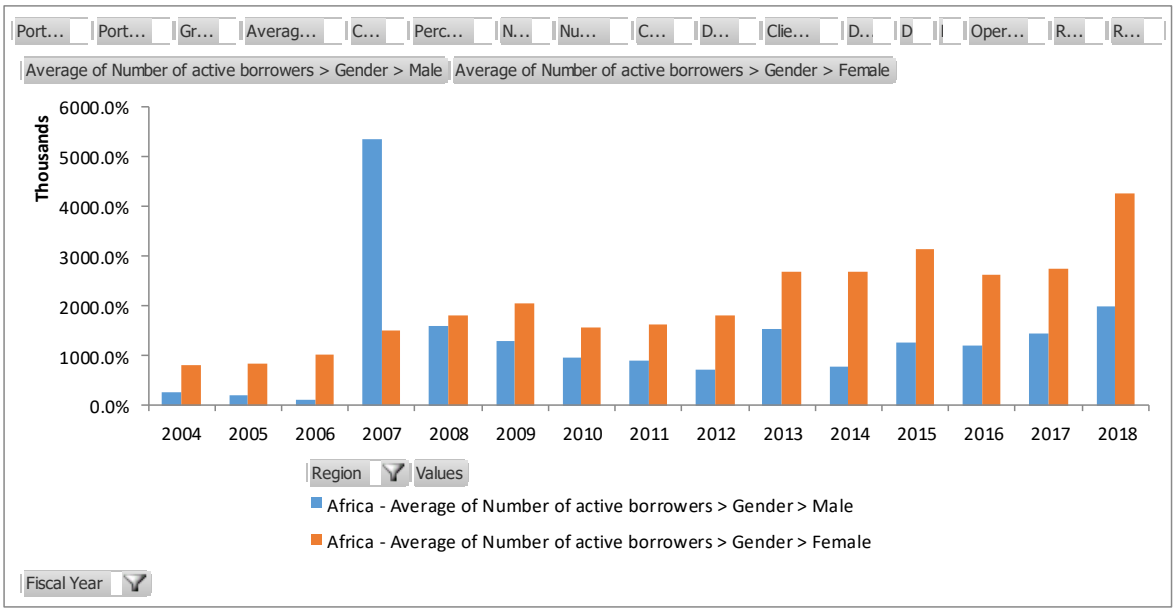

Figure 8. Number of Active Borrowers Female & Male Comparison.

Source: Authors own. Data collected from MIX Market database 2018.

In Africa overall, the average number of active borrowers of female clients compared to male has been constantly higher in comparison to male clients, bar one year in 2007 (see Figure 8 above). In Figure 9 below, we observe that the number of female active clients in comparison to MFI total active borrowers in Africa further reveals commitment to focus on female borrowers.

MFI Female Borrowers

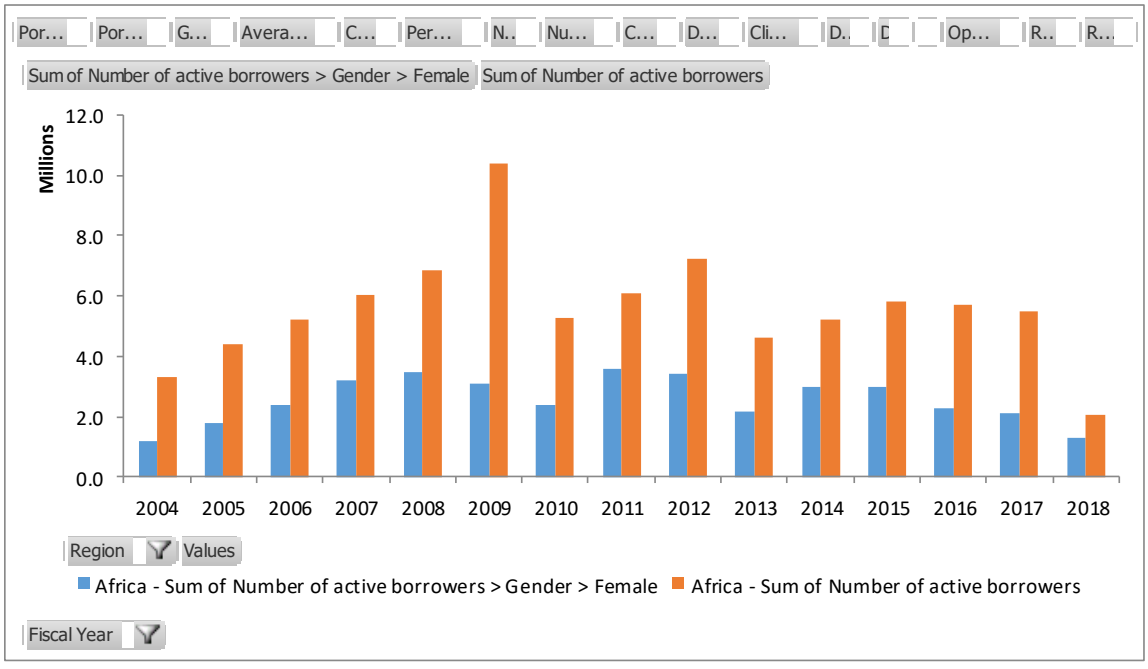

Figure 9. Ratio of Women to Total Borrowers, 2004-2018.

Source: Authors own. Data collected from MIX Market database 2018.

Further observation of the data (in Figure 10, below) suggest that West Africa (WA), and East Africa (EA), show the highest levels of female participation as a percentage of total MFI active borrower clients, in comparison to Central Africa (CA) and Southern Africa (SA).

MFI Female Participation

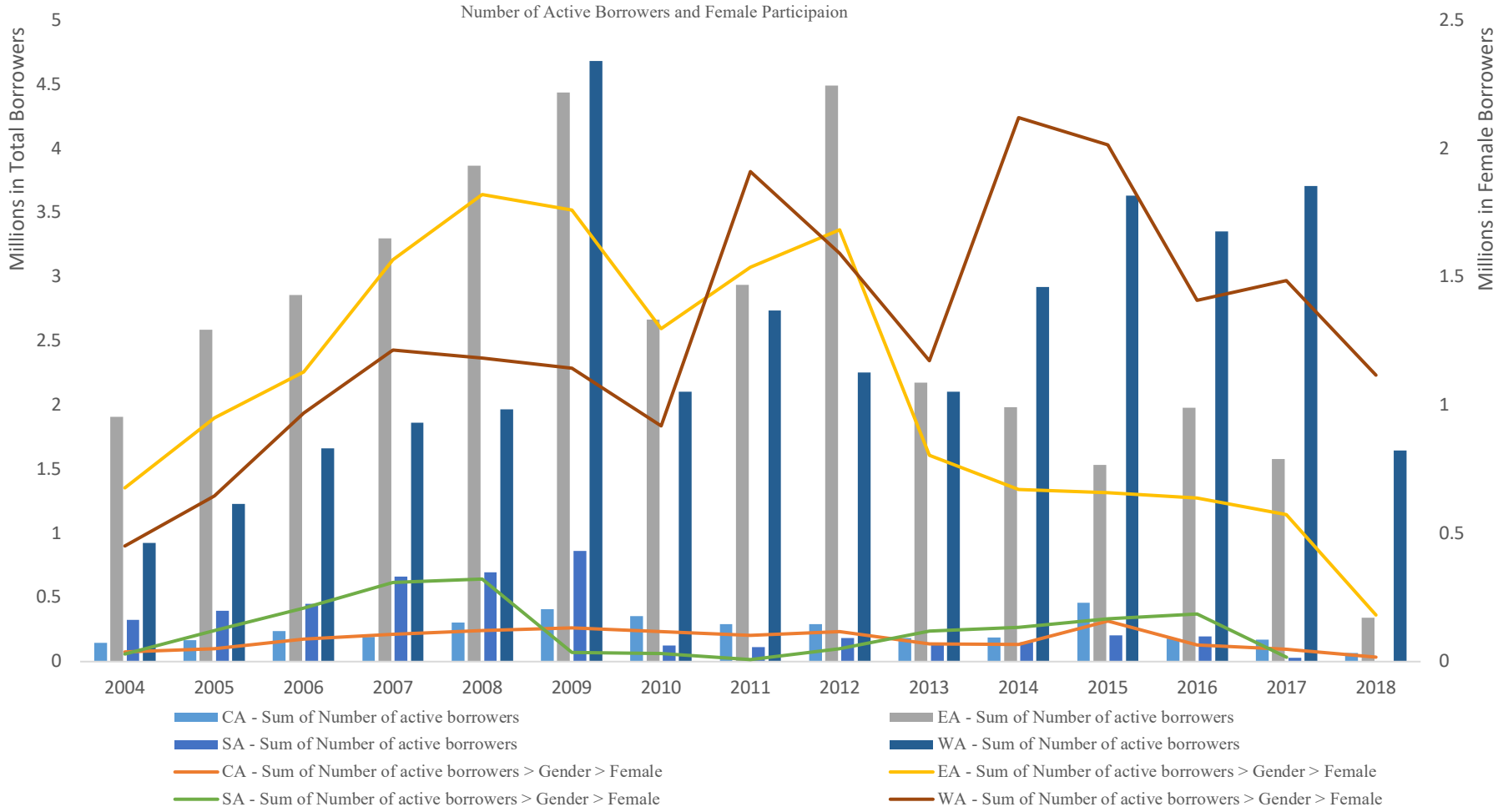

Figure 10. Number of Active Borrowers vs MFI Female Participation.

Source: Authors own. Data collected from MIX Market database 2018.

2.4 MFI SUSTAINABILITY

Theoretically sustainability has been defined as permanence (Navajas et al., 2000). According to Navajas et al., (2000) financial sustainability of a microfinance institution is the ability to meet its operating cost obligations from its generated revenue without seeking external finances. Dunford (2000) put it plainly that financial sustainability as the "ability to keep on going towards microfinance objectives without continuous support from donors." Barr (2005) argues that financial sustainability in the microfinance industry does not seem to be confined to a particular lending methodology, legal status of the entity or profit orientation.

Many microfinance institutions are not financially sustainable in spite of the rise in the number of commercially oriented institutions. In the last decade alone, there has been series of microfinance failures reported in Ghana, India, Morocco, Nicaragua, Pakistan and Zambia (Bateman 2011). Indeed, commercialisation of the microfinance industry has not translated into increased financial sustainability of microfinance institutions. This raises questions that warrants empirical examination and the very question is the objective of this project – What determines the capital structure and what are its impacts on the performance (and thereby sustainability) of MFIs in Sub-Saharan Africa? Even though, there has been enormous progress regarding attaining financial sustainability, for many microfinance institutions in SSA achievement that has been elusive. As highlighted, MFIs are still largely unsustainable (Bogan 2012). This is not surprising due to high transaction costs of managing small uncollateralised loans (Morduch 1999). Nevertheless, moving towards financial sustainability improves efficiency, discipline and transparency of microfinance institutions, and also the industry's longevity.

The issue of financial sustainability of the MFI sector in SSA is directly linked to financial inclusion. This from the rationale that with sustainable institutions, the MF sector will be better placed to meet the needs of the underserved in society, without the need for donor interference. Thus, the ideal situation for MFIs lie in mobilising deposits, and applying credit creation theories of banking, in order to meet/fulfil the demands for credit. This however would rely on a good environment of quality regulation, so as to avoid issues of misuse of client's deposits, and ensure long-term health of the sector. However, a look at the institutional environment quality, suggest that SSA possesses the least quality institutions for regulatory practices. As indicated by the questionably low levels of the sustainability of MFIs in SSA (in comparison

to other regions – see Table 2.1 below). In addition to this, financial inclusion levels lag behind on all development/measurement scorecards in SSA.

MFI Sustainability Africa

MFI Average OSS	Regions						
Year	**Africa**	**EAP**	**EECA**	**LAC**	**MENA**	**SA**	**Total**
2004	1.059	1.272	1.324	1.135	1.118	1.106	1.168
2005	1.020	1.232	1.564	1.186	1.155	1.152	1.223
2006	1.066	1.269	1.315	1.140	2.915	1.073	1.232
2007	1.040	1.320	1.287	1.145	1.238	1.091	1.177
2008	1.075	1.206	1.269	1.139	2.042	1.034	1.190
2009	1.015	1.201	1.212	1.090	1.375	1.025	1.114
2010	1.062	1.200	1.333	1.145	1.430	1.106	1.177
2011	1.151	1.190	1.313	1.101	1.336	1.095	1.165
2012	1.024	1.263	1.357	1.150	1.472	1.095	1.170
2013	1.097	1.232	1.313	0.962	1.207	1.143	1.112
2014	1.058	1.201	1.296	1.115	1.191	1.167	1.149
2015	1.058	1.174	1.133	1.121	1.080	1.200	1.134
2016	1.112	1.124	1.013	1.119	1.198	1.233	1.132
2017	1.095	1.175	1.067	1.119	1.355	1.165	1.135
2018	1.117	1.145	1.168	1.088	1.404	1.316	1.169
Grand Total	**1.065**	**1.221**	**1.291**	**1.117**	**1.493**	**1.119**	**1.165**

Note: OSS (Operational Self Sufficiency), EAP (East Asia Pacific), EECA (Eastern Europe and Central Asia), LAC (Latin America and The Caribbean), MENA (Middle East and North Africa), SA (South Asia).

Table 2.1: MFI Operational Self-Sustainability by Regions

Source: Authors own. Data collected from MIX Market database 2018.

The data is further depicted in figure 12, in which the average values of sustainability of the global MFI sector is collected. MFIs in SSA appear to be lagging behind in comparison to other regions (see Figure 11 below).

MFI Global Sustainability

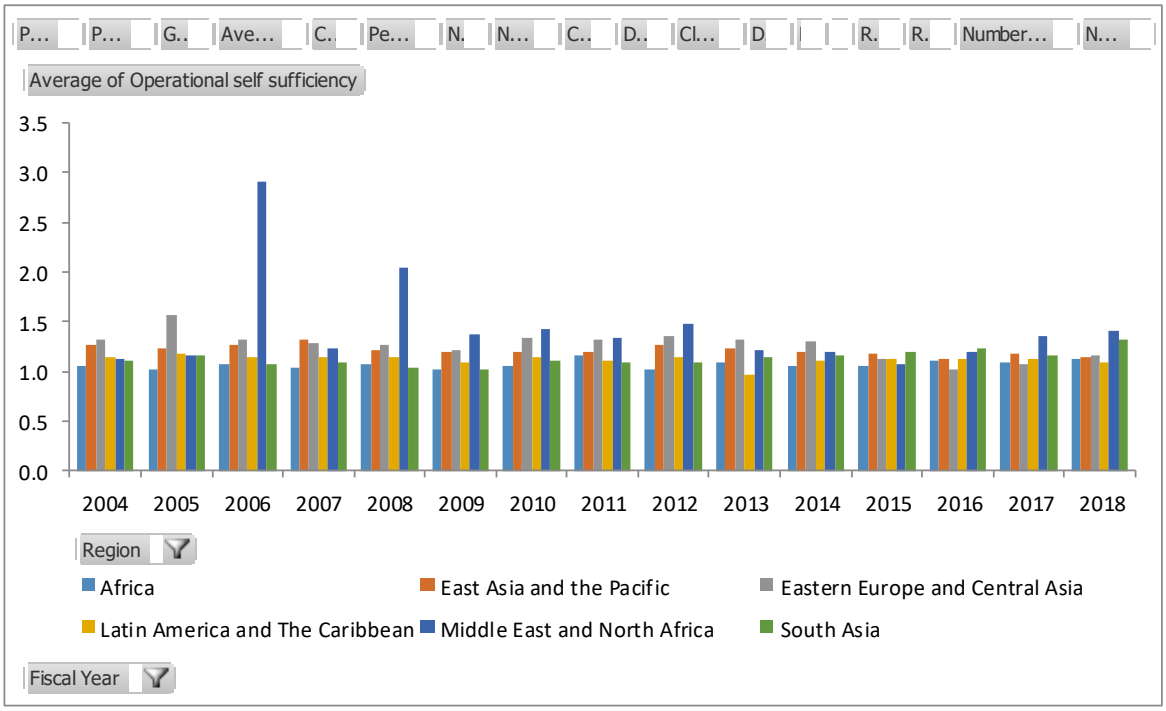

Figure 11. Operational self-sufficiency of MFIs by region.

Source: MIX Market database 2018.

2.4.1 MFI Profitability SSA

MFI profitability measured by return on asset (ROA), and return on equity (ROE), captures the average return on assets and capital employed by MFIs (Rosenberg 2009). The data reveals that MFIs in SSA are not very efficient in the use of assets and equity offerings. However, the data suggests that MFIs in SSA have better utilisation in the use of assets in comparison to equity returns (Figure 12 below). MFIs return on average roughly -15% on the equity obtained, whilst asset returns move closer to the region of between 5% and -5% see Figure 12. This could suggest that efficiency in operations for MFIs in SSA is not optimum.

MFI SSA Profitability

Figure 12. MFI Profitability SSA Region.

Source: Authors own. Data collected from MIX Market database 2018.

2.4.2 MFI Portfolio at Risk SSA

The risk component of MFI operations (PAR>30days) amongst operators in SSA is unique. The data reveals that on average risky loan portfolios have been on the rise. Although the risk profile of all the regions on average largely fall within 5 to 15 percent of MFI total loan book., however, we observe recent spikes in the loan portfolio risk for MFIs in the central Africa region (CA), whilst in the west African (WA) region, we observe a decline in recent years. Whilst a fluctuating figure can be observed in east Africa (EA), southern Africa (SA) region risk on average appear subdued overtime (see Figure 13 below).

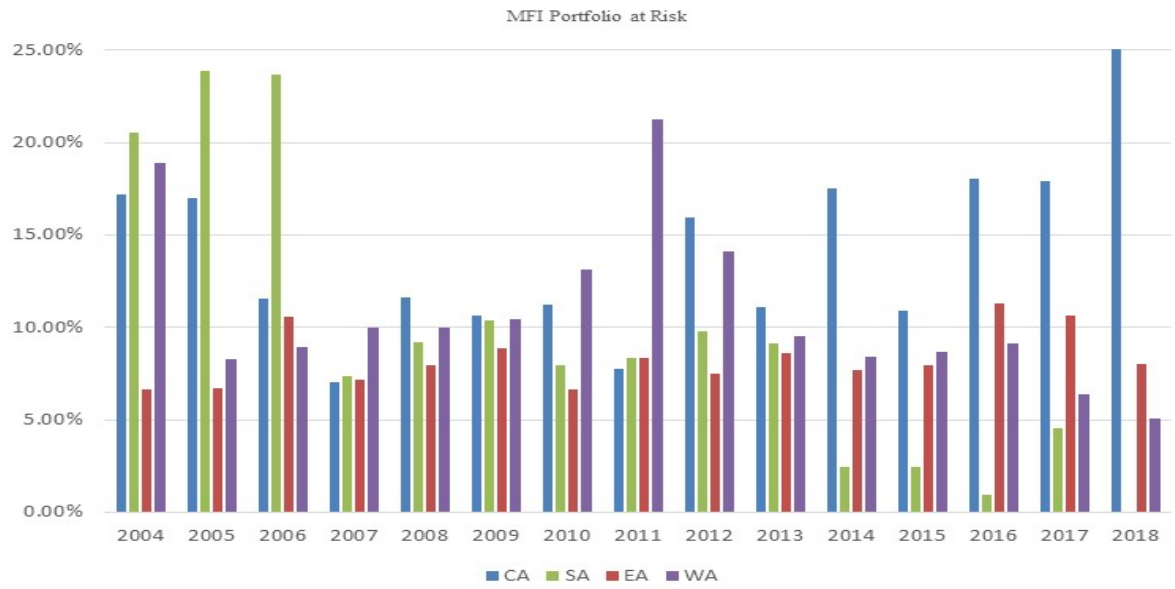

Figure 13. MFI Portfolio at Risk SSA.

Central Africa (CA), South Africa (SA), East Africa (EA), West Africa (WA).
Source: Authors own. Data collected from MIX Market database 2018.

2.4.3 MFI Efficiency SSA

According to Rosenberg (2009), measured in terms of costs as a percentage of amounts on loan, very small loans are relatively expensive to make than large ones. Only a few extremely efficient MFIs have an operating expense ratio below 10%; commercial banks making larger loans usually have ratios well below 5%. The median ratio of MFIs reporting to MIX Market for 2006 was about 19%. When a microfinance market starts to mature and MFIs have to compete for clients, price competition on interest rates will usually push MFIs to become more efficient. Observing the data, in Figure 14, we observe that MFIs in central (CA), and east-Africa (EA), on average have the highest cost of loan servicing amongst the sample observed.

Figure 15: MFI Efficiency

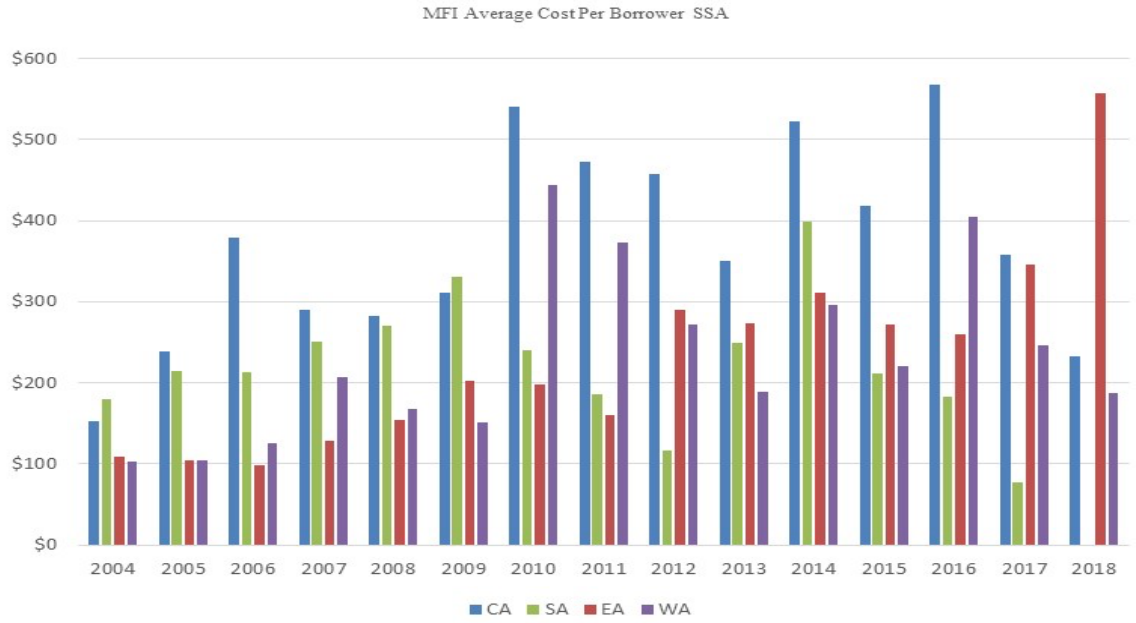

Figure 14. MFI Efficiency (Cost Per Borrower) SSA.

Central Africa (CA), South Africa (SA), East Africa (EA), West Africa (WA).
Source: Authors own. Data collected from MIX Market database 2018.

2.4.4 MFI Outreach SSA

The data on MFI outreach in SSA (see Figures 3, 8 and 9 above) reveal vital information of the MFI sector in SSA. Although total borrower and depositor growth rates were recorded at 11 percent and nearly 20 percent, respectively, in 2009, these rates contracted by 31 percent and 15 percent, respectively, in 2010. The measure of MFI social performance measured by MFI percentage of female borrowers, reveals figures greater than 50% as expected (see Figure 15). However, the Central African (CA) on average offers less than 50% of its resource to non-female borrower.

Consequently, the measure off MFI depth of outreach (see Figure 16 below), captures the depth of reach of MFIs in SSA. Specifically, this measure captures just how low to the bottom of the pyramid do MFIs lend to. Measured by average loan balance per borrower, the indicators supports the idea that the lower the average loan balance, the lower reach MFIs possess. The data in Figure 16, reveals that MFIs in southern Africa (SA), perform best in reaching to the poorest in society. The remainder of the data reveals that on average MFIs in other regions such as; west Africa (WA), central Africa (CA), east Africa (EA), uniformly show increasing average loan balance per borrower numbers over time. From an average of between $250-$750 to more than $1,000 average loan balance per borrower. This suggests that MFIs are

increasingly detached from rural lending, preferring to lend and operate in urban areas. This action directly impacts on their depth of outreach, thereby directly impacting MFIs lending profile in SSA.

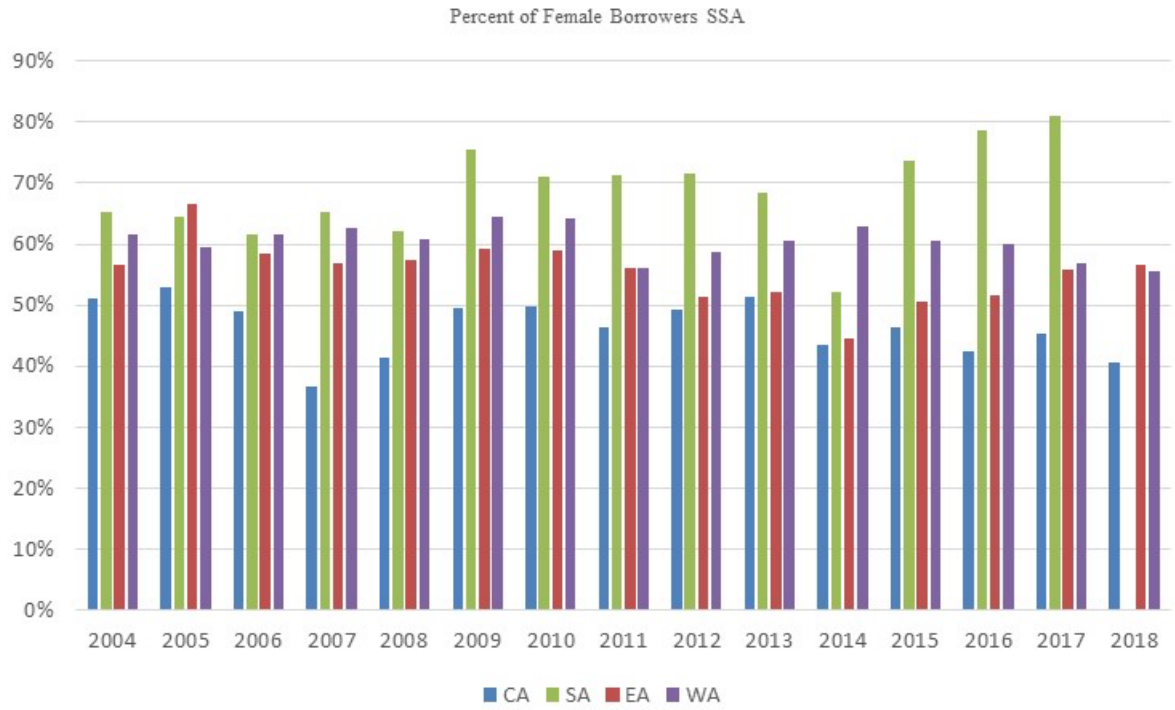

Figure 15. MFI Percent of Female Borrowers SSA.

Central Africa (CA), South Africa (SA), East Africa (EA), West Africa (WA).
Source: Authors own. Data collected from MIX Market database 2018.

Figure 17: MFI Average Loan Balance per Borrower

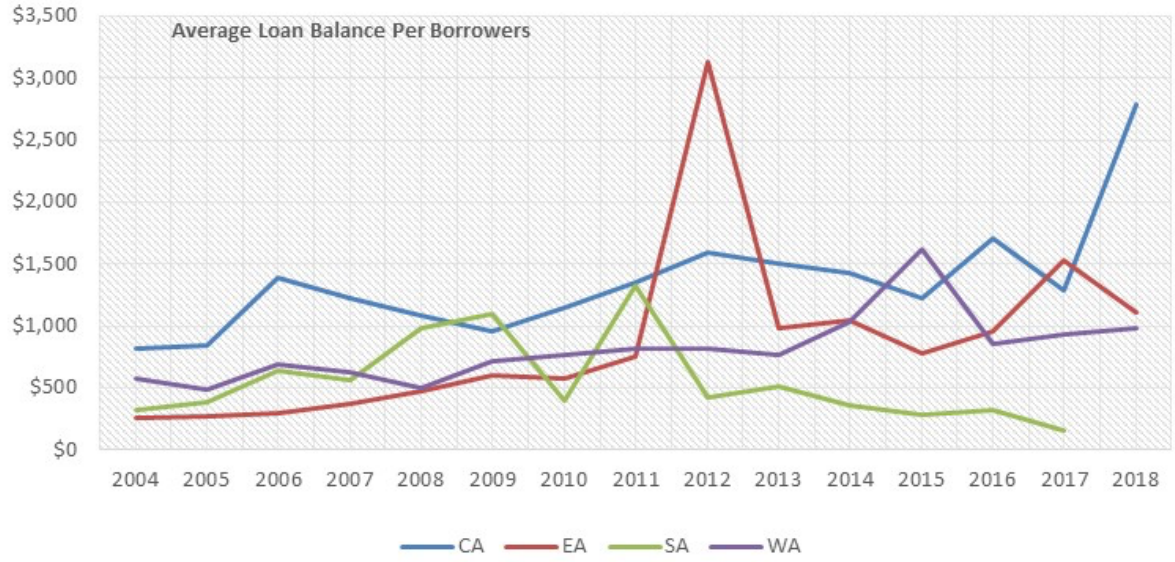

Figure 16. MFI Average Loan Balance per Borrower SSA.

Central Africa (CA), South Africa (SA), East Africa (EA), West Africa (WA).

Source: Authors own. Data collected from MIX Market database 2018.

2.4.5 Conclusion

Microfinance has yet to be proven to be an appropriate, effective, and powerful tool for the poor, poverty reduction and financial inclusion, in line with the recently revised Millennium Development Goals (especially for Africa-SSA). The review of MF literature has raised some important issues.

First, microfinance clearly cannot immediately turn the poor into non-poor. Whilst MF is praised as a long-term policy tool of support for the underserved and excluded, as implemented in SSA, it is largely inefficient. An effective implementation of this policy would/should work in concert with vital processes such as an active industrialisation drive (within an enabling institutional environment and good governance framework), in tandem with improving human capital development, and sustaining stable macro-economic conditions (Vanroose 2010).

Second, donor funding tends to become insufficient to meet the continual demand for well-designed financial products from new and existing clients (Fernando 2004, De Haan and Lakwo 2010). Therefore, access to commercial funds is likely to encourage MFIs to move out of heavily subsidised operations and enter into commercialisation in order to achieve efficiency and sustainability (Drake and Rhyne 2002, Armendáriz et al. 2010, Abrar and Javaid 2014). Although several studies have focused on investigating the impact of microfinance or the trade-off between social mission and financial sustainability (Annim 2012), we approach this from the viability of MF as a tool for sustainable long-term tool. Which can remain relevant/viable through the machinery of quality institutional environment, ultimately culminating in improved capital structure, in the delivery of in providing financial services to the poor in the long run.

Third, the funding of microfinance has been identified to play an important role in both the economic viability and sustainability of MFIs, in addition to providing a potential relationship with the institutional environment in SSA (Fehr and Hishigsuren 2006, Annim 2012, Bogan 2012).

Fourth, lending methodologies, savings, empowerment of women and the impact of microfinance are likely to depend on the legal status, profit status and regulated status of MFIs

(Tchakoute-Tchuigoua 2010). This suggest that the institutional environment could play a key role in elevating the practice and funding of MFIs in SSA.

Fifth, these studies have shed light on the link between funding and microfinance performance as one of the important gaps in the existing literature (i.e. how MFIs choose financial structure to improve their performance) (Annim, 2012; Dorfleitner et al., 2016; Hermes and Hudon, 2018). Therefore, in the following chapters this study attempts to fill these gaps in the literature by investigating the funding of microfinance and establishing the effects of the institutional environment on financial structure and the diverse aspects of MFI performance.

The next section explores financial inclusion and the role of MF within the context of eliminating financial exclusion in SSA. And questions if MF in its current state of play in Africa is really a solution for achieving universal financial inclusion for all in 2020.

Chapter 3 FINANCIAL INCLUSION and MFI INSTITUTIONAL FACTORS

In the wake of heightened attention on poverty eradication, much attention has been accorded financial inclusion. Major international development organisations[28], have a view that the provision of financial services to the un-bankable and financially excluded is key in delivering social stability, economic opportunities, and sustainable development.

Microfinance has been frequently celebrated as a panacea for sustainable remedy of poverty, though improved financial inclusion amongst the poor in SSA. Since their appearance, MFIs have been credited with the promise of decreasing the levels of financially excluded people on the continent. Current levels of exclusion in SSA suggest the need for an intervention. For instance, according to Finscope (2010) South Africa has an exclusion level of 23.5 percent, whilst at the other end of the spectrum, Mozambique is 78 percent, with many other countries in between (see Figure 17 below).

Figure 18: Financial Exclusion Africa (Peer Comparison)

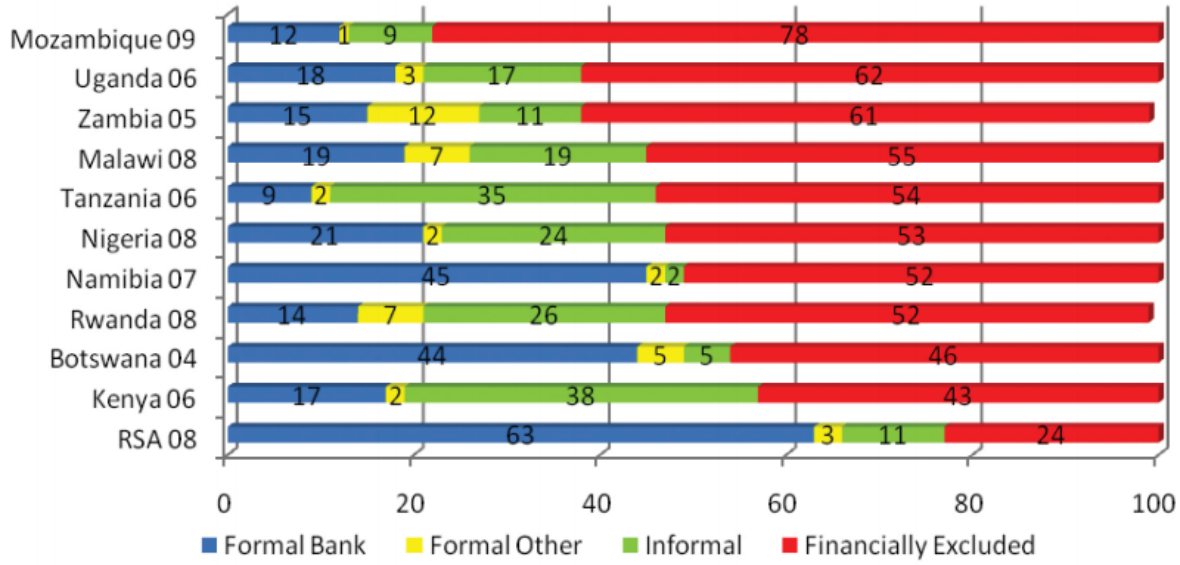

Figure 17: Peer Comparison of Access to Financial Services in Africa

Source: Finscope Financial Access Africa Survey.

This section explores the literature on the question of MFIs supposed contribution on the promise of financial inclusion, with aims to provide an overview of the actions of MFIs in SSA.

[28] This includes: The World Bank Group, The European Union in co-alliance with the G-20 group of nations, and the WB partner institutions.

In view of the growing trend of financial exclusion, amongst the world's poor and vulnerable, the WB Group set a goal of achieving Universal Financial Access (UFA) by the year 2020 (WB 2015). Following this, unanimously, the G-20 governments in collaboration with international development institutions have highlighted financial inclusion as a key development target, with pledges to support UFA 2020. More notably; as one of its key principles, the consultative Group to Assist the Poor (CGAP)[29] highlights financial inclusion and the integration of MF with the formal system in developing nations as a key economic empowerment policy. Despite efforts to turbo charge financial inclusion amongst developing economies, financial inclusion growth rates in much of SSA is at snail pace (Chibba 2009). For example according to Klapper and Oudheusden (2015), whilst inclusion rates have increased, half of the world's adult population still lack access to financial services[30]. Hence, in-order for MFIs to be effective in enabling financial inclusion and improving the welfare of the world's poor, MFIs have to be sustainable, and efficient in managing its resource base.

The question of MFI performance, therefore comes into question. If MFI performance is improved, can they be more efficient in meeting their mandate? Research suggest[31] that one way to achieve this is to improve the quality of the institutional environment in which these institutions operate in. Barry and Tacneng (2014), Tchakoute Tchuigoua (2014) Ajide and Raheem (2016) highlight the important role the institutional environment plays in enabling a conducive environment to enhance MFI performance. Furthermore, Chadee and Roxas (2013), argue that efficient institutional frameworks reduce transaction costs and the cost of enforcing contracts, thereby promoting business development and growth, whilst Aidis (2005), Eifert et al. (2008) show that sluggish economic development and poor financial performance of many firms in developing countries can be attributed to poor institutional environment.

Although microfinance has progressively become a policy tool in combatting financial exclusion in SSA[32], the challenges facing the industry remain rife. In addition to

[29] CGAP is a multi-donor organisation dedicated to advancing microfinance in its goal of universal access to finance, and poverty eradication.
[30] World Bank estimates this figure to be 2billion adults world-wide, with one third from SSA region.
[31] Demirguc-kunt and Maksimovic (1999), Booth et al (2001), (Bogan 2008), Ahlin et al., (2011), Fan et al. (2012), Tchuigoua (2014), Barry and Tanceng (2014).
[32] Banerjee and Duflo, (2011), Morduch and Armendariz (2010), Baye (2013), Hartaska and Nadolnyak (2008),

unsustainability, MFIs face institutional challenges. For example Earne and Nelson (2013) suggest that the regulatory framework, openness, and the level of development of the financial system impacts on MFIs and in-turn promotes economic growth[33]. However this has not been tested on an appropriate sample of MFIs in SSA. Furthermore, in the area of regulation, quality institutional, governance and transparency, the SSA region still falls behind in enabling a conducive environment for development efforts (Asongu and Nwachukwu 2016). In addition, the institutional environment in SSA is characterised by high corruption levels, weak rule of law, and weak regulatory environment for MFIs. Consequently, laws that govern creditor and shareholders rights are either weak, or seldom enforced (Bräutigam and Knack 2004). All the above could impact on the ability of MFIs to attract attractive quality capital, thereby influencing their capital structure. It can therefore be argued that rife corruption and government bureaucracy creates an unfavourable business environment for MFIs. Schicks (2013), observe that the insurmountable procedural and administrative difficulties often hinders setting up an MFI to tackle financial exclusion in rural areas. Furthermore, Justesen and Bjørnskov (2014), show that weak institutional environments often encourages fraudulent activities, whilst (Barry and Tacneng 2014), observe that inadequate consumer protection policies and weak rule of law encourages over-borrowing and loan delinquencies. The above bottlenecks could therefore be a hinderance not only to MFI efficiency in meeting their mandates, but also deprive the sector of much needed growth, often accrued through the benefits and gains from transparency and good governance**.**

3.1 FINANCIAL INCLUSION

Financial exclusion has long been present in societies across the world, from 12th century western societies to present day unique communities in the most remote areas of Africa. It is a phenomenon that affects a cross section of society, in what is documented to be deprived communities. The occurrence of FI begins form the problem of financial exclusion; a phenomenon used to describe the exclusion of sections of individuals from core/basic financial services such as; credit, savings and insurance services. The idea of exclusion does not exclusively associate with financial services, this phenomenon cuts across a larger spectrum of the financial world. The Demirgüç-Kunt (2014) report suggests that this phenomenon includes

[33] Rodrik et al. (2004), Kinda and Loening (2010), Ahlin et al. (2011), Tchuigoa (2014), and Ajide and Raheem (2016).

a multitude of dimensions, reflecting the variety of possible financial services, from payments and savings accounts to credit, insurance, pensions, and the securities markets. In addition this can also be viewed differently for individuals and firms.

The issue of financial exclusion has become important in world economics. This comes as a result of research which identifies with the availability of financial services which allows individuals and firms to take advantage of business opportunities, increase prospects of human capital development[34], save for retirement, pursue leisure, and insure against risks (Beck et al. 2008). While this may not be obtainable in some parts of the world, as a result of financial exclusion, efforts have currently been made to root-out the issue of exclusion and bring-in increased levels of financial inclusion to drive grassroots development in areas of the world; one of such area is sub-Saharan Africa. Therefore, the difficulty for policy makers is often implementing differentiating policies catering to the segment of the population –of the-financially segregated as a result of involuntary segregation.

3.1.1 Access vs Non-Access

The literature on FI often congregates the use-of and access-to financial services interchangeably, for instance; Kumar and Mishra (2011), and Egbide *et al.,* (2015). However, it is important to distinguish the two dimensions. The actual use of financial services and access to financial service are two separate issues, albeit overlapping in areas. Demirgüç-Kunt *et al.*, (2017) raises the issue/point of voluntary exclusion[35]. On the other hand, access to financial services denotes the accessibility of finance to anyone in need of it. In addition to voluntary addition, some users of financial services could also be involuntary excluded. This could be or several reasons; firstly, individuals or micro-small firms could be un-bankable from the perspective of commercial financial institutions and markets because they have insufficient income or represent an excessive lending risk. In some instances, discriminatory practices, lack of information, shortcomings in contract enforcement, poor information environment, price barriers as a result of market imperfections, ill-informed regulations, or the political capture of

[34] Such as; Investment in education and other necessary knowledge required for the advancement of an individual's competencies and other attributes required to produce goods, services or form ideas in market circumstances. Human capital of the economy, largely equates to the aggregate human capital of an economy. Which will be determined by national education standards.

[35] A type of exclusion of which is self-imposed on by individuals. For instance, due to cultural, religious and indirect access to financial service. Individuals and firms may chose not to use financial services even when they have access to it. Indirect reasons could be the ability to use someone else's account.

regulators (Annim 2012). Many of the recent drive towards increased financial inclusion particularly focuses on the involuntary excluded persons in largely developing countries of the world. The argument for this stance assumes that, as more individuals have access to MFI services, this leads to improved access to finance, enabling individuals and firms to take advantage of business opportunities, increase prospects of human capital development[36], save for retirement, pursue leisure, and insure against risks (Beck et al., 2006).

3.1.2 Exclusion Theory

Financial markets are markedly different from the markets for other goods and services (Petrosky-Nadeau and Wasmer 2017). For example, credit markets often encounter problems that restrict and/or reduce the appetite for participation by market participants, for instance, liquidity. However, this may not necessarily equate to an access problem that might be obtainable in a market for cell-phonies for example. Economic theory asserts that prices adjust such that, at any point of a market equilibrium, supply must always equal demand (Varian, 1992). Therefore, in a market for cell-phones; as the demand for cell phone increases (exceeds supply), the price of cell-phones will then rise until demand and supply are equated at a new equilibrium price-level. Hence, those willing to pay the price are then able to buy a cell-phone. Consequently a higher price could alienate unwilling consumers out of the market. Hence, if the price-level functions as expected, the problem of access should not exist.

Varian (1992) however show why financial markets, particularly credit and insurance markets are different. A theoretical explanation put forward on the problem of exclusion from financial services emanates from the phenomenon of moral hazard and information asymmetry. Particularly, they show that information problems can lead to credit rationing and exclusion from financial markets even in a state of equilibrium. Credit and insurance markets are often characterised by serious principal agent problems, which includes adverse selection[37] and moral hazard[38]. The issue of rationing may also arise in a competitive credit market because interest rates and bank charges affect not only demand, but also the risk profile of a bank's customers:

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[36] Such as; Investment in education and other necessary knowledge required for the advancement of an individual's competencies and other attributes required to produce goods, services or form ideas in market circumstances. Human capital of the economy, largely equates to the aggregate human capital of an economy. Which will be determined by national education standards.

[37] Adverse selection in this relationship characterises the fact that borrower's les seriously intent on repaying loans are more willing to seek-out external finance.

[38] This constructs/illustrates the behaviour of the loan recipient. Once loan is received, the borrower of the loan may use the funds in ways that are inconsistent with the interest of the lenders.

higher interest rates tend to attract riskier borrowers (adverse selection and change repayment incentives (moral hazard). Hence, the expected rate of return on a loan will increase less rapidly than the interest rate and, beyond a point, may actually decrease because banks do not have perfect information about the credit worthiness of prospective borrowers, financial exclusion will persist at market equilibrium. Furthermore, because it is not possible to supply more loans if the bank faces excess demand for credit the bank will deny loans to borrowers who are observationally indistinguishable from those who receive loans. Rejected loan applicants would not receive a loan if offered to pay a higher rate and are thus denied access. In other words, they may be bankable, but are involuntary excluded. In SSA the data reveals that the majority of excluded are involuntarily exclude from financial services. In addition to information asymmetry and moral hazard problems, this could also be the case of lack of institutional infrastructure fracturing the market for financial services. Martinez and Krauss (2015) show that technological advancement can improve the access to financial services to those at the bottom of the pyramid. However, an examination of the current state of infrastructural enablement for the pick-up (increased usage) of finance -by those in dire need for it- is still plagued by bottlenecks.

Moral hazard and adverse selection issues have been well documented in insurance markets. For instance Chiappori and Salanie (2000), test for, and establish the existence of asymmetric information in insurance markets, whilst Wolfe and Goddeeris (1991) accesses the impact of moral hazard on health insurance markets, and finally, Finkelstein and Poterba (2002) show evidence from the UK in insurance annuity markets. Although, this is to a lesser extent represented/affected in other financial products or markets such as; deposits and payments. However, the agency conundrum could also occur from the perspective of depositors, in particular small depositors, who entrust their financial resources to intermediaries who are not easy to oversee (Benston 1994). In other cases, poor (or complex) institutional procedures governing financial services could exacerbate this process. For instance the documentation requirements for opening an account, such as the existence of a formal address or a formal sector employment (Demirgüç-kunt and Klapper 2012). In the institutional sense, high fixed costs and prices associated with deposit or payment services make it impossible for large segments of the population (especially in rural areas) to use these basic services (Litt *et al.*, 1990; Collier and Gunning, 1999; Demirguc-kunt and Klapper, 2012; Diniz, Birochi and Pozzebon, 2012; Tchouassi, 2012).

This failure reflects a lack of competition or underdeveloped physical or institutional infrastructures, in resolving which government effectiveness (institutions) can play a key role. The challenge therefore is disentangling whether the non-use of financial services is voluntary or involuntary.

3.1.3 Barriers to Financial Inclusion

The accessibility to financial services for individuals and firms, is predicated by supply and demand side pressures (Swain 2007). However, a breakdown in the market infrastructure can lead to permanent exclusion of both individuals and small firms from the use of financial services (Swain and Floro 2007). Similarly, other factors contribute to creating barriers to the accessibility of financial services. The global findex survey (conducted for 70,000 adults) reveals some of the pertinent reason to some of the barriers of access to financial services. Not enough money (30%), family member already owning an account (25%), too expensive (23%), distance (too far away) (20%), lack of documentation (18%), lack of trust (13%), and religious reasons (5%). For SSA however, the results reveal that factors such as; distance, cost, documentation, and lack of money, all count for the main barriers preventing individuals and firms from accessing finance. Adults in developing markets are more likely to cite distance, cost, documentation, and lack of money in comparison to adults in developed countries.

Women and adults living in high-income and upper middle-income economies (where relatives are most likely to have an account) were substantially more likely to be deterred from accessing financial service. (Litt et al. 1990, Collier and Gunning 1999, Demirgüç-kunt and Klapper 2012, Diniz et al. 2012, Tchouassi 2012) show that lack of account ownership and personal asset accumulation limits women's ability to pursue self-employment opportunities. Hence, while such voluntary exclusion may be linked to individual preferences or cultural norms, it may also indicate a lack of awareness of financial products or a lack of financial literacy more generally. Chikalipah (2017), supports this view. On a study to understand the determinants of financial exclusion in SSA, an important finding was that literacy was a key determinant to financial exclusion in SSA –although the study failed to include other measures that could be important in explaining the financial exclusion, such as, income and distance to access.

Affordability in SSA is a key barrier to account ownership. High costs are cited by a quarter of global unbanked respondents, and by 32% of unbanked respondents in low-income

economies. Fixed transaction costs and annual fees tend to make small transactions unaffordable for large parts of the population. For policy purposes therefore, FI crucially requires a suitable measurement, so as to create significant scope for researchers to find solutions to problems prevailing in society, and also enable impact evaluation of policies created for tackling the issue of exclusion in societies.

3.2 FINANCIAL INCLUSION MEASUREMENT AND IMPACT

3.2.1 Measuring Financial Inclusion

Indicators used in accessing and/or measuring FI differs widely. Until recently, the measurement of financial inclusion around the world was focused purely on density indicators such as; number of bank branches or automated teller machines (ATMs) per capita (Beck, Demirguc-Kunt and Martinez Peria, 2007; Kendall, Mylenko and Ponce, 2010). Through the financial access survey[39], financial service providers (FSPs) now tally supply-side data on the use of financial services. However, up until recently, relatively little has been known about the global reach of the financial sector, particularly, the extent to which financial inclusion is permeable and the degree to which the poor, women, and other population segments are excluded/segregated[40] form the formal financial sector. This was especially the case in the sub-Saharan African region (see table below).

[39] The Financial Access Survey is a database of data collection which comprises of supply-side data from providers of financial services. In this annual survey, data from 187 jurisdictions from 2001 to 2011.
[40] The demand-side constraints of financial services.

Adults with a Transactional Account Worldwide

	2011	2014	2017
Percentage of Adults That Own a Bank Account	%	%	%
Developing Countries	42	54	N/A
East Asia & Pacific	55	68	73
Europe & Central Asia	45	60	68
Latin America and Caribbean	39	52	55
Middle East & North Africa	20	32	54
South Asia	33	46	69
Sub-Saharan Africa	24	34	43

Table 3.1: Percentage of Adults with a Transactional Account.

The Global Findex Database measures how adults in 148 countries access and use financial services. Constructed from interviews with more than 150,000 nationally representative and randomly selected adults over the 2011 calendar year. The Global Findex Database includes over 40 indicators related to account ownership, payments, savings, borrowing, and risk management in a comprehensive survey. For example the 2011 maiden year data showed that the usage of financial services by 97% of the world's adult population indicates that; the share of adults in developed economies with an account at a formal financial institution is more than twice the corresponding share in developing economies (Demirgüç-kunt and Klapper 2012). There is also a substantial variation in financial inclusion within countries across individual characteristics such as income and gender. While the disparities are less sizable in the access of firms to finance, considerable differences exist across countries and by certain characteristics, such as firm age and firm size (Beck, Demirgüç-Kunt, et al. 2007, Kendall et al. 2010). According to the WB 2012 report, the core measurement indicators include; use of bank accounts, savings, borrowing, payments, and insurance. As observed, these measures encompass the key product offerings by financial service providers. However, this only incorporates demand-side measures for accessing financial services, and hence, provides a nuanced view into the measurement of financial inclusion levels amongst its sample size (see Table 3.1 above).

Approaches utilised in accessing financial inclusion have been few and far between. However, a few approaches are worth a mention/review. A first approach places more emphasis on measuring the clients of basic financial services, whilst a second approach centres on

measuring the quality of the financial services that the households and firms obtain. Finally, a third approach examines the physical and cost barriers to access (Beck, Demirgüç-Kunt, et al. 2007, Demirgüç-Kunt and Klapper 2012, Allen et al. 2018). Early research by Beck et al., (2007) explored cross-country banking outreach indicators in order to examine base usage of financial services using eight commercial bank-based outreach and usage indicators from 99 countries between 2003 and 2004. Their results suggest that higher rates of banking outreach associated with financial development and economic growth. Furthermore, they found that transport infrastructure, well-organised communication, and well-developed governance are also correlated with higher rates of banking outreach.

Subsequently, Beck et al., (2007) examines the access to financial services using financial access indicators separately to test and compare impacts of financial access on the penetration of credit and deposit facilities of banks and non-bank financial institutions. Using 14 outreach, usage, ease and cost indicators from 154 countries for 2008 and 2009. Their main contribution to the literature has been to compare credit and deposit penetrations from banks and non-bank institutions. They only consider credit and deposit services in this study and compared bank and non-bank institutions in terms of credit and deposit penetrations with the limited data of non-bank financial institutions. However, the limitations of data prevented them from making robust comparisons across countries. For instance, credit penetrations data is available from specialised state financial institutions of 15 countries and the microfinance institutions of seven countries. Furthermore, this paper separately ran regressions with 14 different financial access indicators on various financial, infrastructural and economic country variables using OLS and Tobit estimation models.

Finally, Kumar (2013) explores the determinants of financial inclusion in India using six banking outreach and usage indicators from 1995 to 2008. This research employed indicators of financial access variables, along with other country-specific factors, to explore the determinants of financial inclusion. Panel-fixed effects and GMM estimation was employed to test research hypothesis of financial inclusion and control for the dynamic endogeneity of the variables. The findings suggested that a branch network has a positive impact on financial inclusion.

All the above research separately analyse these indicators and their impacts on various set of country-specific factors. However, these studies have some limitations in terms of data for

banking outreach indicators, such as lack of time trends, the variety of financial services that are used, using commercial bank-based indicators only, and, finally, using quantity unit indicators, so the price dimension of the outreach is not provided. This research project differs markedly, such that, in order to establish the impact of MFIs on financial inclusion, the indicator of financial inclusion proposed for this analysis is that of a developed financial inclusion index by Yorulmaz (2016). The indicator is based on numerous measures of financial inclusion from commercial banks and other financial institutions. Unlike other financial inclusion measures (mainly commercial banking indicators, often supply-side indicators), the utilised index, incorporates both demand-side and supply-side indicators in developing a concise measure of financial inclusion scores, across developed and developing market economies across the world. This indicator is based on data obtained from The-MIX and the World Banks FINDEX compilation, in addition to the Financial Access survey of 2009.

3.3 DETERMINANTS OF FINANCIAL INCLUSION

3.3.1 Inclusion and Exclusion (Income, Geography, Financial Development)

In analysing the problem, it is important to examine some of the stated links between the concept of inclusion and financial exclusion. Within the defined context financial exclusion precedes the need for financial inclusion. Research suggests that country-level income, (approximated by GDP per capita), seems to account for much of the massive variation in account penetration worldwide. For example in most countries with GDP per capita above $15,000, account penetration is essentially universal, explaining 73% of the variation around the world. Demirgüç-Kunt and Klapper (2012) show that within-country inequality in the use of formal accounts is correlates with the country's income inequality. They find a relatively high correlation between account penetration and the Gini coefficient as a proxy for income inequality. This association seems to hold even if one controls for national income and other variables. The income- demographics across Africa certainly reflect this position. With majority of the economies in SSA under a low-income economic disposition, income inequality is exacerbated by the extremely wealth as a result of increasing corruption and disregard for rule of law in appropriating contracts and managing the wealth of the economies involved. However although the story mirrors a similar enactment above, the correlations postulated by the above study needs to be taken with a pinch of salt. In-depth analysis suggests that other factors, especially the quality of institutions in an economy, drive account penetration as well

as income level and income inequality. Therefore looking beyond basic factors and explaining FI through the lens of the institutional quality and environment could provide more of a unique insight into a key sector.

3.3.2 Geography

The geographical differences in the use of financial services is also rather uneven, suggesting that the geographical landscape could play a role in the financial exclusion of certain marginalised segments of society –societies in SSA-. Densely populated urban areas show a much higher density in retail access points (such as bank branches, ATMs, and agents) and a greater use of financial services than rural areas. Although natural barrier disruptors such as mobile money have been in operation in SSA (Demirgüç-Kunt et al. 2017). However, despite the growth in mobile money and other recent technologies, being near a retail access point is still important for the use of financial services by individuals, especially for the poor who are less mobile and have less access to modern technologies. The trade-off however, for advocates and practitioners remain at a standstill. Whilst advocates want a broad coverage –of the population- for financial access, and would also like to see certain segments of the population (such as the poor) also have access, this concern is not always shared by providers. The extreme commercialisation of financial services, the location of financial services in the urban and not rural areas (reality on ground), the drive for profits, and the cost of delivery are all key incessant barriers points to the reality for practitioners. These factors further limit the disbursement of financial services from a geographical standpoint. The question of how to break this deadlock points to the establishment and implementation of well-functioning quality institutions. This is argued, could enable penetration by mandating MFIs to operate in rural areas with the enabling use of technology to deliver robust services.

3.3.3 Financial Sector Depth, Efficiency and Stability

The depth of the financial system has often been anecdotally linked to the relative use of financial services within an economy. The rationale here is that the deeper the markets, the more it is of use to users of the financial system (Beck et al., 2007). However large amounts of credit in a financial system –both commercial and consumer credit- as research has shown- do not always translate to the broad use of financial services, especially in developing markets in SSA. According to Demirgüç-Kunt et al., (2014), this could be as a result of credit concentration amongst larger firms operating in the bourses of these countries. This in addition to the concentration amongst wealthy individuals could give an appearance of depth of use, but

on the surface is not really the case. A common measure of depth of the financial system within the literature is; domestic credit to the private sector as a percentage of GDP (WB, 2014), recent research suggest that the use of formal accounts is imperfectly correlated with this measure. However some variation to the norm exists. For example, a look at some country data reveals that in some cases a large percentage of domestic credit to the private sector exist, however only a relatively small percentage of the adults have access to financial services (are financially included). Examples include; Vietnam, where domestic credit to the private sector as a percentage of GDP is 125%, whilst only 21% of the adults in the country report they have a formal account. Conversely, the Czech Republic, with relatively modest financial depth (with domestic credit to the private sector at 56% of GDP), has relatively high account penetration (81%). This suggest that financial depth and financial inclusion are distinct dimensions of financial development and that financial systems can become deep while showing low degrees of inclusion. On the other hand the efficiency of financial institutions can be linked with the use of formal accounts (the more the number of population with accounts, the lower is the lending minus deposit rate percentage). Country level data also reveal similar picture: financial inclusion is associated positively with depth and efficiency, whilst having no significant association with stability.

3.4 FINANCIAL SERVICES AND THE POOR

Finance influences not only the efficiency of resource allocation throughout the economy but also the comparative economic opportunities of individuals from relatively rich or poor households. Financial institutions exist to serve as intermediaries in a market with high information asymmetries and transaction and information costs. As the bridges between the firms and the households, financial institutions live up to the primary function of being able to spur growth and development. Though this may be the case, there exists a divide within the financial system in itself. As it is at present, a considerable number of people are excluded in the financial system. Financially excluded, as they are defined to be, there is a seen need for them to be included in the financial sector.

The evidence for the impact of MF on financial inclusion levels is still nascent. Although the general causes of financial exclusions are illustrated from a theoretical perspective, consensus is still to be reached on the evidence driving financial inclusion. Furthermore, if

MFIs are seen as a general/overall policy to improving the state of FI in developing countries, what is the role of MFI in alleviating the problem of FI in SSA? Studies have yet to examine this line of questioning (area of research) carefully and in a robust manner.

3.4.1 MFI and Financial Inclusion: Empirical Evidence from SSA

Financial inclusion has been a recurring issue for countries in SSA, this has led to concerted efforts amongst governments within SSA to adopt several initiatives and policies designed to improve access to individuals excluded from traditional financing (commercial banks). One of such initiatives adopted, in SSA has been Microfinance. The evidence for the impact of MF on financial inclusion levels is still nascent. Although the general causes of financial exclusions are illustrated from a theoretical perspective, consensus is still to be reached on the evidence driving financial inclusion. Furthermore, if MFIs are seen as a general/overall policy to improving the state of FI in developing countries, what is the role of MFI in alleviating the problem of FI in SSA? Studies have yet to examine this line of questioning carefully and in a robust manner.

Despite the universally adopted use of MF in SSA, there is yet absolute evidence of the suitability and impact of MF on the financial inclusion efforts of countries in SSA. Amidst the backdrop of several initiatives to improve the financial inclusion situation in SSA, measures still fall short of the intended effect. Take for instance Nigeria (the most populous country in Africa), efforts to improve access to lending –over the years- include policies such as; The Commercial Bill Financing Scheme (1962) and the Microfinance Policy of 2005. Despite these interventions, the financial inclusion landscape still lags in comparison to other regions such as; LAC and Asia Pacific. According to Adeyemi (2008) factors such as; bribery and corruption, wrong channelling of credit facilities, poor management wherewithal and ineffective supervision continuously stall these efforts. The broader literature in the region reveals a growing number of studies focused on examining the empirical links between financial inclusion and a variety of economic, institutional and political factors (Fuller, 1998; Sarma and Pais, 2008; Hannig and Jansen, 2010; Andrianaivo, Kpodar and Allum, 2011; Beck, DemirgüÇ-Kunt and Singer, 2013). Majority of the studies accessing the financial inclusion have employed primary data collection methods in examining the significance of the relationship between financial inclusion and specific variables of interest. For example (Fuller 1998, Sarma and Pais 2008, Hannig and Jansen 2010, Andrianaivo et al. 2011, Beck et al. 2013). Regardless of the unique challenges that face the SSA region, only a handful of studies

have examined the African context (Mbutor, 2013; Babajide, Adegboye and Omankhanlen, 2015; Bayero, 2015; David-West, 2015; Egbide *et al.*, 2015; Ene and Inemesit, 2015). Amongst these only a few really examine the impacts of MF initiatives on financial inclusion (Mbutor 2013, Babajide et al. 2015, Bayero 2015, David-West 2015, Egbide et al. 2015, Ene and Inemesit 2015), Ali (2015), Martinez and Krauss (2015).

Allen et al. (2012) use the 2011 findex report to highlight the drivers of FI. Using dependent variables of financial indicators such as; Ownership of account, use of accounts to save, and frequent use of the account, defined as three or more withdrawals per month. They find that these indicators are associated with a better enabling environment for accessing financial services, such as lower banking costs, greater proximity to financial providers, and fewer documentation requirements to open an account. However, young, poor and unemployed, out of the workforce, or less well educated, living in rural areas are relatively less likely to have an account. Subsequently, Chikalipah (2016) using WB data analyse the determinants of FI in SSA. The results reveal that illiteracy forms one of the key drivers of exclusion in SSA. However, of all the above research however, only one study reflects the MFIs on the African continent. Ene and Inemesit (2015), examined the impact of MF on financial inclusion within the Nigerian context, however their findings cannot be regarded as conclusive for a number of reasons. Firstly: the measure of financial inclusion employed is un-supported by the literature. Secondly. The method of analysis (OLS) further appears to be simplistic for the nature of this research problem.

3.5 EFFECTS OF FINANCIAL SERVICES ON POOR MORE EVIDENCE

The scope of current research have focused on defining financial inclusion, measuring it, determining its drivers, and examining the barriers that limit it in addition to framing the importance of financial inclusion for development in economic theory. All this has helped in elevating the issue of FI to the forefront of development thought. However, the empirical evidence and effects on the lives of the world's poor has had less emphasis. This is because, recent empirical evidence on the impact of financial inclusion on economic development and poverty varies by the type of financial services in question. For instance, earlier research on the impact of the financial sector on economic development highlighted the contributions of aggregate financial depth on economic growth (King and Levine, 1993; Demirgüç-Kunt and

Maksimovic, 1998a; Rajan and Zingales, 1998; Zervos, 1998), and on poverty reduction and income inequality (Beck et al., 2007). However, (as discussed earlier), deep financial sectors are not necessarily inclusive ones. Hence, more recent and ongoing research have focused on examining financial inclusion and the access to and use of different types of financial services separately from financial depth.

In the access to basic payments and savings, the evidence on benefits, especially among poor households, is quite supportive. In insurance products, there is also some evidence of a positive impact. However, in access to microcredit, the data on dozens of microcredit experiments and from other cross-country research paint a rather mixed picture, for instance, (King and Levine 1993, Demirgüç-Kunt and Maksimovic 1998, Rajan and Zingales 1998, Zervos 1998). More specifically, Karlan and Zinman (2010), based on an innovative experiment in the Philippines, find that access to credit led to a decline in the number of business activities and employees in the treatment group relative to controls, and subjective well-being declined slightly. However, they did find that microloans increase the ability to cope with risk, strengthen community ties, and boost the access to informal credit. These findings suggest that microcredit has a positive impact, but that the channels may not necessarily be those hypothesized by proponents. Specific areas of financial services access are addressed in the following sections.

3.5.1 Effects of Microcredit

Economic theory suggests that improved access to credit can have positive implications for poverty alleviation and entrepreneurial activity. Better access to credit makes it easier for households to smooth out consumption over time and provides a de-facto insurance against many of the common risks facing households and small enterprises in the developing world. In the same vein, improved access to credit can also encourage entrepreneurial activity by attenuating investment constraints and making it easier for small businesses to grow beyond subsistence.

In many parts of the world, substantial improvements in access to credit among house -holds and small businesses in recent decades have occurred through the rapid expansion of microcredit. The original narrative emphasized that microcredit could serve not only as a tool to alleviate extreme poverty, but also as a means to unleash the entrepreneurship potential of the poor. Recent evidence has, however, highlighted some of the limitations of microcredit and

suggests a more nuanced narrative. Although microcredit can have significantly positive welfare effects if used as a means for consumption smoothing and risk management, most studies have found that the effects of microfinance on investment and entrepreneurship are relatively small.

Many studies have documented the effects of microfinance on household welfare and income. This includes positive effects on consumption, economic self-sufficiency, and some aspects of mental health and well-being (Pitt and Khandker, 1998; Khandker, 2005; Kaboski and Townsend, 2009, 2012; Karlan and Zinman, 2010). By contrast, studies that explore the impact of microfinance on entrepreneurship find relatively modest effects (Pitt and Khandker 1998, Khandker 2005, Kaboski and Townsend 2009, 2012, Karlan and Zinman 2010). In a study that experimentally varies access to microcredit, (Giné et al. 2010, Karlan and Morduch 2010) find a large effect of access to microfinance on investment in fixed assets, but also note that this effect is concentrated among wealthier households that already own a business, while households with a low initial probability to transition into entrepreneurship use credit to consume rather than invest. Many of the limitations of microcredit as a tool to finance entrepreneurship are likely to be the result of the rigidity of microcredit, including the lack of grace periods, frequent payments, and joint liability that may prevent risk taking (Field and others, forthcoming; Giné et al., 2010). While joint liability contracts have made the extension of credit to marginal clients possible, such contracts may be poorly suited for loans to businesses for which the cash flows and risks are difficult to observe.

There is also ample evidence that limited access to credit poses a substantial obstacle to entrepreneurship and firm growth, especially among small and young firms (Beck, Demirgüç-Kunt and Maksimovic, 2005; Banerjee and Duflo, 2006; Beck *et al.*, 2006). Cross-country research analysing 10,000 firms in 80 countries shows that financing constraints are associated with slower output growth, while other reported constraints are not as robustly associated with growth (Beck et al. 2005, 2006; Banerjee and Duflo 2006; De Mel et al. 2012). Therefore, improving access to finance for potential entrepreneurs therefore promises significant welfare gains not only for the entrepreneurs, but also for society as a whole. Other evidence suggests that access to credit is associated with a decline in observable measures of poverty. For example, Burgess and Pande (2005) suggest that bank branching regulation in India has had a substantial impact on poverty reduction.

At the macroeconomic level, however, the impact of broader access to microcredit may be mostly redistributive and not without risks for financial stability. For example, Kaboski and Townsend (2012) offer a quantitative evaluation of the aggregate and distributional impact of microfinance and find that, if general equilibrium effects are accounted for, scaling up microfinance programs has only a small impact on per capita income because increases in total factor productivity are counterbalanced by the lower capital accumulation resulting from the distribution of income from high savers to low savers. The benefits occur largely through wage increases and greater access to finance by poorer entrepreneurs.

The evidence on the overall impact of increased microcredit access on economic development and poverty alleviation is weak at best. Kaboski and Townsend (2012) use data from the Townsend Thai Survey to evaluate the Thai Million Baht Village fund program, which involved the transfer of 1.5 percent of the Thai GDP to the nearly 80,000 villages in Thailand to start village banks and was one of the largest government microfinance initiatives of its kind.[41] The evaluation finds that some households valued the program at much more than the per-household cost, but, overall, the program cost 30 percent more than the sum of the benefits. Overall, there is plenty of evidence that access to finance is important for firms, especially for the smaller and younger ones. Economic growth would come to a halt if firms could not get credit. But there are major ongoing debates on the pros and cons of microcredit, which are discussed in the next subsection.

3.5.2 Savings and Payments

Available global data point to a strong correlation between income inequality and inequality in the use of bank accounts. For example, in Sweden—a country with one of the most even income distributions in the world—the share of people having bank accounts is the same for the rich and the poor (Demirgüç-Kunt et al. 2017). On the other end of the spectrum are countries such as Haiti, where income inequality is very high and where the richest 20 percent are about 14 times more likely to have a bank account than the poorest 20 percent (Demirgüç-Kunt et al. 2017). More importantly, data from a broad spectrum of countries indicates that the measure of inequality in account penetration (financial inequality) is closely correlated with income inequality (Demirgüç-Kunt et al. 2015).

[41] For the survey, see "The Townsend ThaiProject: Baseline Survey ('The Big Survey'),"National Bureau of Economic Research,Cambridge, MA, http://cier.uchicago.edu/data/baseline-survey.shtml.

Field experiments provide more direct evidence about the causal linkages between access to savings and payments services and real-economy variables. For example, a range of randomized controlled experiments finds that providing individuals with access to savings accounts or simple informal savings technologies increases savings (Aportela, 1999; Ashraf *et al*., 2006), women's empowerment (Aportela, 1999; Ashraf *et al*., 2006), productive investment (Ashraf *et al.,* 2010), consumption, investment in preventive health, productivity, and income (Ashraf et al. 2010; Dupas and Robinson 2013). Lastly, a reduced vulnerability to illness and other unexpected events (Dupas and Robinson 2013).

These findings are in line with those of several other studies. For example, an in-depth examination of the effect of bank deregulation in the United States shows that greater financial inclusion accelerates economic growth, intensifies competition, and boosts the demand for labour. It is also usually associated with relatively bigger benefits to those people at the lower end of the income distribution, thus contributing to inclusive growth (Ashraf *et al.,* 2011). Together, these studies provide robust justification for policies that encourage the provision of basic accounts for savings and payments.[42] Increasing financial inclusion in terms of savings and payments, if done well, can both help reduce extreme poverty and boost shared prosperity.

3.5.3 Effects of Insurance

For insurance products, the evidence on the impact on economic development is slightly more nuanced, but, on balance, still positive. Evidence based on total volumes of written insurance premiums casts doubts on the aggregate impact. Beck *et al.,* (2010), using co-integration analysis for nine countries of the Organisation for Economic Co-operation and Development (OECD) from the 1960s to the 1990s, find that, in some countries, the insurance industry Granger causes economic growth, while, in other countries, the reverse is true. They conclude that the relationship between insurance and growth is nation specific. Previously, Ward and Zurbruegg (2000) have pointed out that it is possible to have co-integration at the aggregate level but not at the disaggregate level, and vice versa; so, looking more closely at the disaggregated data is important. Recent evidence from disaggregated data is encouraging. In

[42] For brevity, the focus in this section is on savings and transactions related to savings accounts. Nonetheless, there is also evidence of the strong impact of access to payment services. One aspect of this is the benefits of international remittances on the incomes and living standards of the families of migrants, on which there is some evidence.

particular, (Kugler and Ofoghi 2005) have conducted a large randomized experiment in south-western China to assess the impact of insurance on sows. They find that providing access to formal insurance significantly increases the propensity of farmers to raise sows. In another study, Cole et al. (2011) examine how the availability of rainfall insurance affects the investment and production decisions of small- and medium-scale Indian farmers. They observe little effect on total expenditures. However, they find that increased insurance induces farmers to substitute production activities toward high-return high-risk cash crops. Finally, Shapiro (2012) evaluates the effects of a Mexican government disaster relief program with insurance-like features. Specifically, the program provides fixed indemnity payments to rural households the crops or assets of which have been damaged by a natural disaster. The evaluation finds that the availability of insurance against losses from natural disasters changes how rural households invest in their farms. In particular, insured farmers utilize more expensive capital inputs and purchase better seeds.

3.6 MFI FINANCING: INCLUSION, SUSTAINABILITY AND INSTITUTIONAL ENVIRONMENT

3.6.1 Financial Inclusion And MFI Capital Structure Funding

The role of MFIs on the impact of financial inclusion relies heavily on the ability of MFIs to sustain themselves financially (Porkodi and Aravazhi 2013). The role played by capital structure in this process is crucial. For instance, a capital structure comprising of simply donations and grants are less likely to enable MFIs sustainably provide the operations needed to improve the welfare of the bottom of the pyramid. Partly as a result of the moral hazard attached to the offer of grants and donations, in addition to the near non-attachment of terms on debt (Stiglitz and Weiss 1981). Therefore, the onus on debt as a disciplining mechanism/function in this sense is eroded. The reasoning here is that donations and grants are a constant source regardless of MFI performance. Donors often give grants to MFIs with no financial obligation as donors often derive a social return on these investments. However, on the other hand a capital structure comprising of debt and equity is more likely to induce superior performance of MFIs, this is because of the disciplining and monitoring nature of debt (Stiglitz and Weiss 1981), and its ability to demand superior performance, so as to secure favourable terms in the next funding round.

The use of competitive funding terms is therefore assumed to directly induce MFIs to perform better in their mission. The cascading effect further leads to creating economic efficiency and operational efficiencies amongst MFIs, of which then leads to the overall sustainability of the MFI sector. For instance, when an MFI is able to be operationally efficient, this is an attractive prospect for favourable market competitive debt terms. The disciplining nature of debt will enable MFIs to perform well, with positive implications on financial sustainability and efficiency in improving financial inclusion[43]. The feed-through effect could therefore improve an MFIs ability to sustain levels of operation in underserved rural communities.

Capital structure theories indicate the possibility of the survival of firms when the right mixture of debt and equity is employed. The capital structure therefore plays a key role in this process, the better the combination of debt and equity in MFIs can therefore lead to the efficiency of these institutions, leading to improved sustainability amongst these firms (Bogan 2012). This could then lead to improved financial inclusion levels amongst those at the bottom of the pyramid in SSA. Other such theories exists within the western context (as regarding various industries, contexts and sectors), however for firms like MFIs, little evidence exists to suggest such. Furthermore, the role of the institutional environment (macro environment, financial environment and other institutional factors) will be considered within the SSA context, in order to assess the importance of capital structure for MFIs in improving financial inclusion levels in SSA.

3.7 MFI FINANCING AND SUSTAINABILITY: A CONCEPTUAL VIEW

The widespread failure of MFIs around the world, most specifically in Africa have prompted recommendations about structuring financial rescue packages for ailing MFIs (Karim 2011). Paradoxically, these recommendations fail to indicate a way forward for a sustainable financing structure that would ensure financial sustainability in the long-term for MFIs. Much of which has since been a revolving door of rescues and series of collapses of MFIs. For instance, MFI failures in India, Ghana, Pakistan and South Africa. Calls for providing the right financing option that can proffer much needed sustainability for MFIs given the need to ensure a

[43] The positive impact on financial inclusion stems from the continual accumulation of experience of operation and expertise in these communities, in addition to the trust accumulation through the combination of local trust relationship building (local expertise). A combination of these factors would improve MFIs efficiency in improving financial inclusion in rural communities.

continued outreach to the poor has been therefore unavoidable. Despite the burgeoning interest in microfinance, research has shied away from addressing the relationship between financing and financial sustainability. This area of research is highly relevant, because informing the structuring of MFI financing along the context of sustainability is not only a theoretical exercise (in light of the views of capital structure and firm activities), the relevance of this helps to guide practitioners on observing best practices in order to ensure the long-term sustainability and existence of, as solution providing institutions in the development process of much of Africa.

This section explores the literature, of the various financing options available to MFIs and their implications for financial sustainability. With a general aim to consolidate the theory and empirical evidence on MFI financing and financial sustainability. The understanding is that financing of MFIs continues to evolve with an increased inclination towards commercial financing (Cull et al., 2011; Johnson, 2015). Given the limited information available on this subject for MFIs, most of which is implied, this chapter fuses the theory and evidence on the relationship between financing and MFI sustainability.

3.7.1 Financial Sustainability

Much of the literature on MFI sustainability have been explored in preceding chapters, however, a brief consideration of the literature and issues surrounding sustainability as relates to MFI financing will be reviewed. Even though the provision of financial services to the poor hinges on the assumption that MFIs exist eternally to solve social ills such as poverty, unemployment and low living standards (Bogan, 2012). Sustainability as relates to MFIs thus ensures an uninterrupted delivery of financial services. Furthermore, (Adams 2002) deem sustainability as a strong stabilizer to MFI efficiency and distinct outreach. Despite pursuing a double bottom mandate, it is often acknowledged that MFI sustainability, is a first step towards ensuring it meets its long term target (Mersland and Strøm, 2010).

The theoretical understanding of the nexus between financing and sustainability, draws from the notion that; financially sustainable MFIs often capitalise on scale, exercise cost consciousness, promote innovation, reduce administrative and information asymmetry costs, and therefore, mostly lower adverse selection and moral hazard problems. Thus, advancing outreach whilst suffering the least amount of losses (Mersland and Strøm 2010). The drive towards sustainability have often led to a move away from donor funded MFIs towards commercial (for-profit) oriented MFIs. For instance, some governments have privatised

subsidised, inefficient and loss-making credit programmes and parastatals (Hoque et al. 2011, Quayes 2012). Whilst many argue for the case of mission drift in this concerted shift (Mersland and Strøm 2010, Hermes and Lensink 2011), evidence remains conflicted (Amin et al., 2003; Hermes and Lensink, 2007; Hoque, Chishty and Halloway, 2011), and inconclusive (Quayes 2012). Proponents however, argue that the shift has brought with it much needed accountability, transparency, efficiency, economic interest rate setting, capital mobilisation and appropriate management remuneration within the MF sector (Robinson 2001b).

It is however clear that on both sides of the divide on which Morduch (2000) calls a "schism" -the old paradigm of pro-social mission and the new paradigm of financial sustainability-, the binding factor remains to be funding, playing a key role in the process. In light of the key role of (both donor and commercial) funding in the sector, it is imperative to examine MFI funding within the context of MFI sustainability within SSA.

3.7.2 MFI Funding and Performance

The Link between Funding and Performance Economic profit (or loss) refers to the difference between total revenues and all expenses. Responding to profit incentives, firms tend to try to increase total revenues and decrease total expenses (including costs of capital). In the case of a financial institution, financial expenses (costs of funding) usually represent a large part of total costs, but this part is more difficult to control by the financial institution, while the revenues depend mostly on the interest on loans provided to borrowers (De Aghion and Morduch, 2005). Therefore, financial structure in terms of funding has become one of the important issues for MFIs in gaining efficiency and sustainability. The effects of funding sources can be positive or negative due to their positive contributions to total financial revenue (i.e. the predicted effects are indeterminate and depend on the specific circumstances of each MFI). However, the increase in financial expenses is always expected to be lower than the increase in financial revenues.

3.8 OTHER FINANCING DETERMINANTS

3.8.1 Role of institutional Environment

Amongst other key determinants of the financing structure of MFIs as noted by Fehr and Hishigsuren (2006) are the regulatory provisions. Regulated MFIs are normally allowed to attract deposits. Hence, regulation enables MFIs access and gain a benefit from low cost savings (Fehr & Hishigsuren 2006). Thus, countries whose regulation outlaws deposit collection tend to consider more debt and equity financing compared to countries that allow attraction of savings. The incredible trend of surging deposits in Africa is attributable to several African countries passing laws that de-criminalise deposit collection (Lafourcade *et al*., 2006). Whilst deposits can be a source of cheap financing, regulation and supervision present a cost to MFIs (Cull et al. 2011). Cull et al. (2011) found that regulation negatively affected outreach, the same as female borrowers. Regulation thus poses additional cost to MFIs that may force them to cut back on smaller loans meant for the poor and female clients and issue more lager loans.

Microfinance funding trends are also subject to localised characteristics that have a bearing on the development of institutions (Bogan 2012). These characteristics include historical legacies of both saving and lending as well as legal provisions defining the operations and the raising of capital. This explains why Latin America has many regulated MFIs compared to the Middle East, North Africa, Eastern Europe and Central Asia. Moreover, various microfinance charters mean different players with different/varying missions, hence the difference in funding and funding patterns and transitions.

3.9 CONCEPTUAL FRAMEWORK

A conceptual framework identifying the gaps in the literature has been employed in developing suitable hypothesis applicable to the study context (SSA), specifically those related to capital structure determinants among MFIs within the context of SSA. The research is focused on establishing the institutional environment determinants quality of the capital structure of MFIs. Specifically, this research proposes a model of capital structure determinants inspired by LaPorta et al. (1999), and Tchuigoua (2014), in order to predict and explain the institutional determinants of capital structure and the consequences of quality institutions on the capital

structure to MFIs performance in SSA. This conceptual framework, extends this line of enquiry by further examining the impact of MFIs on financial inclusion in SSA.

Previous research has established that standard firm-level characteristics acts as determinants of the capital structure of firms (Kyereboah 2007). Additionally, institutional environment is deemed to have a determinant effect on the funding of firms in developing countries. Although this has been seldom analysed by empirical studies, existing literature suggest that this could undoubtedly influence capital structure choices within the SSA region. Hence, variables capturing the institutional framework within SSA will be employed in order to determine its mediating effects on capital structure, and its impacts on MFI performance.

There is still a lack of literature in the MF industry specifically exploring the impacts of institutional environment on the capital structure choices of MFIs in SSA. Of the few that examine the determinants of capital structure for MFIs, Kyerboah (2007), employs governance variables such as Board size, Board independence, CEO duality and CEO tenure. Whilst these are important variables in a governance context, it fails to capture the broader institutional framework of the sampled country (in this case Ghana). On the contrary, Tchuigoua (2014), employs three country-level institutional variables namely; Creditor rights index, Development level of the financial sector, and country's legal tradition. However, this was applied on a sample of MFIs situated around the world, the differences in institutional contexts in Latin America and SSA are unaccounted for. For example, variables relating to corruption; a more relevant variable for the SSA context is omitted.

Although standard capital structure determinants follow assumed key variables for analysis in a western context. However, the context is different in SSA. Therefore, in order to capture relevant variables in examining the SSA context, institutional framework variables deemed suitable for SSA have been identified and represented within the conceptual framework. Leverage determinants deemed unsuitable to the study context (SSA region) will not be employed in examining the capital structure of MFIs. Rather, variables deemed applicable to the SSA context will be employed within the analysis. For example, the institutional environment's in developed and developing economies are divergent. Therefore, where there exist strong institutional frameworks in developed economies, in developing countries within SSA, this is not the case. For instance, Webster and Piesse (2018), show that whilst foreign

firms prefer FDI destinations with transparency, foreign firms will often alter behaviours negatively in an institutional environment that supports corrupt practices.

Two models, of capital structure was employed in this research. On the one hand, the general measures of capital structure employed in general studies are measured. In addition, capital structure variables directly employable/suitable to the hybrid structure of MFIs are also considered. MFIs, have interesting capital funding, for instance, MFIs employ the use of subsidized debt, grants, and donations, in addition to equity funding. These types of funding present unique challenges for MFIs, and further act as limiting and/or enabling impediments to their mission. By combining all variables affecting the determination of capital structure, this research will be able to ascertain how changes in the institutional environment impacts on the ability of MFI in obtaining capital. Implementation of the above capital structure measures will further reveal the impact of these types of capital on the ability of MFIs to perform its functions effectively. The framework that guided this research therefore reflects a multifaceted lens comprising of three relationships, which have been identified for testing in this study.

The first set of hypothesis represents the relationship between determinants of capital structure and leverage, capital structure measures represent the dependent variable, whilst the institutional, macro-economic, financial development, firm-specific determinants and control variables form the independent variables. Secondly, a subsequent litter-of hypothesis investigates the relationship between leverage and MFI performance. The capital structure measures identified act as the explanatory variables in addition to macro-economic and firm specific control variables. The idea being that the capital structure aids in the performance of MFIs in their ability to reach their mission. Finally, in the third relationship, the conceptual framework (identifies a set of hypothesis which) takes into consideration the feed-through effects of the performance of MFIs on the financial inclusion levels of countries within the sample size. Specifically, this relationship examines the impact of MFI (using MFI penetration rate) as independent variables and financial inclusion as a dependent variable.

The consideration from Hypothesis 1 generalises that the quality of the institutional environment impacts positively on the capital structure of MFIs in SSA. Secondly, the consideration from Hypothesis II generalises that MFI leverage components are important for MFI financial and social performance, and finally, consideration from Hypothesis III generalises that MFIs are important enablers of financial inclusion.

PhD Conceptual Framework

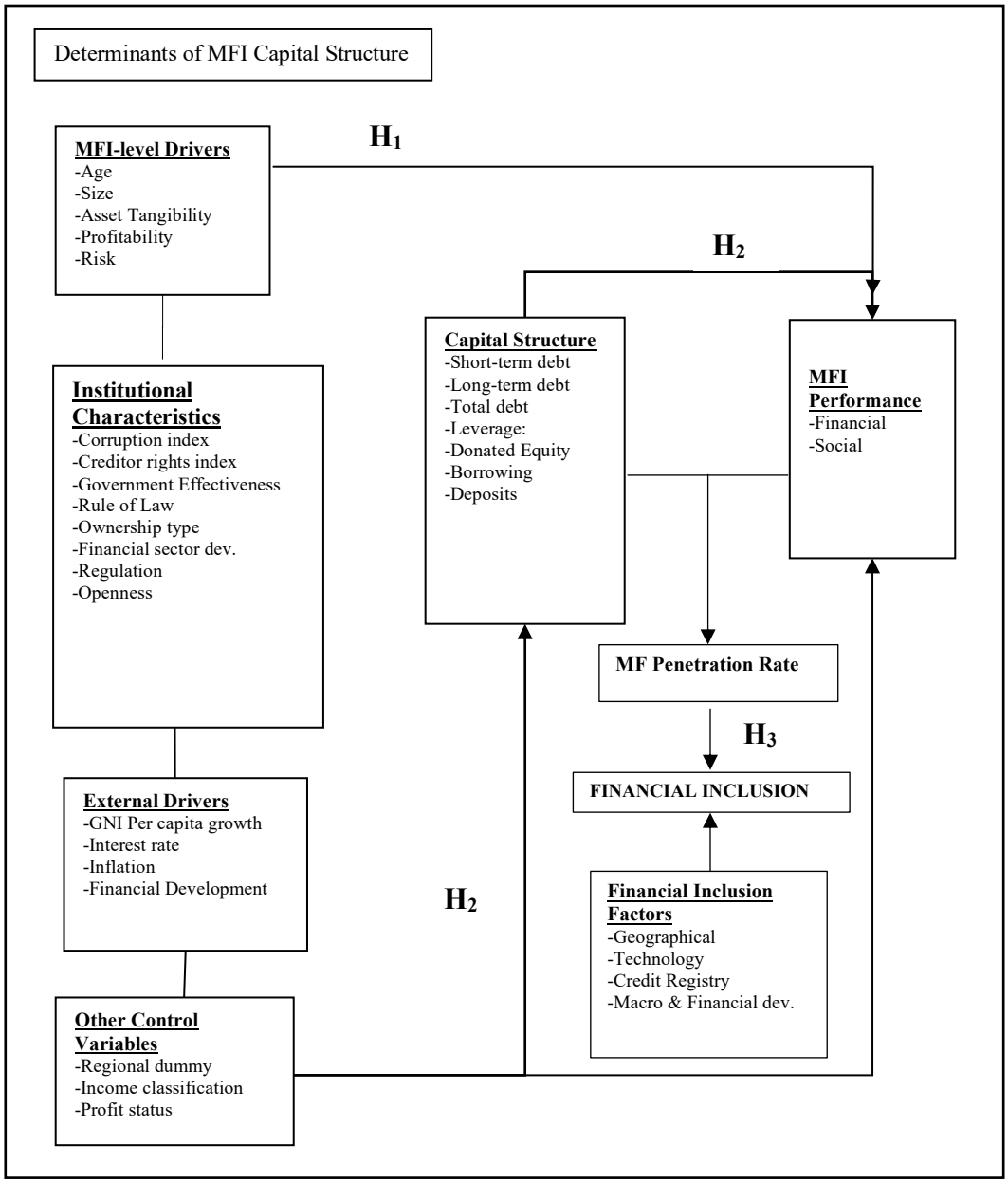

Figure 18. Conceptual Framework.

Source: Authors Own

The continent of Africa through efforts aided by the WB, IMF, G20 and other multilateral finance institutions have pushed for efforts in tackling the issue of financial inclusion. Financial inclusion, as defined by WB is "the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low income groups at an affordable cost." Whilst the WB and other development agencies identify MF as a tool to improve financial inclusion, a gap in the literature exists. In that, till date, there has been no comprehensive study put forward to determine the imposing effect of MFIs on

financial inclusion. In addition to this, existing studies are yet to measure the impacts of various policy interventions to eliminate financial inclusion. Hence, using a financial index employed by Yorulmaz (2016), and a measure of MF penetration, this study aims to establish the effects of MF on financial inclusion in the SSA region.

The World Bank usually measures the level of financial inclusion through certain banking measures. These include number of bank branches, number of accounts, and domestic credit as percentage of GDP and domestic deposit as percentage of GDP. These indicators for financial inclusion however, as Sarma (2008) argues, are not enough because it only identifies one dimension of banking outreach. The general consideration of the conceptual framework captures first the link between the institutional environment, macro factors and financial development on MFI capital structure, the capital structure then impacts on MFI financial and social performance. This could then impacts on the financial inclusion.

Chapter 4 MFI FUNDING AND THE INSTITUTIONAL ENVIRONMENT

4.1 THEORETICAL UNDERPINNIGNS

The relationship between capital structure and firm value has engaged the attention of both academics and practitioners (Kyereboah 2007). According to Glen and Pinto (1994), Demirguc-kunt *et al*., (2011), Awunyo-vitor and Badu (2012), one of the important decisions confronting a firm is the choice between debt and equity. Hence, the position of theory to provide an understanding about corporate issues and the relationships that occur within an organisation cannot be overlooked. Several theoretical frameworks have been employed to study the relationship between capital structure and firm performance, as well as the determinants of the capital structure of firms. The famous Miller Modigliani (1958) paper set the stage for numerous propositions, developed to provide the theoretical underpinnings of this crucial concept of finance (with an irrelevance position achieved in concert with the existence of perfect capital markets). The theoretical advancements with emphasis on shaping capital structure models based on tax balancing and information asymmetry, and various elements of a firms capital structure have (has over-time,) in times-past, aided in understanding the financing behaviour of corporate entities. The various arguments have centred on an optimal capital structure for specific firms, and the extent to which the quantum of debt usage (in relation to equity) is irrelevant to a firm's worth/value. According to Cotei and Farhat (2009), three prevailing theories are often used to explain firms capital structure choices namely; Trade-off theory, Pecking order theory, and the Market-timing theory of capital structure. Whilst, Jensen and Meckling (1976), propose a trade-off between utilizing the benefits of debt, and the adverse costs related to debt, Myers and Majluf (1984), suggest a hierarchy of firm preferences in financing firm's investments. On the other hand, the market-timing theory suggests that firms time equity issues when company shares are overvalued and buy-back shares when undervalued.

According to the above theories, a certain level of leverage can lead to performance gains through various benefits of leverage, thereby concluding that leverage influences performance of firms. It is worth noting that, whilst these theories explain capital structure, for corporate firms, no such theory has been employed to explain MFI financing choices, and its effects on how MFIs perform. Post Miller and Modiigliani (1958) irrelevance theory, Miller and

Modigliani (1963) incorporate tax benefits as determinants of capital structure, thereby, recognising the importance of tax-deductible interest (as a tax-shield) on the use of leverage within the capital structure of firms (via payment of lower taxes). They thus state that firms should employ as much debt as possible, in order to maximize firm value. This therefore is a tacit admission that the capital structure of a firm, influences firm value. Subsequent to this, several studies have looked at the linkage between capital structure and firm performance, leading to several competing theories[44] on the role of capital structure in determining the financing choices, and performance of firms.

Fama and Miller (1972), examine the possibility of different utility functions between managers and shareholders. Building on this, Jensen and Meckling (1976), argue that greater financial leverage possess the ability to affect manager's performance (through the threat of liquidation), which causes personal loss to manager's salaries, reputation and perquisites[45] thereby reducing (agency) cost associated with disconnect between managers and owners. Myers and Majluf (1984), and Myers (1984), indicate a position of support for the unavailability of a well-defined target debt ratio, suggesting the existence of a hierarchy with regards to the financing of investment by firms; pecking order theory of firm financing. Finally, the market-timing theory of capital structure, suggest that firms time new equity issuances when stock prices are perceived to be overvalued, and buy back stick when prices are perceived to be undervalued.

A glaring conclusion emerging from the debate suggest that; the capital structure of a firm indeed has implications for its operations, as well as impacts on its performance. Although much of the debate on capital structure centres on the determination of an optimal capital structure, observing capital structure dynamics from the perspective of the institutional environment lacks evidence from an MFI perspective. Particularly pertinent due to the importance of these institutions and key institutional changes within the MFI context (increased calls for; improved institutional quality and governance amongst donor recipients, sustainability drive and commercialisation calls). In view of the increased clamour for commercialisation within the MFIs sector, this research project aims to fill this void; by

[44] These include, Agency cost theory, The trade-off theory, Pecking order theory, and the Market timing theory of debt.
[45] Grossman and Hart (1982), and Williams (1987), expand on this area of the literature.

establishing through empirical analysis the institutional drivers of MFI financing choices (capital structure), and its impact on the performance of MFIs.

4.2 MFI FINANCING

Existing theories have been developed to describe under what circumstances an MFI should use a particular type of funding instrument. The prevailing theories of MFI funding processes can be categorized into two main frameworks: Life-Cycle Theory (LCT) and Profit-Incentive Theory (PIT).

Kapper (2007) estimates that 80% of the world's population is financially excluded thus the demand for microfinance is high. Paul (2010) estimates that the demand for microfinance currently outstrips supply by $300 billion and in order to reach those without access, MFIs need to expand. Capital constraints and high operating costs in developing countries limit access to financial services by the poor (Kumar, 2012). The aggregate portfolio for MFIs across the world approximates $15 billion whilst the anticipated growth rate ranges between 15 and 30% per year, translating into $2.5 - $5 billion additional capital required annually. Conversely, donors are able to inject nearly $400 million annually, falling short of the sector's need. Donations are used for microfinance developmental issues especially information dissemination, capacitation of MFI associations and regulatory support (CGAP, 2004). It is therefore apparent that a high prevalence of financial exclusion is caused by the lack of strong financial intermediation backed by sound financing (Kapper, 2007). The literature clearly identifies that adequately financing MFIs is critical if the needs of the poor are to be fully addressed. Thus, the financing options assumed by MFIs in part determine the financial services that they can provide and at what cost.

Myers and Majluf, (1984) highlights the noticeable increase in the transition of NGOs and non-bank MFIs into regulated microfinance banks as the search for suitable financing increases for MFIs (for instance Compartamos in Mexico). Subsequently, de Sousa-Shields and Frankiewicz (2004) observe that the MF sector in most countries has proven commercial viability and an ability to serve the market profitably when applying best practise asset management. It is no surprise that; given that MFIs are being weaned off donors and governments, new innovative financing methods are being instituted (Hoque et al. (2011a). However, the debate on the right financing of microfinance that ensures extended outreach and

sustainability of MFIs remains open. Furthermore, establishing how best to attract optimum financing for MFIs especially in SSA remains scant. It is in this prism/gap that we examine current MFI financing theories and explore if they explain much of MFI financing within the context of SSA. Therefore, in view of the important role of financing for MFIs, the next section explores the literature on MF funding theories, and relationship with value, and performance. Secondly, we situate this within the current long-term goal of MFIs in improving financial inclusion.

4.2.1 Microfinance Funding & Capital Structure

The positive returns of several MFIs around the world have continued to attract new investment funds, whilst MF continues to evolve, with consistent emphasis on (sustainability,) efficiency and growth in outreach. The gradual increase in MF activities have ultimately meant that MFIs now more than ever, are increasingly reliant on commercial financing to fund this potential growth, whether through debt or equity investments (Ming-yee, 2007; Hermes and Lensink, 2011). A review of the literature suggest/indicates that the link between the funding and performance of MFIs is one of the important gaps in the existing literature (i.e. how funders determine financing decision based on the key performance indicators of MFIs) (Ming-yee 2007, Hermes and Lensink 2011). Amidst this, there has been a concerted drive amongst governments/countries in SSA to improve governance, and institutional quality in hopes to attract foreign capital and improve the quality of institutions. Whilst researchers suggest this could be a determining factor in improving funding (attracting funding from foreign agents), empirical evidence is yet to confirm this is really the case for MFIs in SSA. With the growth and clear funding gaps within the MF sector in SSA, the importance of determining the institutional factors that influence the sector would be useful for policy makers, MFI practitioners, and researchers in the area of MF.

This section of the literature reviews the literature on MFI funding; starting with the review of the early stage funding, growth and current trends within the MFI sector. We then examine MFI funding theories in context with long existing capital structure theories. Finally, we place the literature on MFI funding the context of (institutional upheaval through the institutional environment prism) the institutional environment in view of the current institutional upheaval of commercialisation of the MF sector.

4.2.2 Evolution of MFI Funding Sources

MFIs services impact on the bottom of the pyramid in developing countries around the world. Despite the successes of many MFIs, millions of low-income individuals in developing countries still lack access to financial services. High operating costs and capital constraints within the MFI industry have prevented MFIs from meeting the enormous demand. Additionally, (Bogan et al. 2007, Imai et al. 2011) show that the demand for credit by the poor is not inelastic. The high interest rates charged may be limiting the ability of MFIs to serve poorer potential clients. Donor agencies, local governments, and others are promoting competition and stressing financial sustainability as ways to maximize the breadth of outreach (Armendáriz de Aghion and Morduch, 2004). As an added level of complexity, MFIs are a unique type of lending institution with risk and return characteristics different from those of standard lending operations. MFIs also have a mission of reducing poverty, not just maximizing firm value. Thus, institutional structure and capital flows to MFIs have become much more critical issues. Focusing on funding sources, this research project investigates the determinants of the institutional of the funding of MFIs. Secondly, we establish the impact/relationship between capital structure, MFI sustainability, efficiency, and outreach to identify opportunities for increasing the sustainability and growth of MFIs[46].

Although microfinance has existed for centuries in various forms, the development of distinct MFIs came into prominence in the 1980s after the emergence of the Grameen Bank, which developed strategies and lending techniques that influenced MF organizations all over the world. In its initial stages, MF employed the use of social capital to overcome the problems of lack of collateral, and limitations in creditworthiness information. Much of the applied economics literature in this area addresses the MFI lending mechanisms (Morduch, 1999), the social worth of microfinance organizations (Armendáriz de Aghion and Morduch 2004), or the performance of MFIs (Navajas et al. 2000, 2003).

In recent years, there has been increasing internal and external pressure for MFIs to decrease dependence on subsidies and grant funding. For example, ACCION International, an organization designed to support MFIs, helps MFIs obtain equity financing, debt financing,

[46] Table of funding summarizes how each of the four primary funding sources can affect MFI efficiency (Helms, 2006).

and other commercial funding instruments. By enabling MFIs to link directly with investors and commercial banks[47]. Over the past decade, ACCION has been highly influential in encouraging donors to subsidize start-up costs only and pushing for MFIs to have a commercial focus (Armend´ariz de Aghion & Morduch, 2004).

Subsidized external debts, also called soft loans or concessionary borrowings, are contracted at favourable conditions, that is, below market rates. They are often provided by government aid agencies (United States Agency for International Development: USAID), multilateral banks (World Bank), or apex organizations and foundations. Soft equity or subsidized equity is a financial instrument that is channelled mainly through micro investment vehicles (Lapenu and Zeller 2002). Returns expected by donors in this case are under the market rate. Finally, MFIs receive subsidies in the form of donations and cash, and donors in this case are not expecting any returns. Subsidized equity is part of equity. Whilst some question the ability of donor funds to continue to pour into the sector –especially post the credit shocks- (Murdoch (1999), the clamour for domestic solutions for MFI financing has been on the discourse of current debate. Even when the local constitutions/make-up in many of the developing nations –who really need MF services- are dire (poor institutions, governance and high levels of corruption remain rampant), the strategy of a continual subsidising of MFIs increasingly looks bleak. For instance, Bateman and Chang (2009) identifies this strategy as poor implementation and exploitation of the vulnerability of those involved in funding and benefiting from the ills of MF as is.

Since donor funds are limited in amount, reliance on this source of funding limits the ability of MFIs to expand to meet rising demand for services. There is also a question as to whether reliance on donor funds allows MFIs to avoid pressures to operate efficiently. Commercially-funded MFIs respond to the profit incentive, working to increase revenues and decrease expenses so that they can have revenues sufficient to cover all operating expenses. MFIs with access to donor funds may not respond to these pressures to operate efficiently or may deliberately choose outreach over efficiency by serving poorer or rural clients with higher delivery costs (Hudon and Traca 2011a).

[47] One of such institutions favouring the independence of MFIs is ACCION. ACCION strives to help MFIs become independent of donor funds, through a transformation process from NGO to commercialised MFI operations. The ACCION Gateway Fund LLC invests in MFIs with a proven track record of financial viability.

MFI FUNDING STAGES

Instrument	Benefits	Challenges
Grants/Donations	Best for start-up or risky institutions when commercial sources unavailable.	Money perceived as "too easy" so no efficiency incentives
Equity		
Quasi-equity	Source of low-cost funding (similar to concessional debt)	Generally available only to mature institutions.
Local equity capital	Governance role could improve overall management and thus efficiency.	Only licensed financial institutions are eligible. Stockholder demands can cause mission drift that allows inefficient practices.
Traditional equity capital	Allows financial institutions to tap into capital markets. Governance role could improve overall management and thus efficiency.	Only licensed financial institutions are eligible to sell shares on the market. Stockholder demands and diluted ownership can cause long-term inefficiencies due to short-term focus.
Deposits	Over time is a low-cost source of funding. Creates independence from external funding.	Only for regulated institutions. Some institutions may need support to develop products and systems to lower costs and manage growth of deposits.
Debt		
Concessional loans	Source of low-cost funding.	If commercial alternatives exist, can distort domestic markets and reduce incentives to mobilize deposits.
Commercial loans	Source of funds that encourages efficient operations.	None.
Bonds	Allows financial institutions to tap into domestic capital markets, encouraging efficiency.	Requires sufficiently developed secondary market. Dependent on local shocks. May require initial incentives to get started in some markets.

Table 4.1: MFI Funding Instruments and MFI Sustainability.

Source: Authors Own. Coined from Helms (2006).

4.3 MIFI FINANCING THEORIES

4.3.1 Life Cycle Theory

Existing research places the evolution of MFI funding sources within the context of an institutional life cycle theory of MFI development (de Sousa-Shields, 2004). According to this framework of analysis, most MFIs start out as NGOs with a social vision, funding operations with grants and concessional loans from donors and international financial institutions that effectively serve as the primary sources of risk capital for the microfinance sector. Thus, the literature on microfinance devotes considerable attention to this process of "NGO transformation" as a life cycle model outlining the evolution of a microfinance institution (Armendáriz De Aghion and Morduch 2010) (see "MFI Funding Table 4.1). Generally the life cycle theory posits that the sources of financing are linked to the stages of MFI development. Donor grants and soft loans[48] comprise the majority of the funding in the formative stages of the organization. As the MFI matures, private debt capital becomes available, but the debt structures have restrictive covenants or guarantees. In the last stage of MFI evolution, traditional equity financing becomes available (Helms 2006).

The Life-Cycle Theory (LCT) of MFI financing situates MFI financing as a product of MFI life-cycle. Fehr and Hishigsuren (2006) posit that the capital structure of MFIs changes with the LCT phases of an MFI. Hoque and Chishty (2011) concur by writing that the LCT explains the financing of MFIs as they evolve into financially sustainable institutions. Despite the popularity of the LCT, evidence of it remains scant as little work has been done on it. In an effort to answer the question: Do MFIs develop towards financial sustainability, Bogan (2012) used cross-sectional data on the top 300 MFIs. The results did not support the LCT but underscored the importance of capital in determining financial sustainability. This is because capital constraints and costs limit the expansion of microfinance. (Fehr and Hishigsuren 2006) note that the shift to private capital has already begun and some MFIs are being established on full private capital financing. The authors emphasised that, the ability of an MFI to survive any stage of the LCT is a function of the ability to attract the ideal financing resources.

[48] Soft loans are loans with subsidized interest rates obtained from multi-lateral banks (e.g., the world-bank, Inter-American Development Bank), government aid agencies (e.g., U.S. Agency for international Development, U.K. Department for International Development), foundations (e.g., Ford Foundation, ill and Melinda Gates foundation), and apex organisations (e.g., Women's World Banking ACCION).

Farrington and Abrams (2002) provide evidence that supports the life cycle theory, noting an increase in competition in MFIs as they increase in number and documenting a spread in regulation facilitating a change in the capital structure of the industry. They discuss several key trends that have emerged: (a) the tendency toward increased leveraging of capital, (b) the rise in the practice of accepting public deposits, and (c) a shift away from subsidized donor money toward commercial funding. However, Fehr and Hishigsuren (2006) notes that whilst market-oriented financing for MFIs is noticeable, there is still evidence of non-commercial financing that opposes the LCT evolution style. Financing programmes linking MFIs with investors and commercial banks through credit enhancement lowers financing costs for MFIs as they turn into commercially viable entities, thus challenging the LCT.

Despite the support for the life cycle approach, there is also evidence that countervailing factors shape the funding sources and instruments available to MFIs. MFIs therefore face limitations in financing options, especially MFIs constrained with no license for taking public deposits and no shareholder structure for attracting equity other than donations. In addition, Banerjee et al. (2003) have shown that the maturity of the capital markets within a country can affect the allocation of funding or other resources.

4.3.2 MFI Profit Incentive Theory

In contrast to the life cycle theory, the profit-incentive theory (PIT) posits that MFI use of commercial funding sources (at any stage of development) will enable MFIs meet the "microfinance promise" (Bogan 2012). The use of commercial funding raises cost consciousness, efficiency and outreach. In concurrence with the institutionalist paradigm, the PIT maintains that donor funding is limited in amount, thus cannot fund microfinance on a mega scale given the increasing demand for microfinance. Reliance on commercial funding is therefore beneficial along two dimensions: outreach and efficiency. Since donor funds are limited in amount, reliance on donor funding limits the ability of MFIs to expand to meet rising demand for services (Jansen 2003).

Commercially funded MFIs respond to the profit incentive, thus, the profit incentive theory maintains that MFIs pursuing profits strive to maximise revenue whilst minimising operational costs to cover expenses and build surpluses. Increased revenues and decreased expenses therefore enables MFIs to amass revenues sufficient to cover all operating expenses.

Conversely, MFIs with access to donor funds may not respond to these pressures to operate efficiently or may deliberately choose outreach over efficiency by serving poorer or rural clients with higher delivery costs (Armendáriz de Aghion & Morduch, 2005).

Evidence on the PIT as furnished by Bogan (2012) shows the increasing international and internal pressure on MFIs to shed subsidies and grant financing. Institutions such as ACCION International have made frantic efforts to link MFIs with equity financiers, debt financing as well as other commercial funding sources. This has provided an avenue for MFIs to seek independence from grants and subsidies'. But how effective is this theory in explaining the financing of MFIs? Concerns over the dangers of excessive subsidization in microfinance have been prevalent since the 1980s, and as a result, the goal of serving the poor has been twinned with the goal of long-term financial self-sufficiency for some time (Morduch, 2005). In recent years, there has been increasing internal and external pressure for the MFIs to decrease dependence on subsidized or grant funding. For example, some non-profit organizations like ACCION International have been helping MFIs obtain equity financing, debt financing, and other commercial funding instruments (CGAP 2004). By enabling MFIs to link directly with investors and commercial banks, these types of organizations strive to help MFIs become independent of donor funds[49]. For example, over the past decade, ACCION has been highly influential in encouraging donors to subsidize start-up costs only and pushing for MFIs to have a commercial focus (Armendáriz de Aghion & Morduch, 2004).

4.4 MFI FINANCING SOURCES AND INSTRUMENTS

Current literature places the financing structure of MFIs as closely-mirroring that of commercial banks (Karim 2011). However, differences in orientation of MFIs means that the variation of funding amongst these institutions are different within groups. For instance, profit-motivated MFIs employ debt, equity and savings whilst grants, subsidies and donations are used by NGOs (Tor 2003; Rosenberg 2009). Debt is mainly supplied by private investors (non-commercial), commercial banks and multilateral organisations, whilst equity is owned by national and international non-profit institutions and development banks. CGAP (2004) estimates that 25-35% of MFIs are financed through deposit/savings financing. A further 35-

[49] The ACCION Gateway Fund, LLC invests in MFIs with a proven track record of financial viability, with an estimated $19.5 million in committed capital through its subsidiary ACCION Investments.

40% are debt financed with 30-40% being equity financed. Hermes and Lensink (2011) emphasise that commercialisation of microfinance, competition, technology, financial liberalisation and regulation explain the change in the financing structure of MFIs. This chimes with the institutional change theory, which suggest that institutional upheaval (in this case, changes in technology, institutional environment like policy, governance and regulation), impacts organisational resources. If this is the case, the need to examine the funding pattern for MFIs in SSA within the context of institutional change is imminent (Tchuigoua 2014).

Other commercial funding sources include commercial banks (Johnson 2015). Despite this, there is still a shortage of funding for MFIs. For instance, this has led to other MFIs have turned public to raise capital. Compartamos went public in 2007 whilst SKS Microfinance managed to raise $358 million after going public (Hoque & Chisty, 2011). This has marked a transition in the thinking behind funding of microfinance as it has become acceptable that MFIs can source financing in competitive markets just like any other corporate. MFIs can also attract deposits and use such deposits to fund outreach only upon meeting regulatory requirements. Deposits are considered stable and can fund MFIs over a long period of time thus MFIs can attain solid growth (Kapper, 2007).

4.5 MFI FUNDING TYPES

The financial structures of MFIs resemble many business entities; a combination of two elements/instruments: liabilities and equity (see funding Table 4.1 above). However, the hybrid nature of MFIs implies that the spectrums of funding instruments are unique to these institutions, and not readily applicable in many business entities. Total liabilities, sometimes called total debts, typically include voluntary deposits, compulsory savings, debts and other liabilities (Isern and Porteous 2005). Total equity, on the other hand, generally refers to the total money the owners have invested. Hence, two main separate categories of financing instruments are available to MFIs: liabilities financing and equity financing (Wisniwski 1999, Ming-yee 2007, TheMIX 2009, Sapundzhieva et al. 2010, Hermes and Lensink 2011). Recent debate has moved to investigate the best option for financing MFIs from a choice of debt or equity financing (Sapundzhieva et al. 2010). However, of the studies reviewed, none of these focus on the SSA region, despite the fact that in deciding the optimum choice of debt and equity, considerations of MFI characteristics (such as; Size, profitability, mission goals, MFI orientation, financial capital trade-offs/opportunity costs, portfolio risk/quality, MFI age and

institutional and macro-environmental factors) is crucial (Bogan 2012). Regional characteristics and the quality of the institutional environment in SSA suggest that all these factors are uniquely different for MFIs especially within the SSA region. Therefore, in the choice between liabilities and equity financing, the heterogeneity of these factors within the continent needs to be taken into consideration in order to procure SSA specific solutions. This therefore, requires a unique study for the MFIs in SSA.

4.5.1 Equity Financing

Equity financing for MFIs refers to an instrument of MFI financing which in exchange for capital, requests some equity from MFIs (Janson 2003). According to the LCT, this type of financing for MFIs usually comes in the later stages of MFI development (mature stage). Equity offerings for MFIs therefore create a liability in the shape of capital (Delloite, 2010). The literature on MFI financing suggests that three main methods exist for raising equity financing for MFIs. These include; employing retained profits, rights issues and new issues of shares to the public. Although these means of raising finance is not new to other business segments, the hybrid nature of MFIs suggest that advantages accrue to some of these methods. For instance, the investment funds from owners do not necessarily have to be repaid since investors expect a share of the profits via dividends. If the MFI does not make any profit or fails, the MFI will not have to make any repayment. Secondly, MFIs absorbs debt liability in the event of bankruptcy. Finally, owners can employ raised equity to cover operational costs, of operations without the burden of debt.

However, equity financing has some disadvantages. First, MFIs often have to meet superior regulatory and governance structures in order to obtain these funds, these regulatory impingements are often blockades and expensive for MFIs to implement. Secondly the increased risk and pressure on MFIs to perform (when not ready), could lead to a quick collapse. Thirdly, investors always require a very well-detailed and convincing business plan (or board guarantees, which is not often available for MFIs-expertise-).

4.5.2 Liabilities Financing

Liabilities financing, represents various maturity dated debt financing employed by MFIs, which have (often favourable) repayment terms to issuers of these liabilities. Due to lack of sufficient funds (equity), MFIs often rely on debt financing to fund their business operations

and loan portfolios. The main advantages of debt for MFI include: Owners can maintain maximum control over their business without sharing control and profit with lenders. Secondly, the firm has no other obligations apart from the repayment of the loans (the principal and interest) to the lenders. Finally, interest on debts is tax-deductible to corporate income tax. This means that it shields a part of the income from taxes and lowers tax liability every year. Conversely, there are also a number of disadvantages of debt financing. MFIs often have to meet certain criteria to attract favourable financing, which often is unachievable. For instance, MFIs have to suddenly improve on their social and financial performance KPIs in order to attract favourable financing. Secondly, information sharing is crucial to obtaining liability financing; however, MFI reporting is not always premium, because of the various regulatory requirements across regions. Finally, liabilities financing could come with high repayment rates. This could lead to MFI collapse. Thus, whenever they use debt financing they run the risk of bankruptcy. Debt financing can clearly have positive benefits to MFIs. However, over-reliance on this financing instrument creates a negative impact on their credit ratings and makes it difficult to raise funds in the future.

4.5.3 Deposits

An emerging source of funding for MFIs is deposit financing. The literature indicates that a growing number of MFIs have formalized and sought to fund growth through public deposits and thus became willing to accept banking regulation and the concomitant standards of transparency and prudential management (Janson et al. 2003, MIX 2011). As these institutions mature and expand, the gradual transition to include commercial funding is crucial. This ultimately increases MFIs range of risk and liquidity profiles and thus could be adjusted to match the capital structure requirements at different stages of the institutional life cycle. Some observers view these changes as a general shift toward capital structures more typical of commercial financial institutions. Deposits therefore represents a sustainable means of financing MFI activity. However, the regulatory framework in much of SSA serves as a limiting factor to this source of financing. Establishing the usefulness of the institutional environment by examining the institutional determinants of this source of funding could direct policymakers in creating an environment conducive for effective deposit mobilisation amongst MFIs in SSA

Voluntary deposits are characterised by convenience and return: the ability to deposit and withdraw at will and earn interest at the market-driven rates (Branch and Klaehn 2008). This form of financing is relatively stable and of low-cost. They help MFIs to achieve independence from donors and investors, which is particularly important in periods of liquidity constraints (Morduch and Haley, 2002). Deposits are more than half of the total assets reported by financial institutions that have deposit mobilisations because depositors enjoy certain benefits, such as access to loans (Marsh 1982, Gombola and Marciukaityte 2007).

Research suggest that other reasons affect the reluctance of MFIs to adopt deposit financing. First, the poor were thought not to have enough money to make voluntary savings (Adams 2002). Second, most of the institutions involved in microfinance were NGOs or small financial institutions, which were not legally licensed to collect savings from the public. Due to their own lack of capacity, such as limited services and branches, the public prefer to deposit their savings in local commercial banks rather than MFIs. Thus, deposits appear to be too costly[50] for MFI implementation, when compared to concessionary funds from governments and donors, or even commercial loans with interest at the market rates (Elser et al. 1999, Wright 1999).

4.5.4 Borrowing and other Liabilities

Borrowings are sums of capital borrowed from other financial institutions for short and/or long-term periods. MFIs often borrow from local commercial banks or international financial organisations (MIX Market, 2009). Foreign capital obtained by MFIs often through debt preferment terms are also a source of liabilities for MFIs, obtained through MIVs; who are becoming an increasing source of liquidity for MFIs. MIVs are vehicles utilised by international investors who often want exposure to superior returns in the MFI sector. These usually is in the form of capital investment in MFIs directly or indirectly through microfinance investment vehicles (MIVs), known as intermediaries between global investors and local MFIs. Even though debts are the commercial funds generally priced at the market rate and may be expensive for new or small MFIs, they are currently the most popular funding source for lending when MFIs have limited ability to obtain savings from the public (Sapundzhieva, 2011). MIVs therefore play an important role in mobilising commercial funds to MFIs to fund

[50] Costs here include; transaction costs, advertising cost, employee incentivisation, volatility of funding, liquidity management and reserve requirements (Giehler 1999; Adams 2002).

their loan portfolios and operations. Soft loans and grants also are often utilised as other/further type of liabilities used by MFIs. This source of this funding usually consist of investment funds from other external sources from local and/or international donors. Furthermore, commercial debt consists of debt maturities constituted at market rates. MFIs often use a combination of all of these types of financing to achieve a rate of interest generally lower than the market rate for debt (MIX Market, 2009).

In summary, the literature identifies three main sources of financing for MFIs to fund their potential growth. Each type of funding therefore has unique qualities which offer different utility for MFIs, with unique implications for capital structure and the performance. The varied nature of the capital employed by MFIs mean that these institutions will behave differently from other financial institutions, therefore, examining MFI funding structure within the context of the institutional environment presents a unique opportunity to proscribe useful policy directions for MFIs within the SSA environment.

4.6 MFI FUNDING AND THE INSTITUTIONAL ENVIRONMENT

A unique feature of MFI funding is the variety of funding available to these institutions. However, despite the existence of various types of funding methods available for MFIs, research still show that a large number of MFIs are still dependent on donor subsidy to meet their costs (Fehr and Hishigsuren 2006). For instance. Foreign donors, charities, and socially responsible investors still continue to fund many MFIs in the world (Bogan 2008). In addition, to this, Hermes and Lensink (2011) observe that 70 % of MFIs still receive subsidies from donor organisations and governments. Furthermore, D'Espallier et al. (2013) find that only 23% of the world's MFIs survive without subsidies.

This statistic is particularly pressing when viewed within the context of the recent liquidity squeeze and the inherently scarce nature of capital and resource. The reliance on subsidies could therefore pose a distant danger in cases of extreme shock to financial and capital markets. Areas such as MF donations particularly become areas of less importance for funders and donors (Morduch 1999). Many have signalled that this is an unsustainable way to practice development. For instance, Mader (2017) argues that MFIs current level of reliance on subsidised donor funding is at odds with its goal of long-term sustainable development and

improving financial inclusion. Amidst this, demand for funding (MFIs) has been increasing, and funding instruments are growing within the sector.

A CGAP (2010) report indicates that more than US$2 billion per year of public fund is being disbursed globally to the microfinance sector through apex funds. Disbursements[51] through apex funds –to MFIs- come in the form of subsidized loans and grants. In addition to subsidized loans and grants, debt funding instruments like soft-equity (subsidized equity) are also used to fund MFI commitments globally. However, in the case of soft-equity, this is particularly channelled through microfinance investment vehicles (Hudon and Traca 2011). This funding type has over the years acted as the premier source of funding for MFIs wishing to attract external investor funding. Hence, the promulgation of a sound institutional environment sits at a higher agenda for MIVs in lending to MFIs as portfolio companies. With the increasing influx of commercial funding into the sector, the role played by institutional environment increases in importance, this further creates implications for MFIs.

4.6.1 Commercialisation Drive (New Funding Landscape of MIVs)

This lack of short-term resource, coupled with the fact that domestic credit markets are underdeveloped in some countries, limit MFI financing opportunities. Moreover, MFIs that rely on subsidies are financially constrained (Tchuiugoua 2015). To overcome this constraint of access to external funding, MFIs seek commercial sources of funding, local or cross-border, in order to meet the promise of microfinance to alleviate poverty. Commercialisation (or commercial funding) has been proposed by researchers as one way to improve the funding options of MFIs and thereby reduce dependence on subsidy and grant funding (Hoque et al., 2011; Bogan 2012). Furthermore, Armendáriz de Aghion & Morduch, (2010) argue that moving toward commercialization may increase the ability of MFIs to expand their scale by leveraging assets. Commercialization thus gives an opportunity to MFIs to diversify their funding sources and to be less dependent on subsidies.

It is no coincident that a CGAP (2011) report indicated that between the period of 2007 – 2010, the move by MFIs from donor-dependent funding to sustainable financial service providers, the corresponding foreign investment in microfinance (including debt and equity)

[51] This is public money contributed from developed market economies to developing markets in order to improve development efforts. According to CGAP (2010) more than $2bn/year of public money is being disbursed to MFIs globally.

quadrupled to reach US$24 billion. Mainly disbursed by MIVs, MIVs —the intermediaries between MFIs and investors—have therefore become an important facilitator of access to capital markets by offering several types of financial instruments to MFIs. Microrate (2011), particularly highlight this importance. Their survey indicates that for more than five years, debt instruments have been the main financing tools for investors in microfinance. They represent about 82% of the invested assets of MIVs, followed by equities (18%). Europe and Central Asia (EECA) and Latin America and the Caribbean (LAC), respectively with 38% and 35%, are the two regions that concentrate the majority of microfinance investments. Most notably the region of SSA have been largely left behind in the broad development of the sector.

Concensus point to the quality of the institutional environment in LAC and EECA as contributory factors to the advancement of the MF sector in those regions in comparison to SSA (Cuevas, 1996; Arnone *et al.*, 2012; Veronica *et al*., 2014). If this is the case, the question remains to be answered on the potential lessons to be learned by the MF sector in SSA form the quality of the institutional environment in attracting quality funds to the sector. For instance, the Forster *et al*., (2011) survey shows that the share of MIV investment held by private institutions is 43%, public institutional investors is 35%, private individuals is 12%, and not-for-profit investors is 5%. According to the Consultative Group to Assist the Poor (CGAP) (2011) debt instruments represent 50% of total commitments. In addition, some MFIs are funded directly through financial markets (e.g., Equity Bank in Kenya and Compartamos Banco in Mexico). The implications of the advancement of the sector in other regions suggest that it is vital to cultivate a conducive ecosystem for capital flow to allocative resources.

We therefore propose that MFIs in countries with a better institutional framework will thus benefit from greater access to external funding on attractive conditions as better institutions result in loan availability and better loan contract terms. Furthermore, MFIs in countries with better institutional framework will thus benefit from greater access to external funding on attractive conditions as better institutions result in loan availability and better contract (Tchuigoua 2014).

4.6.2 MFI Challenges of Transition into Commercialised and/or Regulated Entities

More recently, deposit financing and the implementation of commercial debt has been increasingly utilised amongst ambitious MFIs as essential elements of funding future growth in the microfinance sector (de Sousa-Shields & Frankiewicz, 2004). Commercial debt has

therefore become an important financing tool in both short-term as well as longer-term MFI debt financing and management. However, access to these sources of funding requires transition to a regulated entity (Jansson 2003). The process of transition can therefore be challenging and expensive in the short run because of the management, capital, and technical requirements for a regulated entity. Research indicates that this has been a deterring factor for MFIs (Jansson 2003). Although, in some cases, MFIs receive grants and subsidized loans from development agencies to finance the transition into deposit-taking institutions, however, the fraction of these recipients are trivial compared to the overall MFI sector (Helms 2006). It is in this vein that it is suggested that robust funding instruments for MFIs are crucial for the effectiveness of the sector (Tchuigoua 2014).

Funds from development agencies or NGOs may also be deployed as financial instruments designed to improve access for newly regulated entities. These instruments, such as guarantees for capital market issuances or bank loans, have newly regulated MFIs to prove creditworthiness and borrow at cheaper rates (Jansson 2003). Thus, the analytical framework of an MFI life cycle funding pattern may be altered by the ongoing supply of non-commercial funds attracted to MFIs by the social objectives of a sector that aims to serve poor populations. Some research suggest that, these changes to the "analytical framework" has led to a change in the outlook of these institutions. Capturing this changes through observing the capital structure of MFIs suddenly become very useful in further understanding the performance of these institutions especially in SSA (an under researched region).

This has been evident in SSA. For instance, in some countries, a significant number of MFIs grew out of credit unions that traditionally focused on mobilizing savings from members. Whilst some of these institutions may choose to become regulated entities through institutional upheaval (and other factors such as: improved regulation that allows MFIs to accept deposits, improved quality institutional environment such as; improvement in the rule of law, and enforcing creditor rights, and governance framework. These changes could lead to an attraction of the sector from investors, thereby gradually coaxing MFIs to change as they receive international funding with preference terms), others may be more likely to stay unchanged[52]

[52] Whilst some MFIs may choose to transform due to institutional factors such as a change in regulatory environment, or an improvement in indicators of business ease, others may well choose a savings bank model rather than a model that is based on commercial banking.

(Sekabira 2013). Hence, this process of change could therefore suggests that institutional changes/upheaval could play a role in the formation of the funding patterns of MFIs across the SSA region. However, this crucial area of the evolution of MFIs has largely been uncaptured so far by the literature (Tchuigoua 2015). The importance of asserting the level of change in funding, in view of the quality of institutional upheaval is well stated in the literature.

Despite keen interest in possible links between the institutional environment, MFI funding sources and operational sustainability, there have been no systematic studies that provide robust evidence of how variations in the institutional environment affects the capital structure and thereafter sustainability for a larger/specific group of MFIs. In addition to empirical support for the impact of institutional environment on the funding of firms, there is also evidence that countervailing factors shape the funding sources and instruments available to MFIs. These factors show through in considerable regional variation in MFI funding patterns; regional variations that have been influenced by historical factors, including traditional patterns of savings and lending, and variations in regulatory environment. Whereas MFIs in several Latin American countries have made progress in the transition to regulation and market funding (Jansson, 2003), unregulated and NGO structures still predominate in the Middle East, North Africa, Eastern Europe, and Central Asia. Such institutions face limitations in financing options, with no license for taking public deposits and no shareholder structure for attracting equity other than donations. It is therefore important to capture these changes in view of the increasing importance of MFIs mandate.

Further research that situates MF funding options in connection with capital market instruments suggests that an extension of MFI funding to include capital market instruments could benefit the sector in achieving its long-term goals. For instance, in the broader context of addressing the challenges of varied and robust funding options in delivering financial services to the poor, Basu et al. (2004) explores the evolution of financing models from traditional lending to asset backed securitization, credit derivatives, and mezzanine financing[53]. The findings suggest that Indian MFIs have had limited avenues to raise on-balance sheet funds. Thus, in moving towards a capital market based funding structure, the overall regulatory environment could play a role in national and regional variations in funding patterns, since

[53] Mezzanine financing is a hybrid form of capital, structurally junior in priority of payment to senior debt, but senior to equity.

some countries benefit from a more balanced and informed regulatory structure that facilitates the transfer to a regulated entity while still assuring essential prudential oversight.

4.7 EMPIRICAL EVIDENCE: MFI INSTITUTIONAL ENVIRONMENT AND FUNDING.

The empirical literature on microfinance institutional framework and capital structure is still growing. The nascent MFI literature that focus on institutions still largely focuses on the institutional and performance direction. For instance, Patten *et al*., (2001), Demirgüç-Kunt and Maksimovic (1999), Booth *et al.*, (2001), Antoniou *et al*., (2008), Li and Ferreira (2011), Fan *et al*., 2012), Patten et al. (2001), &; Vanroose and D'Espallier (2013), examine the observed differences between MFIs in terms of performance and efficiency by macroeconomic and macro-institutional features. On the other hand, Vanroose and D'Espallier (2013) investigate the relationship between financial sector development and MFI outreach and provide evidence that MFIs flourish and act as a substitute when the formal financial sector fails.

Studies that examine capital structure in microfinance can be categorized in at least four ways. Firstly. A strand of the literature asks whether capital structure improves MFI efficiency and financial sustainability (Bogan, 2012; Hoque, Chishty, & Halloway, 2011; Hudon & Traca, 2011; Kyereboah-Coleman, 2007). A second category of the literature investigates the role of ratings in the reduction of the price of financing, and whether ratings help MFIs raise funds (Garmaise & Natividad, 2010; Hartarska & Nadolnyak, 2008a). Hartarska and Nadolnyak (2008a). Findings from this strand of the literature reveal that rating agencies differ greatly in their impact on MFIs' ability to raise funds. Their evidence further suggests that subsidizing rating does not help MFIs raise more funds. Specifically, Garmaise and Natividad (2010) show that rating significantly reduces the price of financing while having a mixed impact on the quantity. They find that being rated does not significantly increase the amount of loans that MFIs receive from outside creditors. The third category describes MFI financing practices and links sources of financing to the stage of MFI development (De Sousa-Shields & Frankiewicz, 2004; Fernando, 2004; Ledgerwood & White, 2006). The fourth category examines the firm determinants of the international funding of microfinance and provides evidence that profitability and better outreach are more likely to increase an MFI's chance of attracting international commercial debt (Mersland and Urgeghe 2013).

Despite of the importance of this topic for development purposes, identified studies seem to overlook the impact of the institutional environment on the capital structure of MFIs. This analysis intends to fill the gap; by examining the relevance of the quality of the institutional environment on the funding practices of MFIs in SSA. The article thus attempts to answer the question of whether institutional framework variables influence funding choices of MFIs in SSA.

4.7.1 Gaps

Even though this topic is crucial for development purposes, identified studies seem to overlook the impact of the institutional environment on the capital structure of MFIs. The association between institutional framework and capital structure has not yet been subject to thorough investigation in the field of MF. This article intends to fill the gap by examining whether institutional frameworks account for MFI funding policies. The article thus attempts to answer the question of whether institutional framework variables have an effect on the capital structure of MFIs.

Considering the growing importance of development financial institutions like MFIs for developing markets, and its implications on improving financial inclusion, empirical analysis is needed to advance current knowledge in this field. Furthermore, the quality institutional environment in SSA has come under renewed scrutiny, and has been identified as a conduit for international investor appetite in the development process of countries within SSA (Miller and Holmes 2011). More saliently is the dearth of solid evidence on the impacts of the institutional environment on the funding of MFIS. Cohen (2003), Bogan (2008), Ebaid (2009) all argue that a firm's financing decision is influenced by many factors, and explaining this important decision, by one theory (trade-off or pecking order theories) may be short of providing a complete diagnosis of that decision.

To the researcher's knowledge, this research project is thus the first to analyse whether institutional frameworks matter for the capital structure of hybrid organizations such as MFIs in SSA. We thus borrow extensively from general law and finance literature, which examines the link between institutional environment and capital structure. This research project relates to those that previously examined the relationship between the institutional environment and firm financing in the nonfinancial sector. MFIs are hybrid organizations insofar as they

combine banking logic (profitability, clients as customers) and development logic (poverty alleviation, clients as beneficiaries) (Battilana and Dorado, 2010; Kent and Dacin, 2013).

We commence the examination of the funding of MFIs within an institutional framework basis. Within this context, the argument denotes that quality facilitating institutions are really what's needed for MFIs to achieve robust performance, meet its double mandate, and finally help to improve sustainable development in SSA.

We pay specific focus to the institutional environment in SSA because, considerable efforts have been directed towards strengthening the institutional environment, in order to improve governance, open up markets, and therefore attract foreign investment. For instance in the country with the largest economy and population (Nigeria), the government has had a concerted drive towards improving its ranking in the ease of doing business index. Other such efforts have manifested across other parts (in the key powerhouses in regions of the continent) of the continent in South Africa, Kenya, Uganda, and Angola. Within this context, it is therefore important to examine the importance of these changes to the operating institutional environment in SSA and the ability of MFIs to attract financing.

Research examining capital structure as it applies to firms in developed markets exists. Although a fraction of these go on to examine the impacts of the institutional environment and its relationship with capital structure. Many argue that this relationship is vitally important. However, as they apply to MFIs within the SSA context, there are only a few. Of this crop, only one examines the impacts of the institutional environment on the capital structure of MFIs. Of the few that look into the SSA region, majority/all of these examine capital structure form the context/lens of western capital structure paradigm. Although relevant to the literature, however, this as it applies to SSA seems/is inefficient, this is because SSA as a regional context within the continent of Africa possesses its own unique challenges, most of which has been touched upon above. Others include; the similarity of countries within the regions (culturally, and population demographics of west, east, central and South), in addition to the collective increased drive to improve lives through improved governance and the institutional environment in this region[54]. These have hardly been examined in the above studies. Therefore,

[54] Through the improvement in doing business index, transparency and other governance index measures.

it is within this context that we examine the capital structure and MFI sustainability, through the institutional framework context of the countries in SSA. More importantly, this aim is to be achieved whilst incorporating key characteristics of the region.

More overarching is the financial inclusion debate, through the intervention of MF. Anecdotal evidence point to the importance of MFIs in combatting financial exclusion in SSA (Morduch and Armendariz, 2010; Banerjee and Duflo, 2011; Baye, 2013). Whilst MF has also been unilaterally implemented as a tool for poverty alleviation, and as a policy tool to fight financial exclusion by many governments in SSA, empirical evidence is still lacking on the efficacy (and the role of) of MFIs in this process. Therefore, this research project aims to establish the impact of MFIs on the financial inclusion amongst countries (in SSA) implementing this policy initiative.

There is –further- recognition that in countries at all income levels, there are population groups that are not adequately serviced by the formal financial system. Financial inclusion involves expanding their access to the financial system at an affordable cost (Kempson, 2006). In developing countries, the growth of microfinance institutions (MFIs) which specifically target low income individuals are viewed as potentially useful for promotion of financial inclusion. Even though MFIs at present, mainly offer only credit products; as they grow, they are likely to expand their product range to include other financial services.

Credit is one of the critical inputs for economic development. Its timely availability in the right quantity and at an affordable cost goes a long way in contributing to the well-being of the people especially in the lower rungs of society. It is one of the three main challenges to input management in agriculture, the other two being physical and human (Hans, 2006). Thus access to finance, especially by the poor and vulnerable groups is a prerequisite for employment, economic growth, poverty reduction and social cohesion. Further, access to finance will empower the vulnerable groups by giving them an opportunity to have a bank account, to save and invest, to insure their homes or to partake of credit, thereby facilitating them to break the chain of poverty. But SSA is lagging behind in this respect, hence, it is a matter of grave of concern.

In particular, we are interested in the question: what has been the role of MFIs in promoting financial inclusion among the section of the population that does not have any access to formal

financing? This question is particularly important given that: (i) MFIs have a widespread network where they target a significant poor population; and (ii) they are often in direct competition to banking. We therefore hope to answer the question on how MFIs, -if at all-, fit into the overall scheme of financial inclusion.

In the context of a concerted drive in SSA to improve institutional arrangement/quality, we first examine how the institutional environment influences the funding of MFIs in SSA, secondly, we then observe how the funding impacts on the performance (sustainability) of MFIs, and finally, we examine how the implementation of MFIs in SSA influences the financial inclusion on the region.

Three broad areas of institutional environment are of interest to this research project. Firstly, the index of legal rights as it relates to investors rights (these include: application of the rule of law, strength of investor protection and strength of legal rights). Secondly, the world governance index, with focus on corruptions index (a component of index measures) which measures the level of corruption, in addition to political stability, government effectiveness and regulatory quality). Thirdly, we examine the freedoms index, which measures the economic freedoms of countries in SSA. Finally, we examine the financial development indicators in tandem with the macro environmental factors.

4.8 DEVELOPMENT OF STUDY VARIABLES

4.8.1 Theoretical Development & Foundation

How important are institutional frameworks for microfinance funding? With the continuous drive towards commercialisation, of MFIs, the question of the role of institutions in the drive towards better funding of MFIs become pertinent. A unique feature of MFI funding is the variety of funding available to these institutions (Jansson 2003). However, despite various funding sources available to MFIs, research still show that a large number of MFIs are still dependent on donor subsidy to meet their costs (Fehr and Hishigsuren 2006). For instance, whilst some of MFIs external financing is subsidized, a large portion of MFI funding is still reliant on donor financing (Hassan et al 2016). Foreign donors, charities, and socially responsible investors still continue to fund many MFIs in the world (Armendáriz De Aghion and Morduch 2010). In addition, to this, Lensink et al (2011) observe that 70% of MFIs still

receive subsidies from donor organisations and governments. Furthermore, D'Espallier et al., 2013) find that only 23% of the world's MFIs survive without subsidies.

This statistic is particularly pressing, especially when viewed within the context of the near-recent liquidity squeeze and inherent scarce nature of capital resources. Substantial reliance on subsidies could therefore pose a distant danger to MFI funding. Furthermore, in cases of extreme shock to financial and capital markets donations to MFIs particularly become areas of less importance for funders and donors (Morduch 1999). Many have signalled that this is an unsustainable way to practice development. For instance, Mader (2018) argues that MFIs current level of reliance on subsidised donor funding is at odds with its goal of long-term sustainable development and improving financial inclusion. Amidst this, demand for funding (MFIs) has been increasing, and funding instruments are growing within the sector.

This section of the literature explores the importance of the institutional environment within the context of MFI external financing. We tackle this by highlighting some important issues in microfinance funding to shed new light on previously unstudied topics, such as; examining the institutional determinants of funding of MFIs. Using the information asymmetry theory of Banking, within the context of a continuous drive towards MFI commercialisation, the question of the role of institutions in the drive towards better funding of MFIs become pertinent.

The theoretical foundations of information asymmetry as relates to banking, can shed more light on the inability of MFIs to access capital in instances of scarcity. Information asymmetry occurs when the information filtering in to market participants is fractured (Stiglitz and Weiss 1992). For MFIs, this is more pronounced. For instance, Hudon and Traca (2011b) observe that this could be heightened, given the geographical distance between donors and MFI operations[55]. In addition, MFIs often possess local market information that donors simply do not have access to. Hence, information asymmetry problems are bound to manifest between donors and MFIs. The MFI market is further characterized by a deficiency of reliable client-monitoring information coupled with insufficient disclosure[56]. Regulation and minimal-to-no

[55] MFI donors are often non domicile.

[56] In recent years however, a number of institutions have set-out to improve the quality and lessen the information dearth of MFIs. For instance, The MIX is an organisation that collet information on the performance of MFIs. In addition, a slew of rating agencies have helped to strengthen information disclosure in the sector and to improve the reliability of the financial information disclosed by MFIs.

reporting requirements in the sector further accentuates the problem of information asymmetry. Therefore, the dearth of information also makes it difficult to better inform donors about MFI performance, and their ability to efficiently utilize subsidies. The role of the institutional environment therefore lies in supporting policy that fosters good institutions (Lu & Liu, 2009; Fiss, 2012; Kumar & Zattoni, 2016). The availability/existence of better institutions can act to improve the information asymmetry between MFIs and donors who decide to support MFIs. Hence, the amount of subsidies tend to be more important in countries with better creditor protection and better law enforcement. It is therefore hypothesized that better institutional quality could overcome the problem of information asymmetry, and therefore play a key role in the funding of the MF sector.

In addition to delegated monitoring, financial intermediation theory indicates that deposit-taking forms the bedrock of a banks activity (Allen & Santomero, 1997). The ability to accept timed deposits enables financial intermediaries channel funds from units in surplus to units in deficit. For (commercial) banks, this forms the main source of income. In banks, deposits are often then invested in loans, other investments and fixed assets such as; buildings. For MFIs however, this holds several functions: The advocates for deposit funding for MFIs as a sustainable way of financing the sector is not new. For instance, Cull et al., (2009) and CGAP (2011), observe that from a financial intermediation point of view, deposits can be seen as a resource used by MFIs to fund their projects and to make loans. Although (Armendáriz De Aghion and Morduch 2010) suggest that around the world, the vast majority of MFIs are non-deposits-taken, this indicates that the utility of deposit (as a financing option) is still at unexpectedly low levels in comparison to the banking sector, further improvements in the institutional environment (through regulation and stronger creditor protections) could improve the ability of MFIs in accessing deposit funding. For instance, in countries with better creditor protections and better law enforcement, there is an expectation of deposits to be less important. Consequently, MFI deposits would thus be more significant in countries with weaker institutions. Furthermore, with stronger institutions, deposit could be used as financial collateral provided by borrowers to secure a loan (Armendáriz de Aghion & Morduch, 2004, 2010). Thus, this could be used by MFIs as a tool to reinforce contracts, and ultimately a prerequisite tool to be qualified for a loan. MFI deposits would thus be more sensitive to institutional quality measures in countries with weaker governance and creditor rights protection.

4.8.2 Corporate Financial (Theory) Structure and Institutional Environment.

Access to the right type of funding is crucial for firm's operations. According to corporate finance literature, access to external funding sources (on attractive terms) is determined not only by firm-level characteristics but also by the institutional environment (Demirgüç-Kunt and Maksimovic, 1999). It is therefore expected that empirical studies review the relationship between institutions and corporate finance decisions in both developing and developed economies. For instance (Demirgüç-Kunt and Maksimovic 1999), Houston et al. (2010), and Acharya et al. (2011), find that differences in legal and financial systems seem to be responsible for differences in investment policies in firms. Brockman and Unlu (2009), Byrne and O'Connor (2012), suggest that country legal systems appear to be responsible for firm's dividend policies. Further research by Allen et al. (2012), Bae and Goyal (2009), Haselmann et al. (2010), and Ge et al. (2012) indicates that institutional environment impacts on bank lending policies. Finally La Porta et al., (1997), Giannetti (2003), González & González (2008), Fan et al. (2012), and Öztekin and Flannery (2012) all suggest that institutional environment impacts on the capital structure of firms.

The main convergence on the relationship between institutional environment and capital structure settles on the idea that firms operating in a better institutional environment (stand to) may benefit from easier access to external funding with attractive conditions (Demirgüç-Kunt and Maksimovic, 1999; Booth *et al.*, 2001; Antoniou, Guney and Paudyal, 2008; Li and Ferreira, 2011; Fan, Titman and Twite, 2012). The central argument of these studies suggest that, better institutional environments can overcome information asymmetries in credit markets and consequently affect firms' funding policies. A similar conclusion could also apply to MFIs within the context of the impacts on the institutional environment on capital structure. For instance, Garmaise and Natividad (2010), argue that information asymmetries likely contribute to raising the cost of finance in less developed and emerging markets where MFIs operate. Therefore, in credit markets with weaker institutions, information frictions will make it difficult and expensive for MFIs to raise funds and may even appear to constrain their growth (Garmaise & Natividad, 2010). This is confirmed in further research by Earne & Sherk, (2013), who test the regulatory framework, openness and level of development of the financial system, and finds that these factors affect MFI funding policies, as relates to performance and financial inclusion performance. This research project thus assumes that institutional environment and financial sector development affects the funding policies of microfinance institutions.

4.9 HYPOTHESIS DEVELOPMENT (STUDY I)

4.9.1 MFI Capital Structure Variables

Studies on the determinants of the capital structures of firms employ various measures to test the predictions of prevailing capital structure theories on their influences on leverage, and the choices of these on a firm's capital structure. The dependent variable employed within this study captures the debt equity ratio as suggested in the literature (Delcoure 2007, Tchakoute-Tchuigoua 2010). Given that MFIs are primarily not publicly traded, variables relating to their capital structure and their financial performance are measured through the use of accounting indicators (Tchuigoua 2015). Shadowing the observed literature on MF, this study employs central funding measures of MFI capital structure observed in the literature. These comprise of; Leverage and Deposit. However, as a result of the peculiarity of MFI funding and mission, this study further dissipates the leverage measure further into two components: Borrowing and Donated Equity (donations), and Deposits.

Following the work of Titman and Wessels (1988) and Kyereboah-Coleman (2007), this study will also employ three leverage measures, calculated by finding the ratio of book value of; short-term debt to total assets (short-term leverage), long-term debt to total assets (long-term leverage) and total debt to total assets (total leverage). This specification will be employed in the second empirical study examining MF performance and its relationship with capital structure. The utilisation of these measures, relate closely to the MFI specific capital structure variables identified above. For instance, the Leverage component translates into short term leverage (STL), Long-term leverage (LTL) and Total Leverage (TL), whilst deposits also fall under short-term MFI funding. This mix of capital structure variables provides a robust understanding of the issue on capital structure for MFIs in SSA.

We estimate borrowings of MFI by tabulating all MFI donations (donated equity), and external and internal borrowing for a robust analysis. This direction specifically examines the direct impacts of institutional environment on specific MFI capital structure funding components. In reviewing the literature, we ascertain that other studies only use the main measures of leverage as a wholesome measure, although this gives a useful direction in the impact literature on MFI Capital structure determinants, this does not provide a detailed picture

of the MFI funding components and how this is impacted upon by the institutional environment. This particularly is useful for MFIs in SSA, whom desperately need varied funding. Ascertaining specific impacts further enables policy makers and practitioners make decisions which enable MFIs function/perform efficiently.

This therefore, is a novel analysis within the MFI literature for SSA. By separating borrowing as a detailed sum of its components parts, we contribute to the knowledge richly by establishing specific effects of the institutional environmental factors, on specific/detailed MFI funding instruments. Finally, we use the deposit measure to marry all our funding suite of dependent variables. These variables will be regressed against selected explanatory/independent variables collected from both theoretical and empirical literature, both of which identify these variables as important in determining the leverage level of MFIs.

4.10 INSTITUTIONAL VARIABLES FOR CONSIDERATION

4.10.1 Institutional Quality

In addition to the impact of macroeconomic factors in determining leverage choices of firms, the quality of institutions in the country has been affirmed to affect the capital structure decision of firms (Belkhir *et al.,* 2016, Santarelli and Tran 2018). Countries with poor institutional quality promote corruption, increase information asymmetry, and law enforcement would be ineffective in such economies. Hence, a negative relationship is predicted by the agency theory. However, this relationship is expected to be positive in economies with better quality institutions.

Studies conducted to examine this relationship reveal mixed results. La Porta et al. (1999), provide a positive relationship between institutional quality and leverage. While a negative relationship was reported by; Mutenheri and Green (2003). Although these studies have been applied in a developed economy context, the institutional quality within the SSA region requires relevant variables, appropriate for the region. In measuring institutional quality, this study employs Government Effectiveness and Rule of Law as measurement variables, in addition to utilising creditor's rights index, government effectiveness and corruption index. According to Barry and Tacneng (2014), government effectiveness captures the credibility of government in enforcing contracts, and the quality of public services. On the other hand, The Rule of Law captures the degree to which economic agents abide by the rules and regulations. Creditor's rights index includes variables which measure the strength of creditor rights within SSA, whilst corruption index identifies the weakness of governance measures within the SSA context. This study therefore hypothesized that:

H : *There is a positive relationship between institutional quality and leverage.*

4.10.2 Governance Indicators

The implementation of WGI measures as part of the measures of the institutional environment measures for this study is predicated on a few reasons. Firstly, the literature largely ignores the role and quality of governance and its impacts on funding for development financial institutions (hybrid institutions like MFIs). Secondly, the sub-continent relies on enormous inflows of foreign investment, aid and portfolio investment to encourage growth and development. Thirdly, now more than ever, there is a growing need for sustainable development fostered by

foreign partnership and expertise in SSA. Finally, the –almost universal- drive to improve financial inclusion within the sub-continent has meant that the quality of institutions could – play a key role in- facilitate inflows of needed funds (shortfalls) and more importantly establish a solid framework for enabling local institutions mobilize funds in an efficient manner. To this end, it is deemed that the quality of governance is of importance plays a pivotal role.

Research has established that resource allocation is predicated on a quality operating and governance framework. Thus, capital and investment thrives in an environment enabled by governance, this is further enhanced by the quality of governance prevalent. However, within the literature of financial inclusion, the failure of existing research to articulate the role played by the quality of governance in the ability of MFIs to attract vital capital needed to finance their operations is unbecoming.

Governance within the context of Microfinance, applies to the mechanisms through which donors, equity investors, and other fund providers ensure their funds will be used according to their intended purpose. This directly suggests that governance and the quality -thereof of- could directly impact on the ability of MFIs to obtain investors/donor funding. Whilst some research has been conducted to examine the impact of firm-level characteristics on the performance of MFIs, existing research has yet to determine/establish the impact of country-level governance on the ability of MFIs to obtain external capital. This research aims to fill this gap by employing measures of the institutional environment to identify the institutional determinants of the funding structure of MFIs.

The Worldwide Governance Indicators (WGI) is a cross-country measure and indicator of governance. These measures consist of six composite dimensions of governance covering 200 countries. These include; Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and Corruption. Relevant indicators selected from the toolkit of the WGI dataset are based on the relevance to the context of the sub-region of Africa. These measures particularly reveal the overall governance perception of countries in the sub-region. Of the measures observed, the selection includes; Government Effectiveness, Regulatory Quality, Political Stability, Rule of Law, and Corruption Control, largely captures the political/legal dimension of the institutional environment.

H: This research, therefore hypothesize that the quality of institutional environment is positive for the funding of MFIs.

4.10.3 Rule of Law, Creditor Rights and Contract Enforcements

The rule of law characterizes the hallmarks of which surrounds; respect for the law, separation of powers of the executive, the legislature, and the judiciary; freedom of the electorate in political decision making process, regular free and fair elections; independent and impartial judiciary system. Extension of the key tennets further includes a vibrant and fearless legal profession; free and independent media institutions; and finally, the equality of people before the law.

Theoretical and empirical studies provide strong evidence that the strength of creditor and investor rights matter in loan contracting and firm financing choices. Aghion and Bolton (1992) developed a theory of capital structure based on transaction costs and contractual incompleteness. They showed that control rights attached to financial instruments such as debt and equity explain the choice of firm capital structure. Indeed, to the extent that raising more debt funding increases the risk of bankruptcy, lenders should benefit from bargaining power, which is the ability to seize collateral or to control borrower firms. Thus, firms in countries that strengthen the ability of lenders to force borrower repayment by seizing collateral and increase lender ability to take control of these firms are financed on favourable terms. Consequently, Giannetti (2003) studies a sample of unlisted firms and shows that a strong protection of creditor rights is associated with leverage and debt maturity. Further studies by González and González (2008) also document that creditor protection reduces agency cost of debt.

Thus, firms with higher agency cost of debt may find it difficult to get loans in countries where creditor rights are not sufficiently protected. In these countries, external finance seems to be costly, so firms preferably resort to internal financing. Qian and Strahan (2007) show that in countries with better investors and creditor protection rights, banks charge lower interest rates, improving credit availability. If the cost of credit is cheaper, firms will be more leveraged. We expect that leverage and the amount of subsidies will be more important in MFIs that operate in countries where creditor rights are better protected. However, a strict enforcement of creditor rights can be associated with low leverage (Rajan & Zingales, 1995), therefore, strengthening creditor rights can influence manager (borrower) behaviour. Two main arguments justify this relationship. On the one hand, managers who are disciplined by the event of bankruptcy and the control by their creditors may choose to maintain a low level of debt. On

the other hand, if the enforcement of creditor rights entails a bankruptcy, then managers will maintain low leverage.

Concomitant levels of, and respect for the rule of law varies across SSA. However, a clear view is that of a gradual progress towards an absolute respect for the rule of law across SSA. Within the international community and indeed the SSA, the two main international human rights instruments that are most relevant to the rule of law are the International Convention on Economic, Social and Cultural Rights (ICESCR) and the International Covenant on Civil and Political Rights (ICCPR). Of the 46 nations in the sample, all are members. This implies that countries in SSA are alive to their international obligation to promote the rule of law at home and abroad.

Research however indicates that in SSA, the hallmarks deemed to characterize a thriving system of the rule of law, is not at appropriate standards. For example, the separation of the powers of the executive, the legislature and the judiciary is a concept in writing –and not practice- in SSA. Whilst systems of government on paper have structures that purport to separate powers form the executive, and legislature, this is certainly not the case in practice. We see examples of this in states like Zimbabwe, where the incumbent president routinely circumnavigated the legislature through veto orders, and including in Gambia (President Yahya Jameh), and DRC (Democratic Republic of Congo).

Other salient areas of deliberate disregard for the hallmarks of the rule of law include; lack of free and fair elections[57], moreover the electorate are often coerced into voting for strong-men (individual party politics as opposed to a coherent policy based party system of government). Examples of this include paying the electorate sums for votes, and using scare tactics such as; threatening and in some cases public beatings so as to inflict fear as a means to garner support). In such instances the rule of law is likely to be very weak (and hence, could be a detrimental factor in attracting capital).

Additionally, the impartiality of the judiciary, countries within SSA are known to be lacking in such light. For example, it has been widely reported about the ability of head of states to

[57] only a handful of countries in the last elections observed by international organizations have been deemed to be free and fair, this is in comparison to a much better picture in Latin America.

influence or circumnavigate/evade the legal arm of the law, when found to be in breach of duties. Finally, impunity of the ruling elite in SSA means that two level of rules will likely exist in these societies, which further negates the equality of all people before the law. It suffice to say that in SSA the institutional environment is characterized by a general weak rule of law, in comparison to other regions of the world. Hence, this could also lead to a general unwillingness by investors to rent their capital in these nations, and hence, negatively affect development institutions like MFIs.

According to Horn and Bösl (2008) the rule of law is the notion that the powers of state and government can be exercised legitimately only in accordance with the applicable laws and according to laid down procedures. Thus, the legitimacy of all systems of state and its institutions must have roots in the law. This further implies that, the quality of which lies in the effectiveness and predictability of the judiciary and (efficiency in) the enforceability of contracts.

Consensus within the foreign investment literature, posits that foreign capital is sensitive to complex and opaque regulatory structures. According to Anyanwu (2006) in a study of Foreign investment finds that the opaque structures of regulatory processes undermine the flow of foreign investment in developing markets. High levels of sophistication of the legal and judicial systems could therefore precipitate an increase in investment in host countries. Foreign investors are therefore likely to value countries with sophisticated legal/judicial systems, so as to ensure the safety of capital investments (Dupasquier and Osakwe 2003, Cleeve 2012). Consequently, a weak legal system comprising of poor property rights, and greater government participation in the economy is likely to lead to weak foreign investment and investor participation in host countries (La-Porta et al 1997).

The detriments of a weak legal system are articulated by Hallward-Driemeier and Hasan (2005) who indicates that weak law enforcement and lack of credible property protection mechanisms are significant obstacles to foreign investment in Africa. This particularly could be the case for foreign investment in development initiatives like MFIs, as these institutions rely heavily on foreign capital to fund operations in Africa (Morduch 1999). The risks accrued to investors according to (Kinoshita *et al.*, 2007) could be a further deterrent. Risks such as expropriation, including difficulty in resolving contracts with partners using the judicial system(Henisz and Zelner 2001, Li and Ferreira 2011).

Efforts in improving the implementation of the ROL in Africa exists and haven't gone unnoticed. For example, the African Peer Review Mechanism (APRM) initiative, which encourages the exchange and sharing of resources and ideas between member states, is one of such efforts. In addition, the New Economic Partnership for Africa's Development (NEPAD) is another such initiative. There is certainly not a shortage of efforts to increase the institutionalization of the culture of democracy, human rights, rule of law, social justice and economic development. However, the phenomenon within countries in SSA is in need of improvement.

H: This research project therefore surmise that a positive relationship exists between high-quality legal environment and the use of foreign capital by MFIs.

4.10.4 Government Effectiveness

The effectiveness of governments often signals to foreign investors, the efficiency of government in meeting its key role within the business environment of the country. This is often used by investors to determine entry into business environments in potential host countries (WB 2011). Government effectiveness thus entails; the bureaucratic quality, competence of civil servants, quality of public service, and governments credibility in meeting its commitment to policies (Kaufmann *et al*., 1996). Governments often influence firms decisions through policies regulating sensitive areas of the business environment such as; foreign capital, mergers and acquisition activity, employment, wages, dividends, tax policies, in addition to defining and enforcing quality standards (Cuervo-Cazurra 2008). This implies that government policies can either create an enabling environment or create an unconducive environment for foreign investment in MFIs within SSA (Okafor et al. 2015). Therefore, by protracting an efficient government, through efficient use of financial/government resources helps to improve investor confidence. Furthermore, by the distortion of private incentives through taxes and specific regulations that create inefficiencies (North 1990, Delios and Henisz 2000).

Governments within SSA fall within this category (Levine and Renelt 1992). The lax nature and inefficiencies characterize the landscape of government efficiency in SSA. Furthermore, government intervention is often is often unpredictable and arbitrary, characterized by solely seeking to satisfy voters and win popular support, with unclear/vague policies for

implementation. North (1990) remarks that governments often have the legal monopoly on coercion and are often present in every economic transaction. Hence, changes to regulatory or fiscal policies are likely to have either a negative or positive impact on firms (Delios and Henisz 2000).

Good governance encourages the influx of foreign investment into a country, this consequently could raise the possibility of profitable business activities through effective government policies (Globerman and Shapiro 2002, Shapiro and Globerman 2003). Furthermore, effective government policies have been established, as positive facilitators to improve the chances of an MFI ability to obtain capital funding. A survey of funders reveal that good governance plays a positive significant role in the decision of foreign capital investment in host countries.

H: A system of effective governance is hypothesized to be influential in the ability of MFIs to obtain debt funding.

4.10.5 Financial Sector Development Market Failure and MFI Financing

The importance of the financial sector in development has received ample attention from researchers (Collier and Gunning 1999). Although there has been critical discussions on the causal relationship between financial sector and economic growth[58]. However, much still remains to be identified on the impacts of financial development on the MF sector. Financial sector development is seen as important, because it fosters economic growth (King and Levine 1993, Beck and Levine 2004).

The level of financial development in a country, influences the financing decisions of firms. Economies that are well developed tend to have higher levels of financial development in both the money and capital markets, often leading to an efficient flow of financial resources from the financial sector to the private sector (Yinusa 2013). This emanates from the idea that limited access to capital/financial services, often leads to major bottlenecks for individuals with a desire to improve their livelihoods (Beck *et al*., 2003).

[58] A summary of the debate indicates that financial sector development could help spur economic growth, on the other hand, economic growth could also spur financial development.

Additionally, Jalilian and Kirkpatric (2005) show that financial sector development plays an important role in poverty reduction. However, as a result of market failure stemming from imperfect information and informational asymmetries (Kono and Takahashi 2010), formal financial institutions do not serve a significant fraction of the population in developing countries. Hence, an important aspect of development policy is concerned with developing financial markets for the poor as a means to enhance livelihoods and thus, economic prosperity (Beck et al. 2008).

Theoretical understanding places financial development at the heart of sustainable economic expanse. For instance, as countries in SSA consider ways to promote sustained and long-lasting growth, onus is often placed on financial development. Thus, the ability of local financial markets in allocating resources to pressing needs of society is a fundamental aspect of this (Creane et al. 2007). Theory emphasizes that policies aimed at enhancing financial sector performance will result in lower information, transaction, and monitoring costs, thus improving allocative efficiency and increasing output (Stiglitz and Weiss 1981, Barham et al. 1996). The Intermediation theory suggests that the lack of information and the existence of information asymmetries on market participants generally leads to a phenomenon of market failure. In societies where the informal economy is thriving and existing, this is likely to be the case. Consequently, in an efficiently managed –policy effective financial environment- theory suggests that this can also lead to eliminating the constraints currently faced by MFIs in obtaining capital (Beck and Levine 2002).

Financial development comprises a multifaceted concept, encompassing not only monetary aggregates and interest rates, but also regulation and supervision, degree of competition, financial openness, institutional capacity such as the strength of property rights, and the variety of markets and financial products that constitute a nations financial structure (Levine 1997, Khan and Senhadji Semlali 2014). Whilst the composite structure of the financial development mentioned in the above research may not be as robust as initiated in SSA, the pace of development is increasing. For instance financial deepening is now more profound in countries like South Africa, Mozambique, Kenya, Ghana and Seychelles.

Financial sector development and MFI capital structure Studies in non-financial firm’s document that the development of the banking sector does matter in firms' financing choices (Demirgüç-Kunt and Maksimovic, 1999; Booth *et al*., 2001; Giannetti, 2003; Antoniou *et al*.,

2008; Beck *et al.*, 2008). The banking literature suggests that banks overcome information asymmetries by producing information on borrowers and using it for capital allocation (Diamond 1984)(Diamond, 1984). Given that the banking sector is an economy that produces and uses information to monitor the behaviour of borrowers, it is expected that its development will facilitate access to external financing sources. According to Giannetti (2003), firms tend to be more leveraged in countries where the banking sector is more developed. Rajan and Zingales (1995) show that in developed economies, there is little difference in terms of firm leverage between bank-oriented economies and market-oriented ones.

On the other hand, Fan *et al*., (2012) do not find any significant relationships between leverage and the level of the banking sector development, measured by the ratio of deposits over the GDP. As noted by Vanroose and D'Espallier (2013), MFIs are directly affected by the state of the development of the banking sector. They investigate whether the microfinance sector and the commercial banking sector substitute for each other. They provide evidence that MFIs flourish where the formal financial sector fails. Pervaded with numerous market imperfections and inefficiencies, low levels of financial development still permeate many developing economies.

The expansion and implementation of MFIs has received increased attention as a promising development tool, able to address the market failures in the formal banking system in developing markets. However, with increased interest by international investors and Banks in the funding of MFIs, an important aspect of development policy therefore is concerned with developing financial markets for the poor as a way to enhance economic growth (Demirguc-Kunt et al., 2008). Research has shown that over a 10 year period, international and local funding of MFIs have more than doubled. Foreign investors certainly see this as an asset to diversify their portfolio holdings, and also contribute to a social cause, amongst many other things (Creane et al. 2007).

Microfinance unique monitoring techniques and group contract structures adequately diffuses the need for information on potential participants, thereby circumnavigating the issue of information asymmetry in banking mediation theory (Morduch 1999). It is no surprised that also amongst scholars MFIs have received increased attention as a tool for poverty reduction (Isern and Porteous 2005, Krauss and Walter 2009) Although some sceptics remain (Murdoch 1999), the growth of MFIs have been remarkable in the last 3 decades, and many such

initiatives have been initiated in developing countries –with a distinct lack of access to financial services- around the world (Vanroose and Espallier 2009).

Vanroose and Espallier (2009) examine the relationship between financial sector (banking sector) and MFIs. The results suggest that MFIs reach more profitability in countries where the formal banking sector is less developed. Suggesting that MFIs serve a different niche market and fulfil a need that the formal banking sector does not address, in line with the market-failure hypothesis. Meanwhile, Jalilian and Kirkpatrick (2005) highlight the impacts of financial development on poverty reduction, whilst Levine (2004) points to improved financial development as an enabler of economic growth.

The changing nature of the MFI landscape (from NGO as start-up to commercial as they develop) suggests that MFIs also changes with financial development of the local financial markets. Such that, the more sophisticated the financial market sector, the less need for MFIs and vice versa. A sophisticated and efficient financial sector can also foster MFI growth. Such that; MFIs have better access to financial instruments and capital enabling a more robust and sustainable operating environment. The idea here is that with improved financial sector, MFIs are able to operate locally in capital markets and therefore offer a complementary role to banks. On the contrary in a less developed capital market, MFIs are often forced to seek external funds (often donations or subsidized debt), this often leads to good social performance, but unsuitable financial performance. This is because MFIs are unable to utilize breadth of outreach as a result of often paltry donated sums.

In this project, we assume that MFIs and the commercial banking sector complement each other. In line with the arguments in favour of commercialization, we claim that a large banking sector enables MFIs to access commercial loans and therefore reduce their dependence on subsidies. Given that the vast majority of MFIs are non-listed and use the domestic credit market as a funding source, we can deduce that the development of the banking sector influences their capital structure. Thus, we deduce that: Financial sector development can be seen as a positive and/or complimentary measure in influencing the capital structure of MFIs. Specifically, we hypothesize that:

H: Leverage is positively associated with the size of the banking sector, whilst Donations are negatively associated with the size of the banking sector.

4.10.6 Corruption Control

It is not news that corruption is endemic in SSA, in addition, corruption in developing countries has been a salient issue amongst researchers and governments in SSA. Despite the UN convention against corruption (the most comprehensive corruption convention to date) entering into force at the end of 2005, corruption still remains a pressing issue in the politics and economics of developing markets. This is highlighted, with the WB president in 2013 describing this phenomenon as "Public enemy number one" in developing countries. Anecdotal evidence suggests that corruption is endemic in developing countries (Svensson 2005). This is evident in the corruptions perceptions index, which places SSA amongst the worst perpetrators of corruption (CPI 2017). The WB policy committee describes this practice as the abuse of power, to obtain private benefits and includes paying or receiving bribes, embezzlement, transactions for personal gain and favouritism, misuse of influence or irregular payments in public procurement, amongst others.

Developing countries particularly exhibit a leaning towards corrupt practices, this could be as a result of weak institutions to check this practice. More importantly, much more attention is now being paid to the problem of corruption especially in SSA than was the case in the past. Three reasons predicate this; firstly, in recent times it has become less necessary to tolerate governance-challenged regimes (both in the Middle East and Africa). For example recently toppled regimes in North Africa, the middle-east and Zimbabwe, caused as a result of a culmination of a long-standing need to reform. Consequently, increased economic interdependence and globalization means that a given level of corruption has become much more costly[59]. An IMF survey of six hundred global and emerging market mutual funds found that fund managers tend to overweight less corrupt countries. This influences the movement of capital into developing markets in SSA, further constricting capital inflows and affecting the ability of MFIs to obtain funds (Kyereboah 2007). Finally, the trend towards democratization has made developing country governments subject to greater scrutiny and accountability from a broader segment of the public (Kinoshita *et al.*, 2007).

[59] Wei (1997) estimates that moving from a relatively "clean" government like that of Singapore to that of Mexico –for example- would have the same effect on foreign direct investment as an increase in the marginal corporation tax of 50%. Hence, rendering corrupt countries to vulnerabilities in financial crises, as they are forced to rely on short-term offshore loans, which are known to flow out faster than FDI following a shock.

Within the existing institutional apparatus, the effects of corruption are particularly impactful. It not only increases the hazards of operating in certain countries (Shleifer and Vishny 1993, Cuervo-Cazurra 2008) it also heightens the uncertainties and costs of having to pay to get things done (Brewer *et al.*, 2003). Thus decreasing needed inflow of capital into the most needed areas of economies sensitive to the impacts of corruption such as MFIs.

Anecdotal evidence suggests that MFIs in these instances; are unable to attract much needed funding to meet their operating mandates, thereby constraining their performance (social and financial), and stifling their capital structure. In an instance where local and regional banking/capital markets are ill-equipped to deal with the demand, as a result of lack of knowledge, or implementation skill to support cross-border funding and local market funding of MFIs, this creates further problems for MFIs. Many are simply forced to shut (Bateman and Chang 2009), or simply cease to exist. Thereby causing a slowdown in development efforts and creating poor performance amongst MFIs, through a constrained capital structure. However, more salient is the liquidity conditions in developed countries. Tight fiscal situations at home –in donor countries- have made donor countries focus more on the impact of their aid to developing countries, raising concerns among bilateral and multilateral aid agencies over the effects of corruption on economic performance.

Consensus amongst Economists suggest that efficient government institutions foster economic growth (Okafor et al. 2015, Webster and Piesse 2018). Therefore, theoretical positions further propose that one of the most effective ways to tackle corruption is to build institutions with greater integrity. However, despite the publicized nature of the detriments of corruption, empirical evidence in the Microfinance literature is yet un-met with received knowledge, the current disconnect is even more salient in the MFI literature. Therefore, from a policy perspective, there remains a significant degree of ambivalence amongst policy makers about the real impact of corruption on the MFI operating environment. This perhaps could be due to the phenomenon of the East Asian puzzle:[60] Inconsistent with theory that weak institutions of governance (characterized by corruption) discourage investments and thus

[60] During the early 90's in a number of East Asian countries, high rates of growth had been sustained over a long period despite high levels of corruption. A survey –of business men- conducted by Transparency international (TI) China, Vietnam, Indonesia, and Thailand ranked amongst the most corrupt countries. Yet, until the recent financial crisis, these countries have had phenomenal growth rates, and attracted significant flow of private capital.

constrict growth. Outside the development finance sphere, many scholars[61] have sought to understand better the complexities that underbelly the issue of the existence and persistence of corruption. However –where previously-, much of the scholarship lies in the implications of rent-seeking activities[62] and the role of institutions[63] -on the potential impacts- of economic performance.

Empirically, Mauro (1995), uses economic data and econometric techniques to document the negative impact of corruption on investment and growth. In broad terms Knack and Keefer (1995) empirically demonstrate that weak institutions –manifested trough the extent of existing corruption- impedes economic growth. Furthermore, in a different light, Paul (1995) and Stone et al (1996) employ the use of surveys on high transactions costs that accompany activities commonly believed to be associated with corruption. For example, customs. However, this research fails to explain the persistence of East Asian countries as outliers.

A seminal paper by Wei (2000) sought to shed more light on the East Asian puzzle, by using bilateral investment information from 12 source countries to 45 host countries. Controlling for other important factors such as; GDP per capita, an important finding suggests that the impact of corruption on the flow of capital is no different in East Asia, relative to other countries. The implications lay in the theorizing that other factors swamp the negative effects that corruption has on foreign investment. Furthermore, in relation to investment practices, this study's findings also suggest that American investors are more averse to corruption in host countries in comparison to their European counterparts (average OECD investors). However, the study suffers from the fact that the inflows and outflows of foreign investment are dominated by countries belonging to the OECD group of nations, Results might however be different if the OECD countries were excluded from the sample, and perhaps a dependent variable measure such as domestic and foreign private investments. Notwithstanding, this study highlights a salient point on the negative impact on corruption as a deterrent of foreign capital investment.

[61] Rose-Ackerman (1978) highlights increasing corruption as the menace of economic performance, Klitgaard (1988), Wade (1982)
[62] See Kreuger (1974), Bhagwati (1982), Tullock et al., (1988), Murphy et al (1993).
[63] See North (1981, 1990).

What seems clear however, is that focus has been predominantly focused on the impacts of corruption on FDI inflows. For instance, Uhlenbruck *et al.*, (2006), builds on institutional theory and examine how firms adjust their strategy for entering foreign markets in corrupt environments and its effect of corruption on firms' choices, from a managerial theory and practice perspective. Using a data sample of 220 telecommunications development projects in 64 emerging economies. The findings indicate that –in addition to the overall level of corruption, the arbitrariness surrounding corrupt transactions significantly impacts on firm's decisions. Such that, firms adjust their capital formation (types of equity, and non-equity models of entry) according to the level of pervasive, and arbitrary corruption. Furthermore, the use of short-term contracting and entry into markets via the use of joint ventures.

Webster and Piesse (2018), observe that local levels of corruption can often influence foreign owned firms operating in emerging markets. Employing firm level data from 41 emerging countries. This study finds that there is often no difference in behaviours of foreign owned firms and domestic firms. Which suggest that although foreign firms (or foreign capital) will ideally locate destinations with the appearance of less corrupt practices. However, this "appearance" may not be the case in reality. For instance, whilst an FDI destination country could present an appearance of corruption control, local practices fail to reflect this. Within the MFI landscape; MFI funders often advocate for transparency in destination countries, however, the transparency levels of these countries do not often approach the required standards. Further research also find that strengthening the efficiency of corruption control in addition to improving human capital development id beneficial for improved FDI inflow (see Okafor et al. (2015).

Cuervo-Cazurra (2006), examines the impact of corruption on foreign direct investment. Specifically, this paper analyses how the relationship between corruption and FDI varies depending on the characteristics of the country of origin of FDI. This analysis, tests the hypothesis using data on bilateral FDI inflows from 183 home economies to 106 host economies. Results reveal that corruption directly reflect/impact lower receipts of FDI from countries that have signed the Organization for Economic Cooperation and Development Convention on Combating Bribery of Foreign Public Officials in international Business Transactions, and further impacts on the change in the composition of country of origin FDI. Therefore laws against bribery abroad may act as a deterrent against engaging in corruption in foreign countries. Furthermore, corruption results in relatively higher FDI from countries with

high levels of corruption. This further suggests that investors who have been exposed to bribery at home may not be deterred by corruption abroad, but instead seek countries where corruption is prevalent.

The type and nature of corruption often has deterrent effects on capital inflows. For instance, Cuervo-Cazurra (2008) identify that types of corruption exhibits a deterrent effect on the levels of FDI inflows, using data from the United Nations Conference on Trade and Development (UNCTAD), in addition to OECD FDI inflows. Results show that type of corruption is more significant than the level of corruption amongst the sample size. Specifically, results indicate that in transitional economies, pervasive corruption, or corruption that is widely present, acts as a deterrent to FDI because it increases the known costs of investment inflows. On the other hand, arbitrary corruption, or corruption that is uncertain, does not have a similar deterrent influence because it becomes part of the uncertainty of operating in transition economies. This findings therefore, suggests that arbitrary corruption is more suitable to investors in comparison to pervasive corruption. Other empirical findings from work of Schleifer and Vishny (1993) who analyze different types of corruption regimes –monopolistic versus independent suppliers of bribe-generating products (as in Kaufmann *et al*., 1996). Findings suggest that different corruption regimes have different effects on investment.

H: This study hypothesized that lower corruption perception positively determines the capital structure of MFIs.

4.11 MFI FIRM LEVEL DETERMINANTS

4.11.1 Asset Composition/Structure

In the financial literature, collateral is used to secure loans and to minimize information asymmetries in the contractual relationship between lenders and borrowers (Njegomir and Stojić 2010, Berger and Black 2011, Hall 2012). A stream of thought considers collateral as a signalling tool that helps to avoid adverse selection, that is, the ex-ante asymmetric information. In this case, collateral is driven by the ex-ante private information from borrowers. Collateral could also act as a solution to moral hazard problems that are part of debt contracts if creditors need to use them in the event of borrowers' defaulting. Thus, MFIs can put their fixed assets as collateral in the borrowing agreement. Given that tangible assets mitigate contract problems, firms with more tangible assets can sustain more external financing

(Almeida and Campello 2007). The costs associated with external financing seem to be lower for firms with higher collateral. In this study, we consider that MFIs pledge collateral to raise capital.

Prevailing capital structure theories predict a positive theoretical relationship between asset tangibility and the leverage employed by firms (Jensen and Meckling 1976; Lasfer 1995; Drobetz and Fix 2003). Empirical studies that have sought to establish the validity of the above theoretical predictions generally found a positive relationship between leverage and asset tangibility, whilst other studies refute the positive predictions. Amongst those studies that find a positive relationship between asset tangibility and financial leverage include Bradley *et al*., (1984), Hovakimian *et al*., (2004), Korajczyk and Levy (2003), Chen (2004), Huang and Song (2006), Zou and Xiao (2006), Salawu (2007), Salawu and Agboola (2008), Abor and Biekpe (2009), Qian et al. (2009), Chandrasekharan (2012), Drobetz *et al.*, (2013). On the other hand, studies which have found no positive prediction for the relationship between asset tangibility and capital structure include; Vilasuso and Minkler (2001), Karadeniz et al. (2009), and Sheikh and Wang (2013).

Many empirical studies report a positive and significant relation between tangible assets and a firm's ability to leverage (Aktas *et al*., 2011; Frank and Goyal 2009; Kayo and Kimura 2011; Rajan and Zingales, 1995). Hall (2012) finds that the relation between capital structure and tangible assets varies depending on a country's legal and institutional framework. In the banking sector, Gropp and Heider (2010) find a strong relation between tangible assets and the leverage of large European banks, which supports the results obtained in the nonfinancial sector. Given that local credit markets are imperfect and that they are one of the funding source for MFIs, I expect local lenders to require from MFIs the provision of fixed assets. The MFIs with greater portions of tangible assets have a greater debt capacity. This research thus employs the ratio of net total fixed asset to total assets (asset tangibility), and hypothesize that there is a positive relation between tangibility and MFI leverage.

H : *There is a positive relationship betweeen asset tangibility and debt.*

4.11.2 Size

Size is considered a measure of risk. Berger *et al*., (2009) note that large-sized organizations (total assets) tend to be more diversified, to be more experienced in risk management, and to

benefit more from government guarantees (too big to fail). Gropp and Heider (2010) study a sample of European banks and provide evidence that liabilities increase with the size of the bank. They also note a negative relation between size and deposits. Hartarska and Nadolnyak (2008) find that size does not help MFIs raise funds. However, they do find that large MFIs in Latin America are more leveraged. Because large organizations have a low probability of bankruptcy, we expect them to be more leveraged.

In studies on donations, size appears to be a proxy for reputation. Reputation reflects the ability of the organization to effectively accomplish its mission and attract funding. Studies show that size is useful information for donors. Trussel and Parsons (2007) provide strong evidence about the positive impact of reputation on the amount of donations. Prevailing capital structure theories predicts a dual role for the relationship between a firm's size and financial leverage. Firstly, a positive relationship is identified with the use of long-term debt in order to mitigate (and control) the excess of managers[64]. Secondly, as a result of information asymmetries, size reflects the amount of information outside investors have, and as a result large firms should have more information transparency and disclose more information than smaller firms. Hence firms with less asymmetric information problems should have more equity and consequently lower debt. This conveys a negative relationship between firm's size and debt level.

The trade-off theory assumes that firms are more diversified, have lower risk, better reputation, more stable cash-flows and fewer hazards to be liquidated. This presents a firm with easier access to capital markets with negligible debt costs. Thus, the trade-off theory predicts a positive relationship between firm size and firm's financial leverage. Studies examining this relationship support both the positive and negative predictions postulated by the above capital structure theories. For example, Mutenheri and Green (2003), Deesomsak *et al*., (2004), Hovakimian *et al*., (2004), Zou and Xiao (2006), Salawu (2007), Karadeniz *et al*., (2008), Haung and Song (2008), Qian *et al*., (2008), Abor and Biekpe (2009), Qian *et al*., (2009), Sheik and Wang (2011) all report a positive relationship. Conversely, Chen (2004), Chakraborty (2010), Hassan (2012) and Chandrasekharan (2012), report a negative assertion between size and the capital structure of firms.

[64] Perks and perquisites, as well as engaging in empire building.

Based on the theoretical position of the above capital structure theories, this research assumes a positive relationship between a firm's size and financial leverage of firms (and a positive relation between size and donations). Thus, this study will employ the natural log of asset as a measure of firm size for MFIs in the SSA region.

H : *There is a positive relationship between a firm's size and debt.*

4.11.3 Profitability

With respect to the predictions of the various capital structure theories on the relationship between profitability and capital structure, consensus is yet to be reached. The trade-off theory assumes that profitable firms are more able to withstand financial distress and bankruptcy cost than firms with low profitability, hence this theory predicts a positive relationship between profitability and debt-level.

The pecking order theory postulates that firms prefer internal resources for financing decisions. Asymmetric information problems between the firm and outside investors lead to management's preferences for internal funding, when credible information cannot be conveyed to outside investors. This implies that profitable firms may have less debt, indicating a negative relationship between profitability and debt level. The agency theory posits that profitable firms prefer not to raise external equity in order to avoid potential dilution of ownership, and ultimately retain shareholding dominance. On the other hand, controlling shareholders prefer raising the debt level in order to ensure that managers pay out profits rather than build empires. This indicates a positive relationship between profitability and leverage. Whilst a number of empirical studies have found support for the positive relationship predicted by both the trade-off and agency theory in regards to the relationship between profitability and leverage[65], other studies have also found a negative relationship between profitability and leverage[66].

The buffer view of the capital structure suggests that financial organizations maintain a level of capital adequacy above the regulatory requirements to minimize the costs of equity. These

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[65] See Salawu and Agboola (2008), Chandrasekharan (2011), and Blaine (2012).

[66] See; Al Sakran (2001), Chen (2004), Deesomsak et al., (2004), Xiao (2006), Salawu (2007), Qian et al., (2008), Qian *et al*., (2009), Chakraborty (2010), Sheik and Wang (2011), and Akinlo (2011).

costs arise from information asymmetries (Myers, 1984; Myers and Majluf, 1984). Microfinance institutions with high costs of equity maintain a high level of buffer capital and therefore are less levered. Based on the POT framework, profitable MFIs face lower costs in raising equity. Higher profits reduce the necessity to raise debt (Degryse *et al*., 2012). Thus, profitable MFIs prefer internal financing to external financing to finance investments. The empirical studies on banking (Berger *et al*., 2009; Gropp and Heider, 2010) seem to confirm the hypothesis that a negative relation exists between profitability and leverage. In microfinance, Hartarska and Nadolnyak (2008) find a negative but non-significant relation between profitability and the financing policy of MFIs.

Hence, following the above discussion, of capital structure theories on the impacts of profitability on capital structure decisions, We can thus expect profitable MFIs to be less leveraged. Because the financial efficiency of MFIs is a guarantee of their survival, I consider that donors might be aware of the MFI's profitability. The literature on the value relevance of accounting information in the decision to make donations supports the positive relation between financial stability and donations. Hence, following the above discussion, and the duality of the predictions of capital structure theories on the impacts of profitability on capital structure decisions, this research assumes a positive relationship between profitability and debt. In measuring profitability this research project employs the use of ROA.

H : There is a positive relationship between Profitability and debt.

4.11.4 Age of Firm

Older firms with a good track record and better performance are expected to employ more debt financing. Goodwill and credibility created over time, enable banks and/or creditors to provide them with debt financing (Bogan 2012). This can then be used to mitigate against the opportunistic actions by managers. Hence, the agency cost theory predicts a positive relationship between age of firm and leverage. Employing firm age as a measurement variable, this study therefore hypothesised that:

H : There is a positive relationship between age and leverage.

4.11.5 Ownership Structure

Donaldson (1985) assert that as a result of the separation of ownership and control of the firm, the dependence of the firm on debt or equity changes as the firm's stock ownership changes

and this separation often shits the firm's financial goals. This relationship has been found to influence the capital structure choices of firms. According to Lasfer (1995), firms that employ the use of debt are those who have less managerial ownership in their capital structure.

Capital structure theories predict a dual relationship between the ownership structure and leverage. This is as a result of the use of more debt in firms that have low managerial ownership in order to mitigate against the opportunistic behaviour of managers created by separation of ownership from control. Hence the relationship between leverage and ownership is expected to be positive. Conversely in firms where there is a higher level of managerial ownership a negative relationship is predicted by the agency theory. Firms with high managerial ownership will employ less debt as managers do not want to lose control, ownership, and free cash-flows that can be mitigated by debt covenants.

Several studies have examined the predictions of the above capital structure theory on the relationship between ownership structure and leverage with varying results. Amongst those studies that reveal a positive relationship include: Bradley *et al*., (1984), Wiwattanakantang, (1999), Li *et al.*, (2007), and Qian *et al*., (2009), whilst Zou and Xiao (2006) document a negative relationship. In light of the above arguments, this study hypothesised that there is a positive relationship between ownership structure and leverage. Considering that MFIs tend towards a low managerial ownership structure, this research project postulates a positive relationship between the ownership structures of MFIs and leverage. In line with the literature[67], this study will employ dummy variables according to MFIs legal status namely: NGO, Cooperative, Bank, and Non-Bank Financial Institution (NBFI).

H : There is a positive relationship between ownership structure and leverage.

4.11.6 Risk and MFIs' Capital Structure

The empirical literature on the relation between risk and the financial structure of nonfinancial firms is not conclusive. Rajan and Zingales (1995) and Frank and Goyal (2009) find that risk is not a reliable driver of the capital structure. Hence, in a regulated banking industry, the expectation is that riskier institutions hold more equity.

[67] Barry and Tacneng (2014), Wijesiri (2016), both employ four classifications for MFIs. They include; NGO, Cooperative, Bank and Non-Bank Financial Institutions (NBFI).

Gropp and Heider (2010) find that risk significantly reduces leverage. In addition, the risk of default for a financial organization can be important if the quality of the credit portfolio is bad or if it is heavily contaminated. Outstanding loans represent a significant portion of the total assets of these institutions. As a result, I expect that a highly contaminated portfolio increases the risk of default for the institution. Institutions with poor portfolio quality tend to avoid the risk of failure by strengthening their equity and thus reducing their leverage. According to Berger et al. (2009), banks whose customers are more sensitive to default risks should hold additional capital. Furthermore, the quality of the portfolio provides information on the effectiveness of the devices for credit risk management implemented by the MFI. We therefore deduce that; MFIs with low portfolio risk are perceived as less risky by lenders and donors. Thus, MFIs with healthy portfolio quality are more likely to benefit from more favourable funding.

H : There is a positive relationship between MFI Risk and Funding.

4.11.7 MFI Profit Status and Capital Structure

As in the banking and insurance sectors, different institutional forms coexist in the microfinance market. Cooperatives, banks, non-bank financial institutions (NBFIs), and NGOs are the main microfinance institutional forms. Banks and NBFIs are shareholder or profit-oriented MFIs and cooperatives and NGOs are nonprofit MFIs (Gutiérrez Nieto et al. 2009). The study of the relation between for-profit status and the capital structure of MFIs can be based on the argument raised by the proponents of the transformation thesis (Fernando 2004; Ledgerwood and White 2006). Profit-oriented or shareholder-based MFIs are more-able to access external funding sources.

According to the transformation thesis, the transformation of an NGO into a shareholding company offers new opportunities regarding funding sources. According to Ledgerwood and White (2006), the transformation allows MFIs to both diversify and increase their capital funding sources. Indeed, one of the main expectations of such a transformation is to provide access to equity and commercial borrowing, which are crucial to sustain growth. Not-for-profit MFIs have a lower access to external funding sources and have less ability to raise external financing. Transformed MFIs can thus attract new sources of capital such as private equities and commercial loans.

H : There is a mixed relationship between MFI status and leverage.

4.12 STUDY TWO: CAPITAL STRUCTURE AND PERFORMANCE OF MICROFINANCE INSTITUTIONS:

4.12.1 Introduction

The pervasive failure of MFIs around the world, most specifically in Africa have prompted recommendations about structuring financial rescue packages for ailing MFIs (Bateman and Chang 2012a, Mader 2013). Paradoxically, recommendations fail to indicate a way forward for a sustainable financing structure that would ensure financial sustainability in the long-term for MFIs (Karim 2011). Much of which has since been a revolving door of rescues and series of collapses of MFIs. For instance, MFI failures in India, Ghana, Pakistan and South Africa. Given/with the need to ensure continual outreach to the underserved, calls for MFIs to become sustainable has been necessary (Manta 2016).

Despite the burgeoning interest in microfinance, research has shied away from addressing the relationship between MFI financing and financial sustainability within the African context. We explore the various financing options available to MFIs and their implications for financial sustainability. With a general aim to consolidate the theory and empirical evidence on MFI financing and financial sustainability. The understanding is that financing of MFIs continues to evolve with an increased inclination towards commercial financing (Cull et al., 2009; Johnson, 2015). Given the limited information available on this subject for MFIs, most of which is implied, this chapter fuses the theory and evidence on the relationship between financing and MFI sustainability. The adjoining analysis will aim to establish the impacts of financing on MFI performance (social and financial), with the aim to equip both practitioners and policy makers with evidence needed to make MFIs solution-providing institutions in the development process of much of Africa.

4.12.2 Financial Sustainability

Much of the literature on MFI sustainability have been explored in the literature in previous chapters, however, a brief consideration of the literature on sustainability as relates to MFI financing will be reviewed. Although the provision of financial services to the poor hinges on the assumption that MFIs exist eternally to solve social ills such as poverty, and unemployment (Dunford et al., 1999; Dunford, 2000; Armendáriz De Aghion and Morduch, 2010). Consensus suggests that having no MFIs is better than having unsustainable ones (Robinson 2001a, Brau

and Woller 2004). Sustainability as relates to MFIs thus ensures an uninterrupted delivery of financial services (Hamada 2010). Furthermore, Brau and Woller (2004) deem sustainability as a strong stabilizer to MFI efficiency and distinct outreach. Despite pursuing a double bottom mandate, it is often acknowledged that MFI sustainability, is a first step towards ensuring it meets its long term target (Mersland and Strøm 2010).

The theoretical understanding of the nexus between financing and sustainability, draws from the notion that; financially sustainable MFIs often capitalise on scale, exercise cost consciousness, promote innovation, reduce administrative and information asymmetry costs, and therefore, mostly lower adverse selection and moral hazard problems. Thus, advancing outreach whilst suffering the least amount of losses (Hoque et al. 2011, Quayes 2012).

The drive towards sustainability have often led to a move away from donor funded MFIs towards commercial (for-profit) oriented MFIs. For instance, some governments have privatised subsidised, inefficient and loss-making credit programmes and parastatals (Robinson 2001b). Whilst many argue for the case of mission drift in this concerted shift (Mersland and Strøm 2010, Hermes and Lensink 2011), evidence remains conflicted (Hermes and Lensink 2007, Hoque et al. 2011), and inconclusive (Haselmann and Wachtel 2010, Quayes 2012). Proponents however, argue that the shift has brought with it much needed accountability, transparency, efficiency, economic interest rate setting, capital mobilisation and appropriate management remuneration within the MF sector (Robinson 2001a).

4.12.3 MFI Funding and Performance

The nexus between funding and financial structure has become one of the important issues for MFIs in gaining efficiency and sustainability (Fehr and Hishigsuren 2006, Maisch et al. 2006, Bogan 2012). The effects of funding can be positive or negative due to contributions to total financial revenue. In essence, the predicted effects are indeterminate and depend on the specific circumstances of each MFI.

The argument for microfinance as an appropriate tool for financial inclusion and poverty reduction is still unproven (Milford 2010, Bateman and Chang 2012a). Firstly, microfinance cannot immediately turn the poor into the non- poor (Mader 2013). Whilst microfinance -as a policy initiative- has often been touted as a long-term strategy, its implementation in SSA

appears to be counter intuitive (Basu et al., 2004; Lafourcade *et al.*, 2006; Mader, 2018). For instance, the operational quality of MFIs within the SSA context lacks vigour. In addition, the quality of institutional and governance frameworks are well below standards (Hartarska, 2005; Kiiza et al., 2005; Mersland and Øystein Strøm, 2009; Reille, 2009).

Secondly, donor funding tends to become insufficient in meeting continual demand for well-designed financial products from new and existing clients (Milford 2010). Thirdly, whilst the institutional environment and funding has been shown to play an important role in both the economic viability and sustainability of firms, evidence on the SSA context has been an area less explored within the existing literature (La Porta *et al.*, 1997; Deesomsak et al., 2004; Utrero-González, 2007; Flannery and Öztekin, 2012; Chadee and Roxas, 2013).

Based on the framework of existing evidence which suggest that the institutional environment could play a key role in elevating the practice and funding of firms, this analysis, aims to fill the gaps in the Microfinance literature. By examining the impact of the funding structure of MFIs, in addition to incorporating the potential influence of institutional quality on MFI performance, this analysis will document the impact of both capital structure and institutional quality on the performance of MFIs in SSA. Although several studies have focused on investigating the impact of microfinance or the trade-off between social mission and financial sustainability, we approach this from the viability of MF as a tool for long-term sustainable development. Through the efficacy of capital structure management, enabled via the quality of the prevailing institutional environment.

4.13 STUDY THREE: MICROFINANCE (MFI) AND FINANCIAL INCLUSION

4.13.1 Introduction

In the wake of heightened attention on poverty eradication, much attention has been accorded financial inclusion. Major international development organisations[68], have a view that the provision of financial services to the un-bankable and financially excluded is key in delivering social stability, economic opportunities, and sustainable development.

[68] This includes: The World Bank Group, The European Union in co-alliance with the G-20 group of nations, and other bilateral global institutions.

Microfinance has been frequently celebrated as a panacea for sustainable remedy of poverty, through improved financial inclusion amongst the underserved in SSA. Since its appearance, MF has been credited with the promise of decreasing the levels of financially excluded people on the continent. However, current levels of exclusion in SSA suggest the need for an intervention. For instance, according to Finscope, (2010) South Africa has an exclusion level of 23.5 percent, whilst at the other end of the spectrum, Mozambique is 78 percent, with many other countries in between (Figure 17 above). The question remains to be asked; have MFIs delivered on this essential promise of financial inclusion? This analyse provides some insight into this question by examining the impact of microfinance on financial inclusion.

In light of the growing trend of financial exclusion, amongst the world's poor and vulnerable, the WB Group set a goal of achieving Universal Financial Access (UFA) by the year 2020 (WB 2015). Unanimously following this, the G-20 governments in collaboration with international development institutions have highlighted financial inclusion as a key development policy target, with pledges to support UFA 2020. More notably; as one of its key principles, the consultative Group to Assist the Poor (CGAP)[69] highlights financial inclusion and the integration of MF with the formal financial system in developing nations, through the delivery of financial services to the un-bankable. This is said to be a universal key economic empowerment policy. However, despite efforts to support financial inclusion amongst developing economies, poverty still remains rife, and financial inclusion rates remain unabated. For example according to Klapper and Oudheusden (2015), half of the world's adult population still lack access to financial services[70] .Hence, in-order for MFIs to be effective in enabling financial inclusion and improving the welfare of the world's poor, MFIs have to be sustainable, and efficient in managing its resource base.

Research suggest[71] that one way to achieve this is to improve the quality of the institutional environment in which these institutions operate in. Barry and Tacneng (2014), Tchakoute Tchuigoua (2014) Ajide and Raheem (2016) highlight the important role the institutional environment plays in enabling a conducive environment to enhance MFI performance.

[69] CGAP is a multi-donor organisation dedicated to advancing microfinance in its goal of universal access to finance, and poverty eradication.
[70] World Bank estimates this figure to be 2billion adults world-wide, with one third from SSA region.
[71] Demirguc-kunt and Maksimovic (1999), Booth et al (2001), Li and Ferreira (2011), Ahlin et al., (2011), Fan et al. (2012), Tchuigoua (2014), Barry and Tanceng (2014).

Although microfinance has progressively become an important policy tool in combatting financial exclusion in SSA[72], the challenges facing the industry remain rife. In addition to sustainability, MFIs face institutional challenges. For example Earne and Nelson (2013) suggest that the regulatory framework, openness, and the level of development of the financial system impacts on MFIs and in-turn promotes economic growth[73]. However this has not been tested on an appropriate sample of MFIs in SSA. For example, in the area of regulation, quality institutional governance and transparency, the SSA region still falls behind in enabling a conducive environment for business growth. In addition, the institutional environment in SSA is characterised by high corruption levels, weak rule of law, and weak regulatory environment for MFIs. Furthermore, laws that govern creditor and shareholders rights are either weak, or seldom enforced. Furthermore, Chadee and Roxas (2013), argue that efficient institutional frameworks reduce transaction costs and the cost of enforcing contracts, thereby promoting business development and growth, whilst Aidis (2005), Eifert et al. (2008) show that sluggish economic development and poor financial performance of many firms in developing countries can be attributed to poor institutional environment.

Therefore all the above could impact on the capital structure of MFIs, in addition to their ability to achieve double-bottom objectives of financial sustainability, poverty eradication whilst enabling financial inclusion. For example, Barry and Tacneng (2014), observe that a lack of adequate consumer protection policies and weak rule of law encourages over-borrowing and loan delinquencies, whilst it can be argued that rife corruption and government bureaucracy creates an unfavourable business environment for MFIs. Schicks (2013), observe that the insurmountable procedural and administrative difficulties often hinders setting up an MFI to tackle financial exclusion in rural areas. Furthermore, Justesen and Bjørnskov (2014), show that weak institutional environments often encourages fraudulent activities**.**

4.13.2 MFI and Financial Inclusion

The literature on financial inclusion measures the use of formal bank accounts as an indication of increased financial inclusion, enabled through greater participation and offering of financial services (Demirgüç-Kunt et al. 2017). Within the SSA landscape however, take-up of bank

[72] Banerjee and Duflo, (2011), Morduch and Armendariz (2010), Baye (2013), Hartaska and Nadolnyak (2008),
[73] Rodrik et al. (2004), Kinda and Loening (2010), Ahlin et al. (2011), Tchuigoa (2014), and Ajide and Raheem (2016).

accounts has lagged in comparison to other regions, this often is as a result of the rigidity frequently involved in this process. The financial inclusion index employed within this context follows on from Gupte et al (2012), and Yorulmaz (2016). Where previous attempts at developing a robust financial inclusion index have omitted some dimensions of financial access, time trends and varieties of institutions within measurements.

The index employed incorporates broader cross-country, time-series data, incorporating not only household-based indicators, but also, individual usage of financial services, in addition to various indicators of financial access. Employing both demand and supply side indicators of financial access, allows for a broader financial inclusion measurement in examining the financial inclusion levels of the countries surveyed. Finally, the identified index spans from 2004 - 2011. In order to present an accurate representation of the level of financial inclusion of the countries identified, this index further adopts the OECD's weighting methodology[74] in achieving the index scores for the countries surveyed. The observed metrics observed in this index include; availability, accessibility, usage, and cost dimensions of financial service. In addition to, the number of deposit, credit and savings accounts, the bank and ATM branches, the volume of deposit and credit accounts, and demand-side indicators, such as households and SMEs, base saving, credit and insurance indicators.

4.13.3 Usage in the Literature

Kumar and Mishra (2000), appeared to use a multidimensional financial inclusion index, using both supply and demand side indicators for the year 2002 and 2003 in analysing financial inclusion in India. Whilst, Sarma (2008), employs the use of three main dimensions for financial access in constructing a financial inclusion index in 2004. These dimensions include a measure of banking penetration, number of bank accounts per 1000 adults, and usage-deposits plus credits as a percentage of GDP. Using these indicators, this study explored the impacts of these on some specific macro factors as has been traditionally done in the literature. Subsequently, Arora (2010), uses more dimensions and indicators in comparison to Sarma (2008). Geographic penetration and dimension of ease of usage and cost of financial services were added to this index. Finally, Gupte et al (2012), use many dimensions in creating an index

[74] The OECD's handbook of constructing composite indicators was employed in constructing this index. This new methodology contains a principal component analysis to explore the relative importance of indicators used in the index construction process and factor analysis to assign different weights according to their relative importance.

for use in their analysis. This incorporated many dimensions in its construction. However, the draw-back of this index lies in the limitations of its length from 2008 - 2009.

4.13.4 Financial Development and Financial Inclusion

Financial development is a key issue for developing countries, whilst the broader literature suggest that an economy transforming unto frontier status requires broader and deeper financial development exertions. However, many economies in developing markets, simply lack the expertise and human capital needed to structure deeper and broader financial development, this is especially the case for SSA. According to research, SSA financial development measures lag behind other developing markets. Strides in financial development can also be associated to the general welfare of citizens in a country. The rationale being, as individuals have better and more robust access to financial services through an efficient financial environment, funding opportunities, and wealth creating opportunities become more available to individuals in need of financing, and firms in need of capital thus have easy access to capital markets and increased investor participation. Hence the development of the financial sector, could hold the key to financial inclusion and indeed financial wellbeing of individuals and firms lacking access to capital. This project therefore hypothesizes that financial development is a positive influence of financial inclusion.

H: Financial development is a positive influence on financial inclusion.

4.13.5 Macro-Factors and Financial Inclusion

The macroeconomic environment plays a role in the development of firm's strategy, capital structure and firm decision making process (la Porta et al 1999). Hence the decision to increase or decrease economic participation by individuals and firms can be linked to the broader performance prospects of the macro-environment in which firms and individuals operate in. We therefore sustain that the macro-economic environment exerts a positive influence on financial inclusion.

H: Macroeconomic factors are a positive influence financial inclusion.

4.13.6 Technology, Mobile Banking and Payments

Increased calls for the adoption of mobile banking solutions for financial inclusion has been bellied by the rise in mobile phone usage and coverage by the population of SSA. It is estimated that the mobile phone coverage of the population residing in SSA has increased considerably over time.

In many low and middle-income countries, the share of the population that has access to a mobile phone is considerably larger than the share of the population that has a formal bank account. For example, in 2011, there were 127 mobile phone subscriptions for every 100 inhabitants in South Africa, while only 54 percent of the population had a bank account. There were 123 mobile phone subscriptions per 100 inhabitants in Brazil, while only 56 percent had a bank account. And, in India, 72 of every 100 inhabitants had a mobile phone, while only 35 percent had a bank account (Demirgüç-Kunt et al. 2015). Other modern innovations such as the use of new technology through banking correspondents (such as; agency based banking), this in addition to; improved technologies for credit reporting, and improved borrower identification have improved the ability of banks to offer services where previously cost barriers were a preventative measure. While these new interventions are a boon for the future of financial services, the adoption and use for financial inclusion have been uneven across countries. Whilst countries such as India adopt a financial inclusion strategy led by traditional bank branches and technologically based correspondent banking (led by the country's large public sector banks), Kenya on the other hand adopts a popular mobile payment service (M-PESA), operated by a telecommunications provider. Whilst it appears that no one universal strategy can be adopted for financial inclusion, what is clear however is that the implementation of interventions on-ground (as applies/d to the region of focus) in addition to an enabling environment can improve financial inclusion.

Recent advances in technology and mobile phone uptake within the sub-continent (SSA) indicates that through innovation, financial services can be delivered to the end user in no-time. Often cutting down time and the bureaucracy involved with the requirement of paper work, such as documentation etc. which often acts as a barrier, deterring potential users from participating in financial services delivery and uptake. One of such innovations in the implementation of technology and financial services is the advent and growth of technology based financial services products. For instance, MPESA is an innovative financial service (providing mobile wallet capabilities such as the ability to send and receive money over the phone, in addition to paying bills and transacting payment. Innovative technological based financial services is gleaned as a having the potential to leapfrog traditional financial intermediation channels such as brick-and-mortar banking. Services like MPESA has helped large swathes of countries in East-Africa (most especially Kenya) to disburse large scale mobile money financial services to end users.

A study by Demombynes and Thegeya (2012) show that enrolment in Kenya's M-PESA system increases the likelihood of saving by up to 20 percentage points. Furthermore, they assert that users who have only M-PESA save. On average K-Sh 1,305/month. This is in comparison to K-Sh 2,282/month amongst users who save with other accounts, and K-Sh 2,959 amongst those who save with M-PESA and other accounts. Thus, the scope exist for savings implementation by financial providers if applied with incentives. While many see the large benefits of this technology especially for the 4th revolution of Africa (Demirgüç-Kunt et al. 2015), the drawback still remain pertinent. For example, the regulation required to ensure the safeguarding of end-users data and personal information, and the depth required to ensure adequate cyber security and client data protection are all pertinent issues still to be addressed within the continent. This project therefore hypothesizes that technology, measured by the use of mobile phone penetration, acts as a positive influence on the financial inclusion in SSA.

H: Technology penetration is a positive determinant of financial inclusion.

4.13.7 The Legal and Regulatory Framework

Legal institutions underpin the development of the financial sector (La Porta *et al.*, 1997b; Levine, 1998; Demirgüç-Kunt and Levine, 1999; Djankov *et al*., 2007). In particular, the protection of private property and the enforcement of shareholder and creditor rights are cornerstones of developed financial sectors (Levine 1998, 1999). In environments with weak legal institutions, contract writing and enforcement are problematic. As a result, financial institutions tend to resort to more costly business models (such as relationship lending or group monitoring) that might limit both the supply and the demand for their services.

Governments have a key role in enhancing financial inclusion by introducing laws that protect property and creditor rights and by making sure that these laws are adequately enforced. A number of studies find that both the quality of the laws and the efficiency of enforcement of creditor rights affect the availability and cost of credit to households. For instance, Meador, (1982) finds that interest rates in the U.S. mortgage market are higher in those states in which the cost and duration of judicial interventions to repossess collateral are greater. Focusing on Europe, (Freixas 1999)shows that the cost and the duration of the judicial process required to repossess collateralized assets are inversely related to consumer and home lending. Combining data on Italian households and the performance of Italian judicial districts, Fabbri and Padula, (2004) find that an increment in the backlog of pending trials has a statistically and economically significant positive effect on the probability of loan rejections among households. Jappelli *et al*., (2005) find similar evidence using aggregate credit data across 95 Italian provinces. Using data on mortgage debt outstanding in 62 countries during 2001–05, Cacdac and Warnock (2007) find that countries with stronger protections or legal rights have deeper housing finance systems.

The efficiency of the legal system also matters because this can affect the sectoral composition of lending. For instance, Costa and de Mello (2006) find that, in Brazil, banks provided payroll loans—the repayment of which was deducted from the employee's payroll check—at lower rates than regular consumer loans, which were subject to the inefficient procedures of the Brazilian legal system. Using databank-level survey data for over 20 transition economies, Haselmann and Wachtel (2010) find that, if bankers have positive

perceptions of the legal environment, they tend to lend more to opaque borrowers such as house-holds and small and medium enterprises.

The strength and enforcement of creditor rights can have implications for household debt repayment behaviour too. For instance, using data from the European Community Household Panel during 1994–2001, Duygan-Bump and Grant (2009) find that, if faced with adverse shocks, households in countries with poor protection of creditor rights are more likely to delay their loan repayments. Hence, poorly designed and enforced creditor rights discourage lending and encourage households to default.

A key component of a modern collateral framework is the existence of collateral registries. The extensive research on the use of property rights, land titles, and access to finance suggests that property ownership is important in the attitudes, beliefs, and behaviours that can have a considerable impact on a variety of social, income, and even environmental factors (Di Tella *et al*., 2007; Goldstein and Udry, 2008; Jacoby *et al*., 2016). However, the traditional view of the importance of property rights in access to finance arising because property provides solid collateral is being challenged by new findings. For example, Deininger and Goyal (2012) evaluate the impact of modernizing land title registries in Andhra Pradesh, India, and find significant, but modest rises in access to credit only in urban areas. Galiani and Schargrodsky (2010) study the impact of the acquisition of clear land titles on access to finance and on other measures of well-being in a poor suburban area of Buenos Aires. They find that house -hold welfare improves, but not through the credit channel; rather, long-term investments in housing and human capital formation made without access to formal credit account for the changes. Galiani and Schargrodsky (2011) discuss the difficulty that low-income home owners face in maintaining formal land titles over time because of the relatively high cost of the administrative procedures, and find evidence of links between long-term investments and stronger property rights in rural areas, but none of the links are attributable to the use of land for collateral in formal credit markets. These studies point to the importance of strong property rights, but call into question policies focused narrowly on providing land titles.

H: The quality of the institutional environment is positive for financial inclusion.

4.13.8 The Information Environment

Information asymmetries between people who demand and people who supply financial services can lead to adverse selection and moral hazard. For example, in credit markets, adverse selection arises when information about the borrower's characteristics is unknown to the lender. Moral hazard refers to a situation whereby the lender's inability to observe a borrower's actions that affect repayment might lead to opportunistic behaviour on the part of the borrower. In both cases, asymmetric information leads to rationing (a situation where the supply falls short of the demand).

Theoretical models suggest that information sharing can reduce adverse selection in markets in which borrowers approach different lenders sequentially (Pagano and Japelli 1993). Moreover, information sharing can also have a strong disciplining effect on borrowers (Padilla and Pagano 2000). Governments –through institutions- can therefore enhance financial inclusion by facilitating the access of banks to borrower information either by passing laws and regulations that enable banks to share information or by directly setting up public credit registries.

Jappelli and Pagano (2002) and Djankov *et al*., (2007) investigate the relationship between information sharing and credit market performance, and find that bank credit to the private sector is more substantial in countries in which information sharing is well developed. Furthermore, research on firm-level survey data indicate that access to bank credit is easier in countries with credit bureaus or registries (Galindo and Miller, 2001; Love and Mylenko, 2003; Brown et al., 2009). On the impact of credit registries on consumer lending, Cheng and Degryse (2010), use a unique data set on credit card applications and decisions from a leading bank in China to access the impact of information sharing via a public credit registry on bank lending decisions. This research shows that additional information on borrowers led to a more substantial line of credit than borrowers with less information.

H: This research therefore hypothesizes that information sharing (captured by the strength of credit bureaus) asserts a positive influence on financial inclusion.

4.14 CHAPTER SUMMARY

The manner in which MFIs are financed varies across regions. For instance, data reveals that African MFIs are mainly financed through deposits whilst MENA MFIs make use of equity. South Asian MFIs heavily depend on debt financing. Therefore, the need to detangle the determinants of MFI funding with specific focus on MFI grouping across regions is imperative. Furthermore, MFI financing options and sustainability would naturally vary according to the region being considered. Variation in the effect of each financing option on sustainability is dependent on the study setup, in other words the sample, the area considered, the period and the level of financial development. This further calls for the need to focus on regions in order to fully understand the current phenomenon (Cull et al. 2009).

Chapter 5 METHODOLOGY AND DATA DESCRIPTION

5.1 DATA VARIABLES

5.1.1 Introduction

This section sets out the methodology and data profile implemented in answering the research questions identified. In order to examine the scope of this research project, three lines of enquiries emerge; firstly, how does the institutional environment influence the funding of MFIs in SSA. Secondly, how does capital structure decisions affect the performance (financial and social) of MFIs in SSA?. Finally, do MFIs (MFI penetration rate) exert a positive influence on the financial inclusion levels amongst countries in SSA.

5.1.2 Data Sources

This research utilizes a comprehensive panel dataset obtained from Microfinance Information Exchange (MIX) database, a web-based microfinance platform providing data on individual MFIS. MIX Market has a rich source of MFI data, reported by MFIs (to MIX) from around the world. Hence, this represents a stable sample of MFI representation across the selected region. Of particular interest for this study is data from the sub-Saharan African region.

Various sets of data exist on the MIX database, some datasets are free student packages for researchers and other deep-looking datasets require a paid subscription. At this point in time, the researcher possesses a broad and concise (student package) data from the MIX, this includes key MF indicators such as; Profitability, outreach indicators, performance and social indicators, as well as other standard level MFI indicators appropriate for research. To ensure validity of proposed analysis, this project also utilizes other variables external from MFI firm-level data. For example, Macroeconomic indicators, and some institutional variables are readily available from The World Bank database. Finally, data on the institutional variables proposed for use by the researcher is also readily available from reputable transparency indexes, developed by international organisations.

The empirical analysis conducted for this research utilises panel data, comprising of observations of the same units in several time-periods (Wooldridge 2001). MFIs are known to change overtime in addition to changes in their operating environment. The use of panel data

is therefore ideal in order to interrogate the lines of enquiry established from the gaps in the literature.

The choice of panel data for use with this analysis is predicated on the superiority of panel data over other types of data (Baltagi 2001)[75]. Therefore, given a well-organised panel data, models are efficient, as they provide ways of dealing with heterogeneity. A systematic approach was employed in identifying the process of analysing the data collected. Firstly, organising the panel data collected. Secondly, identifying the modelling process, and finally, the interpretation of the data (based on the questions identified for this research). The potential pitfalls of poorly organised data, applying panel data techniques to cross-sectional data without model consideration, and results interpretation outside the context of the research question have been so far avoided.

5.1.3 Summary of Dependent Variable (Study I)

This analysis utilizes capital structure variables that capture the profile of MFIs operating in Africa. These include a spectrum of MFI types such as: NGOs, Rural Bank, NBFI, Bank, Credit Union and Cooperatives. The spectrum of these institutions have influenced the choice of capital structure utilised in this analysis.

Capital structure variables such as; Leverage (Borrowings, Donated Equity) and Deposits are employed. Leverage measure for MFIs includes funding which captures total borrowing (as well as short and long tenure financing), donated equity measures the donations made to MFIs by donors, which often is utilised as a form of equity with no obligation on returns to the donor, and finally deposits are MFI clients timed deposits.

[75] This type of data is more informative, has more variability, less collinearity amongst variables, with more degrees of freedom and more efficiency (Baltagi 2001).

5.1.4 Summary of Dependent Variable (Study II)

Panel data consisting of MFI specific data, institutional, macro-economic and country specific data was utilised for this study. Data sourced for this analysis includes an unbalanced panel-data sample for 48 SSA countries with data-points from 2004-2016 (12 years) with over 3,000 data points.

The objective of the study guided the choice of dependent variable. MFIs are hybrid institutions (Morduch 1999), this therefore implies that the performance of MFIs is usually characterised along two lines namely; Financial and Social performance (CGAP 2003). The financial indicators for measurement includes: Sustainability (measured by OSS), profitability (captured by ROA), Efficiency (measured by cost per borrower -CPB-), and Portfolio Quality (captured by PAR>30 days). Social performance is measured by the percent of female borrowers (PFB). MFI social indicator for outreach is further decomposed to get a deeper understanding of MFIs social outreach performance. We decompose MFI social outreach by analysing the breadth and depth of outreach, which is captured by number of active borrowers (NAB), and active loan balance per borrower (ALPB) (Woller 2006).

The above MFI specific variables represents a comprehensive set of performance measures used to capture MFI performance. A comprehensive set of performance measurements was chosen for two reasons: Firstly, a robust view of MFIs is required in order to capture the sector along its double-bottom line mandate. Secondly, a robust examination of MFI carried out in this manner will give invaluable insight into the MFI sector in Africa (one not previously examined in such dexterity). Furthermore, where previous performance literature have previously been one-sided (focusing primarily on financial performance analysis), this research uses a comprehensive set of MFI performance measures in order to satisfy the study objectives. This captures one of the contributions to the literature from this study's point of view. The complete list, description and measurement of the utilised performance variables can be seen in Table 5.1 below.

In order to determine the effects of capital structure and institutional environment on the performance of MFIs, specific interest is placed on the operational self-sustainability (OSS) of MFIs, as this is a key area of focus of financial performance of MFIS within the literature. MFIs are encouraged to be sustainable in order be less reliant on donor funding. Proponents of

this line of argument (Drake and Rhyne 2002, Mersland and Strøm 2010), suggest that sustainability better equips MFIs in achieving their double mandate. The OSS measure represents the optimal measure of sustainability for MFIs. OSS is calculated by:

$$OSS = \frac{\text{Total Financial Revenue}}{\text{Financial expense+ operating exp+ loan loss provision exp}} \quad (5.1)$$

5.1.5 Summary of Dependent Variable (Study III)

The dependent variable identified as financial inclusion index is a multidimensional-set of measures, consisting of commercial banking indicators often employed for use in financial inclusion studies. In addition to, demand and supply side measures of financial inclusion. This culminates in a comprehensive measure/index of financial inclusion, relatively new to the financial inclusion literature, constructed by the work of Yorulmaz (2016). This index was chosen because, it comprises a multidimensional financial inclusion composite index, which contains aggregate information of different dimensions of financial access for a country (Sarma and Borbora 2011). This index further allows researchers and policy makers to make holistic comparisons across countries and contexts. Using cross-country minimum-maximum values for the index construction further increases the comparability of the analysis.

The literature supports, a multidimensional index as a yardstick for measurement, because it explores the trend and relative rankings of countries financial inclusion levels within a sample (Arora, 2010; Gupte, *et al.,* 2012; Mehrotra and Yetman, 2015). According to Gupte *et al*., (2012), and Contreras *et al*., (2014), these measures give feedback and frame policies to target the extent of financial exclusion for researches and policymakers. A look into the components constituting the chosen financial inclusion index, reveals that it takes into consideration a variety of measures for use in accessing financial inclusion levels in SSA[76]. This is particularly pertinent, as research indicates that using individual financial access variables individually may cause analysis to ignore important information about the mechanisms of a financial system, and a misinterpretation of countries financial inclusion levels for researchers and policymakers

[76] For instance using the WB's World Development Indicators (WDI), Global Findex Development Database (Global Findex), the IMF's International Financial Statistics, and survey data from Beck et al (2006a). This index therefore takes into consideration broader cross-country time series data, providing household-based and individual usage of financial services, in addition to other various indicators of financial access. Elements such as Cost, usage and outreach indicators are adapted, so as to explain the impacts of microfinance institutions on financial access in an aggregate manner.

(Sarma 2008). therefore, using single indicators would not be enough to conduct a broader financial inclusion analysis.

Previous literature, notable for implementing financial indexes in conducting research –for use in financial policy analysis- include; Sarma (2008), Arora, (2010). Gupte *et al.,* (2012), and Chakravarty and Pal (2013), who all use measures of a multidimensional index for examining financial inclusion. These papers however, do not employ the preferred index used in this analysis. Furthermore the length of composed index varies between 1 and 2 years, which is unsuitable for the planned analysis for this research project. For instance, Sharma (2008) construct a financial index using three main dimensions of financial access for the year 2004. Subsequently, Arora (2010) also employs a financial index for the year 2008. Finally, Gupte et al (2012), employs an index for the period of 2008-2009, these studies employ financial inclusion index, for short periods (of between one and two years).

Dependent Variable Table

Variable	Description	Measure	Source
STUDY I			
Leverage	MFI Leverage (Leverage is indicated by the MIX as comprising deposits as well as borrowings)	Proportion of TL to TA	The MIX
BORROWING	MFI Leverage excluding deposits Total MFI non-deposit liabilities	ratio of non-deposit liabilities, to BV of assets	The MIX
DEPOSIT	MFI timed deposit liabilities (excluding grants)	ratio of dep's to BV of A	The MIX
Donated Equity			
-Proportion	Measures MFI total grants	Proportion of Donated equity (grants) to TA	The MIX
-Subsidy intensity	or Donations (Donated Equity)	ratio of donated equity by TE	The MIX
STUDY II			
Operational self-sufficiency	MFIs ability to cover its cost through operating revenues	Measured as the ratio of operating revenue to expenses (CGAP, 2003)	The MIX
Profitability	Measures MFI ability to utilise shareholder resources and obtain a return on these resources	Return on Asset (ROA)	The MIX
Efficiency	Indicates MFI ability to efficiently utilise resources in its core mission	Cost Per Borrower (CPB)	The MIX
Portfolio Quality	Indicates the health of an MFIs loan books	PAR>30 days	The MIX
Social	Measures the Social performance of MFIs. In particular, MFIs ability to lend to female borrowers	Percentage of Female Borrowers (PFB)	The MIX
Depth	Measures the depth of MFI borrowing. Specifically, their reach down the poverty ladder (down the pyramid)	Average Loan Balance Per Borrower (ALPB)	The MIX
Breadth	Measures MFIs breadth of reach. Specifically, how far along the poverty spectrum can the MFIs reach	Number of Active Borrowers (NAB)	The MIX
STUDY III			
FINDEX	A financial inclusion index that takes into consideration outreach, cost, and usage indicators of financial services in developing markets	Percentile rank 1 to 100	Yorulmaz (2016)

Note: The MIX (Mix Market), MFI (Microfinance Institutions),

Table 5.1: Dependent Variable Description

5.1.6 Summary of Independent Variables (Study I)

In measuring the institutional environment this research paper employs WB's doing business index and World Governance Indicators (WGI); with specific focus on examining measures that observe the utilisation of credit information and measures identified to be signalling indicators from government institutions on fostering an enabling environment for businesses to flourish.

Studies often point to the link between foreign investment and good governance (La Porta et al. 1997a, Tchakoute Tchuigoua 2014b). With the prevalence of good governance and stable policies, it is assumed that investment flows will follow, potentially improving the economic prospects of a recipient country. Although this has been shown to be the case in certain regions, an established case is yet to be carried out for SSA, a region in dire need of growth and development. Although many empirical studies highlight the impact of firm-level characteristics on the capital structure of firms (Kyereboah, 2007; Bogan, 2012). Other studies however point to the possible impact of the institutional environment[77] (LaPorta et al 1997). This line of questioning has yet to be explored within the context of MFIs in SSA, which is classified amongst the poorest regions of the world. Capital importation for development funding from development financial institutions (WB, DFID, IMF etc). these could all be sensitive to the quality of the institutional environment institutional policies. As such, Economic freedoms, rule of law, and a stable macro-economic environment, could all play an important role in the ability of MFIs in attracting capital, and ultimately diversifying their capital structure financing.

Specifically, this research project employs indicators for Corruption Control (CRRPTNCTRL), Enforcing Contracts (ENFCON), Government Effectiveness (GOVEFF), and the Rule of Law (ROL). These variables measure the strength of governance of public institutions in creating an enabling environment for improving capital efficiency. It is expected that strong institutional environments creates confidence in a financial ecosystem, thereby providing/enabling positively, the access to financial services by individuals and firms. A

[77] Comprising of the institutional characteristics of the operating environment of MFIs, in addition to Macroeconomic factors/indicators such as; growth rate, inflation, interest rate, in addition to financial development.

strong institutional environment also offers (inspire) confidence to international/outside investors and attracts investment in private sector initiatives which could increase market participation, create jobs and offer income to individuals, thereby strengthening access to finance and financial services by end-users. Indicators are obtained from WB WGI and Doing Business Index.

The WB doing business index acts as a signal to foreign investors on the suitability of the business environment of the countries of interest. The measure identified for this analysis include is a measure of the strength of investor protection (SOIP) as this measure identifies the protections level available for foreign investors. A low score could negatively pain a recipient country as unsuitable for foreign capital inflows. On the other hand, a strong score signals to investor that the role of the rule of law, is sufficient to protect capital.

In corporate finance literature, the role of financial development have been identified to foster performance in local banking sector and the non-bank sectors of developing economies. Therefore, formal financial development measures have been identified as these could impact the increase or uptake of financial services in developing markets in SSA. This indicator has been captured using a measure of the Domestic credit to Private Sector (DCTPS), and Deposit interest rate (DEPINTR).

Data capturing broader institutional environment and economic freedom includes: Financial Freedom (FINF), Trade Freedom (TRADEF), and Monetary Freedom (MONF). These indicators were obtained from the Heritage Freedoms Institute. Other macro indicators identified for this analysis employs the World Bank (WB) World Governance Indicators (WGIs) measure in order to assess the income level and Macro-economic characteristics of the countries within the sample. Data on Gross National Income (GNIg), have been employed to capture the income level of the countries within the sample; Inflation (INF), Real interest rate (REALINT), Deposit interest rate (DEPINTR) have been identified to capture the opportunity cost of capital.

Mainstream finance theory suggest key firm level characteristics which are deemed to impact the capital structure of a firm (Rajan and Zingales 1995). Hence, specific firm level data employed in this analysis include; Firm level data such as; Age, Size, ROA, Risk (PAR>30 days), Tangible Assets (Net fixed assets).

5.1.7 Summary of Independent Variables (Study II)

In order to access the impacts of capital structure and the institutional environment on the performance of MFIs, this research project utilizes measures for capital structure, institutional factors, MFI-specific and macro country specific indicators. The capital structure measures identified include; short-term leverage (STLEV), long-term leverage (LTLEV), and total leverage (TLEV). Within the MF literature however, various measures exists for the funding of MFIs, these include a range of capital such as; Grants, Donations, Loans (mezzanine and soft-loans), Equity and Donated Equity (Janson et al. 2003, Jansson 2003). These measures have been congregated to provide an overarching view of specific short, medium and long term financing options available for MFI financing. For instance, grants and donations present long term financing, whilst loans (often subsidized) largely are of a short-term tenure for MFI financing.

MFI firm characteristics such as; Size, Age and asset tangibility (AT) has been employed to identify form moderating influence on MFI performance. Dummy variables for MFI type, profit status and regulation status were also employed. Institutional indicators include: Government Effectiveness (GOVEFF), Corruption Control (CORRPTNCTRL), Strength of Investor Protection (SOIP), Enforcing Contracts (ENFCON), Rule of Law (ROL), Monetary Freedom (MONF), Financial Freedom (FINF), and Trade Freedom (TRADEF). Macro indicators such as; gross national income (GNIg), real interest rate (REALINTR), and inflation (INF) were also employed. Finally, financial development indicators, deposit interest rate (DEPINTR), and domestic credit to the private sector (DCTPS), have also been employed. Data on institutional quality and macro environment was obtained from the World Bank database, and the Heritage Foundation, whilst MFI firm specific data was obtained from MIX.

5.1.8 Summary of Independent Variables (Study III)

This research project utilizes one indicator for the main variable of interest (Microfinance -MF-). The empirical literature surveyed indicates that the dominant MFI indicator is normally the number of MFIs (Adeola and Evans 2017). Other variables include variables that measure user consumption of MFI services, for instance, demand side indicators. Finally, recent

research have used MFI penetration rate (see equation 11)[78]. The use of MFPENRATE was predicated on for a few reasons. Firstly, this indicator allows for depth of analysis unavailable with the use of a single indicator such as the number of microfinance banks as used in (Adeola and Evans 2017). Secondly, MF penetration provides insight into the actual usage and reach of microfinance within countries in SSA. This is important in comparison to a single indicator, which gives no indication of usage. Lastly, this measure captures users most in need of MF services within countries in SSA, as indicated by the formula below.

$$MF\ Penetration\ Rate_{i,t} = \frac{MFI\ Borrowers_{\ i,t}}{Working\ age\ population\ below\ the\ poverty\ line_{\ i,t}} \quad (5.2)$$

MFI Borrowers capture the total number of active borrowers reported by all MFIs in the countries within the sample, this is then divided by the share of the adult (age 15 and over) population -of the sample countries- below the national poverty line as stated by WDI data. For measures of income indicators, this research employs WB WDI data on GNI per capita (GNIk). GNIk captures the overall effect on the income of the various individual countries. This was chosen to obtain an estimate of the impact on real income changes in the sample observed. Macroeconomic variables was measured using WDI data on Inflation (INF).

In order to capture the relevant enabling institutions for microfinance development, this research paper employs WB data on doing business data on credit information. Specifically, this research project employs two main indicators for measuring the institutional environment; Corruption Control (CORRPTNCTRL), and Public Credit Registry (PUBCREGEG). These variables measure the strength of governance of public institutions in creating an enabling environment for the access of financial services.in addition, the availability of public credit registry enables information sharing and therefore encourages deeper financial market integration. It is expected that strong institutional environments create confidence in an ecosystem, and improves access to financial services by individuals and firms. A strong institutional environment also inspires confidence to outside investors. Indicators are obtained from WB's WGI. Finally, financial development measures comprising of deposit interest rate (DEPINTR), lending rate (LENDr) and domestic credit to private sector (DCTPS).

[78] This ratio is measured by dividing the number of MFI borrowers by the respective population below the poverty line. Or simply, the ratio of MFI borrowers to population in poverty.

A new addition to the literature for MFIs is the utilisation of a measure of the information environment measured by public credit registry (PUBCREDREG). This measure employed to capture the efficiency of the information sharing environment is a new addition to the literature on MFIs in SSA. It is gleaned that this measure will reveal interesting findings in regions (like SSA), which predominantly have less efficient information asymmetry in credit markets.

The recent rise in the use and avocation of technology (especially mobiles) as an effective tool to combat financial exclusion has gained traction in recent years, specifically when considering the strides made in Kenya and Much of East-Africa with the emergence of mobile money as a means to transact financial transactions across end-users. This has also been accelerated by the uptake of mobile phones within the sub-Saharan region. It is estimated that the mobile penetration rate now is amongst the best (if not the best) in the world. Whilst advocates have often championed the take-up of mobile technology in order to increases the financial inclusion in Africa, opponents are weary of the un-preparedness of the continent for such a technological shift, bearing in mind the potential backlash of such[79].

Whist it is clear that mobile money technology has made inroads within societies and countries within SSA, the extent of this impact is yet to be captured by empirical data on SSA. Therefore, in order to capture the impact of this phenomenon, the use of WB WDI data on Mobile Cellular subscription per 100 adults has bene identified to examine this effect. It is expected that this will be positive for financial inclusion because the higher the mobile subscribers, the ease of reach of financial inclusion in such an environment. Other control variables considered include the use of Population Density (POPDENS – people per square km of land area, hundreds), which has been found to influence the take-up and use of financial services. The rationale being, the more densely populated, the higher the need for financial services (Chikalipah 2017). The above two variables cater for Geographical and Technological factors. The variable Table 5.2 below presents a detailed description of each of the variables that was employed in the model specification for this study.

[79] For instance, mass-big-brother surveillance, cybersecurity concerns, data breaches and general online etiquette, regulatory expertise and ethical considerations like misuse of data and non-existent protection of data often lacking in the continent.

Table of Variables (Independent Variables)

Variable	Description	Measure	Source
STUDY I & II	**FIRM SPECIFIC MEASURES**		
Profitability	Measures MFI ability to utilise shareholder resources and obtain a return on these resources	Return on Asset (ROA)	The MIX
Efficiency	Indicates MFI ability to efficiently utilise resources in its core mission	Cost Per Borrower (CPB)	The MIX
Portfolio Quality	Indicates the health of an MFIs loan books	PAR>30 days	The MIX
Social	Measures the Social performance of MFIs. In particular, MFIs ability to lend to female borrowers	Percentage of Female Borrowers (PFB)	The MIX
Depth	Measures the depth of MFI borrowing. Specifically, their reach down the poverty ladder (down the pyramid)	Average Loan Balance Per Borrower (ALPB)	The MIX
Breadth	Measures MFIs breadth of reach. Specifically, how far along the poverty spectrum can the MFIs reach	Number of Active Borrowers (NAB)	The MIX
Asset Tangibility	Measures the total tangible assets of MFIs as relates to MFI Total Asset	Ratio of Net Total Fixed Asset to TA	The MIX
Size	Measures the Size of MFI	Natural Log of TA	The MIX
Age	Captures MFI Age	MFI Age	The MIX
	INSTITUTIONAL VARIABLES		
Strength of Investor Protection (SOIP)	Measures the strength of investor protection by existing governance frameworks	Index score between 1 and 10	WB Creditor Rights Index
Enforcing Contracts (ENFCON)	Measures the strength of contract enforcement by countries in the sample	Percentile rank 1 to 100	WB WGI Index
Political Stability (POLSTAB)	Political Stability and absence of violence measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism.	Percentile rank 1 to 100	WB WGI Index
Government Effectiveness (GOVEFF)	Captures perceptions of the quality of public services, the quality of civil service and the degree of its independence from political pressures	Percentile rank 1 to 100	WB WGI Index

Rule of Law (ROL)	The quality of policy formulation and implementation and the credibility of governments commitment to such policies Rule of law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	Percentile rank 1 to 100	WB WGI Index
Corruption Control (CRRPTNCTRL)	Control of corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.	Percentile rank 1 to 100	WB WGI Index
	ECONOMIC FREEDOMS INDEX		
Monetary Freedom (MONF)	Captures price stability and the intervention of the micro-economy.	Percentile rank 1 to 100	Heritage Freedoms Index
Trade Freedom (TRADEF)	Quantifies the extent to which tariff and nontariff barriers affect imports and exports of goods and services into and out of the country	Percentile rank 1 to 100	Heritage Freedoms Index
Investment Freedom (INVF)	Analyses how free or constrained is the flow of investment capital of individuals and firms.	Percentile rank 1 to 100	Heritage Freedoms Index
	FINANCIAL DEVELOPMENT INDICATORS		
Deposit Interest Rate	Measures Deposit rate for sample countries	Deposit Interest rate annualised	WB WGI Index
Domestic Credit to Private Sector	Captures Credit to Private Sector by other financial institutions including banks	Credit to Private Sector including other financial institutions	WB WGI Index
	MACRO INDICATORS		
Real Interest rate (nominal)	Normalized (duration and rolling over method) rate of interest without adjusting for inflation, opportunity and transaction costs	Real interest rate (annualised)	WB WGI Index
Inflation	Captures annualised inflation in sample countries	Inflation rate	WB WGI Index
Income Indicators			
Gross National income growth (GNIg)	Measures National Income growth for sample countries	GNI growth	WB WGI Index

STUDY III	FINANCIAL INCLUSION		
MFPENRATE	Microfinance penetration rate: This measures the penetration of MF.	MFI Borrowers/Working age population below national poverty lines	Krauss and Martinez (2015)
GNIg	Gross National income measures the Income per capital in the sample	GNI measure	WB WDI
LENDr	Measures the lending rate within the sample countries	Prevailing lending rate	WB WDI
DEPr	Measures the deposit rate for banks and financial institutions within the sample countries	Prevailing deposit interest rate	WB WDI
MOBSUBP100	Mobile subscription per 100,000	Mobile penetration score	IMF FAS
PUBCREDREG	Financial development indicator, measuring the depth of public credit registry, financial and credit information gathering and storing	Public registry strength score	IMF FAS
POPDENS	Measures the population density per sq. km of the sample countries	Population density measure	WB WDI

Findex (Financial index), MFPENRATE (microfinance penetration rate), CORRCTRL (corruption control), INF (inflation), GNIg (gross national income growth), LENDr (lending rate), DEPr (deposit rate), DCTPS (domestic credit to private sector) MOBSUBP100 (mobile subscription per 100,000), PUBCREDREG (public credit registry), POPDENS (population density). IMF FAS (International Monetary Fund Financial Access Survey), WB WDI (World Bank World Development Index).

Table 5.2: Independent Variable Table Description

5.2 ESTIMATION METHODOLOGY, ECONOMETRIC MODEL AND MODEL SPECIFICATION

The nature of the data obtained dictates the nature of the analysis to be employed in achieving the broad aims and objectives, undertaken by the researcher on this research project. The proposed data analysis will be carried out within a panel data framework. This is because, panel data provides greater number of data points, and hence, more/additional degrees of freedom (Delcoure 2007). Furthermore, panel data models examine group (individual-specific) effects, time effects, or both in order to deal with heterogeneity or individual unobserved effects (Baltagi 2001).

Panel approaches often involves a range of methods, form the basic estimator such as, a pooled OLS estimator to the dynamic models used for analysing panel data (Kyereboah 2007). However, the choice of an appropriate technique for estimating the basic model is dependent on the structure of the error term, and the correlation between the components of the error term and the observed explanatory variables. DiNardo and Johnston (1997) argue that pooled OLS estimators ignore the panel nature of the dataset. Thereby, treating observations as being uncorrelated for a given firm, leading to homoskedastic errors across individual time periods. Hsiao, (2003), suggest two techniques to render these effects negligible and/or unobservable. Firstly, reducing the number of parameters for estimation, in order to justify the treatment of individual fixed effects (FE) as drawn from some distribution, making the parameters of this distribution the parameters for estimation. As the unobservable effects are therefore included in the error term, the variance-covariance matrix of the resulting errors transforms to obtain consistent estimates of standard error. In this case, the random effects (RE) estimator becomes the most appropriate. However, if the unobservable effects included in the error term are correlated with some or all of the regressors, the RE estimation becomes inconsistent. McManus (2011) suggest employing a FE estimation approach in the case of this eventuality. This technique employs the use of dummy variables to be included for each firm (or variables within the analysis), and yields consistent estimates regardless of correlation between firm-specific error components and the employed regressors, however, Hsiao (2003) notes that the FE approach is less efficient than the RE estimation approach.

In order to decide an appropriate estimation approach, the Hausman specification test is recommended. Hausman (1978) advocates an approach, which tests whether individual effects

are correlated with the regressors. A null hypothesis of orthogonality (no correlation) between individual effects and explanatory variables, suggest both RE and FE are consistent, but the RE estimator is efficient, while the FE is not. However, under the alternative hypothesis (correlation between individual effects and the explanatory variables), the RE estimator is inconsistent, and the FE estimator is consistent and efficient.

$$H = (b_1 - b_0)'\big(Var(b_0) - Var(b_1)\big)(b_1 - b_0) \qquad (5.3)$$

In estimating the appropriate model for the proposed analysis, the Hausman specification test is carried out and hence, a choice made between the RE and FE methods for estimations,

In addition, the proposed panel data to be employed within this study incorporates information from both cross-section and time-series variables, this diminishes the problems that arise with omitted-variables, as there is a likelihood that capital structure models will not be fully specified. For example, variables related to tax such as; non-debt tax shields, tax impact, and dividends[80] remains uncaptured, due to the nature of MFIs (Cohen 2003). It is in this light that the basic model follows that of Delcoure (2006).

5.2.1 Model Composition and Selection (Study1)

In order to estimate the first relationship (determinants of capital structure of MFIs), the model employed takes the form of a panel data regression model following the work of Miyajima et al. (2004), Delcoure (2006), and Kyereboah-Coleman (2007).

The general form of the model is specified as:

$$Yit = \alpha + \beta Xit + \mu it \qquad (5.4)$$

However, specifically for this study the panel regression model, is specified as follows:

$$DR_{i,t}^{(m)} = \beta_0 + Z'_{i,t}\beta_i + \varepsilon_{i,t} \qquad (5.5)$$

[80] Research by Bhaduri (2002) suggest that if a firm is successfully able to signal its quality to outsiders, it can avoid an information premium, and hence, (the firm is able to) gain access to external sources of funds. John and John and Williams (1985), and Miller and Rock (1985) further argue that firms with reputations for paying constant streams of dividends face less asymmetric information when entering the equity market. Hence if dividends presents a signal for sound financial health, this would influence the capital structure choice of firms. MFIs are peculiar financial entities with non-issuance of dividends as a result of their structures, hence availability of dividend information is non-existent.

The subscript i denotes the cross-sectional dimension and t represents the time-series dimension of the available dataset.

$DR_{i,t}^{(m)}$ is a measure of debt ratios for the ith firm at time t, representing one of three debt ratios, as suggested by the literature. Whilst Titman and Wessels (1998) use three main debt ratios, this study aims to employ two leverage measures specifically as related to the MFI sector. $DR_{i,t}^{(m)}$ represents the dependent variable: in this case, the Capital structure of MFIs, measured by Leverage (LEV) and Donated Equity (DONEQ).

According to Tor (2003) MFIs possess unique funding components, applicable only to these hybrid institutions. Hence, capturing these variables will shed new light/information on the literature of the funding of MFIs especially in SSA. The leverage component (the left side of the equation model) will therefore, be further dissipated into Deposits (DEP) and Borrowings (BRRWNGS). Deposits represent the obligations by MFIs to pay-out when requested by clients, whilst borrowings consists of various dated maturity borrowings used to fund MFIs operations.

β_0 denotes the intercept, $Z'_{i,t}$ is a 1 x K vector of observations on k explanatory variables for firm i at time t, β_1 is a K x 1 vector of parameters, and $\varepsilon_{i,t}$ is the disturbance term defined as:

$$\varepsilon_{i,t} = \mu_i + v_{i,t} \quad (5.6)$$

Where μ_i represents the unobservable individual effects and $v_{i,t}$ the residual.
The empirical model therefore takes the form:

$$DR_{i,t}^{(m)} = \beta_0 + \beta_1 X_{i,t} + \beta_2 D_{i,t} + \beta_3 Z_{i,t} + \beta_4 M_{i,t} + \beta_5 P_{i,t} + \beta_6 Q_{i,t} + \beta_7 K_{i,t} + \varepsilon_{i,t} \quad (5.5)$$

X represents firm level determinants of capital structure namely; Size, Age, ROA, Asset Tangibility and Risk.
D (vector of variables) represents variables from the World Bank's doing business index. These include; Strength of Investor Protection (SOIP), Enforcing Contracts (ENFCON).

Z (vector of variables) represents financial development variables form the WBs world governance index. These include; Deposit Interest Rate (DEPINTR), and Domestic Credit to Private Sector (DCTPS).

M (vector of variables) represents macro-economic variables from WBs macroeconomic index/list. These measures include; Gross National Income (GNIg), Inflation (INF), and Real interest rates (REALINT).

P (vector of variables) represents variables measuring the economic freedoms of countries in SSA, obtained from the Heritage foundation. Measures include; Monetary Freedom (MONF), Trade Freedom (TRADEF), Financial Freedoms (FINF).

Q (vector of variables) represents variables from the WBs Governance Index. This index measures the quality of governance and corruption levels of countries in SSA. Measures for the corruption index include; Government Effectiveness (GOVEFF), Rule of Law (ROL), Corruption Control (CRPTCTRL).

Finally, K (vector of variables) represents MFI firm level control variables. These include; Regulation, MFI Type, MFI Year dummy, and MFIs profit status.

5.2.2 Model Construction (Study II)

Empirical studies examining the impacts of capital structure on performance often employ models of regression of the dependent variable (MFI performance variables) against selected explanatory variables. In order to examine the impacts of capital structure on the observed dependent variables, this research project utilizes a panel data, and expands on the chosen regression specification by including regional variables, and selected dummy variables, to achieve the stated aim of this research project.

The panel data model therefore takes the form below:

$$Y_{it} = \alpha_{it} + \beta LEV_{it} + \beta INST_{it} + \beta FD_{it} + \beta Macro_{it} + \beta Control_{it} + \varepsilon_{it} \qquad (5.7)$$

γ_{it} represents measures of MFI performance (social and financial), β_0 represents the intercept, $Z'_{i,t}$ is a vector of observations representing various MFI capital structure variables, MFI firm characteristic variables, institutional variables, macro-economic variables, and other control variables.

Where γ_{it} represents MFI performance (Financial and Social) calculated using various measures of financial and social performance indicators to achieve a robust analysis of MFIs performance in SSA. MFI firm-specific characteristic are captured by MFI Size, Age and Asset Tangibility; Size is measured by the total assets of MFI, Asset Tangibility is measured by the total tangible assets as a measure of total assets. LEV is captured by capital structure variables, INST is captured by the institutional environmental and business enabling environment measures, FD captures financial development (Deposit rate, Domestic credit to Private Sector -DCTPS-), Macro captures the macro environment, with measures such as; Inflation, Real rate, annual Gross National Income. Control variables include; MFI type, profit status, regulated status, and MFI year specific dummy.

Furthermore, for the leverage measures, this study aims to employ multiple debt ratios (DR) within the proposed model specified above to test the hypothesis set-out. The uniqueness of MFI data means that the leverage component of MFI borrowing can be dissipated into short-term, long-term and total leverage. These variables will be utilized, in order to shed light on the impact of various forms of MFI borrowing on MFI performance.
Hence βLEV = 1, 2, and 3 denoting the measures of debt identified for the second study identified for this research project. Specifically, these measures are:

Short-term debt to TA (βLEV =1)
Long-term debt to TA (βLEV =2)
Total debt to TA (βLEV =3)

The type of data available largely influences the choice of model, in addition to the aims and objectives identified for this study. To this end, model 1 is constructed to investigate the impact of capital structure and the institutional environment on the performance of MFIs (using a measurement of microfinance financial and social performance).

5.2.3 Model Construction (Study III)

The type of data available largely influences the choice of model, in addition to the aims and objectives identified for this study. To this end, equation model 12 below is constructed to investigate the impact of microfinance (using a measurement of microfinance penetration rate) on financial inclusion (using a measure of financial inclusion index).

$$Y_{it} = \alpha_{it} + \beta MFI_{it} + \beta INST_{it} + \beta FD_{it} + \beta Macro_{it} + \beta Geo\&Tech_{it} + \beta Control_{it} + \varepsilon_{it} \quad (5.8)$$

Where Yit is the measure of financial inclusion calculated using measures of banking, financial services demand and supply indicators to achieve a robust index of financial inclusion across countries. MFI is captured by the MFI penetration rate, INST is captured by the institutional factors, FD captures financial development indicators, Macro captures the macro environment. In addition, income is captured by GNIk. Geographical and Technological factors include population density and mobile subscriptions per 100 adults. Finally, CONTROL captures other variables deemed to be of impact to financial inclusion.

5.3 PANEL DATA: PRE AND POST ESTIMATION TESTS

This section presents the pre regression tests introduced to access the data's commonality with the methods chosen for modelling the data identified for this analysis. Key tests include the F-test for Fixed Effect, the Breusch Pagan Lagrange Multiplier test, the Hausman test, and time fixed effects test (Testparm). Other tests such as tests for Multicollinearity and Heteroscedasticity in addition to Chow-test for Poolability have also been identified/applied.

5.3.1 Multicollinearity test

According to Hair (2011), highly correlated values of two or more variables, might affect the estimation of the regression parameters. Therefore, in order to identify any instance of Multicollinearity, the Variance inflation Factor (VIF), is employed, following the form (Wooldridge 2001):

$$VIF = \frac{1}{1-R_t^2} \qquad (5.9)$$

Where: R_t^2 is the unadjusted R^2 when values of X_i are regressed against all the other independent variables in the model. Theory aligns that if the VIF result is bigger than 10, collinearity exist (Gujarati 2003)

The tables below summarises the results of the Multicolinerarity test using VIF values for the three identified studies.

Study 1 Models	**Multicolinearity Test (VIF)** (*if VIF<10, there is no Multicolinearity problem*)
Model 01 (BORROWING)	Mean VIF = 2.10
Model 02 (LEV)	Mean VIF = 2.10
Model 03 (DEPOSIT)	Mean VIF = 2.10
Model 04 (DONEQ)	Mean VIF = 2.10

LEV: Leverage, DONEQ: Donated Equity

Table 5.3: Multicolinearity Test (Study1)

STUDY II	**Multicolinearity Test (VIF)** (*if VIF<10, there is no Multicolinearity problem*)
Model 01 (OSS)	Mean VIF = 2.08
Model 02 (ROA)	Mean VIF = 2.06
Model 03 (PAR30)	Mean VIF = 2.09
Model 04 (CPB)	Mean VIF = 2.02

Model 05 (PFB)	Mean VIF = 2.07
Model 06 (ALBPB)	Mean VIF = 2.06
Model 07 (NAB)	Mean VIF = 2.05

OSS: operational Self-Sufficiency, ROA: Return on Asset, PAR30: Portfolio at Risk falling within 30 days, CPB: Cost per Borrower, PFB: Percent of Female Borrowers, ALBPB: Average Loan balance per Borrower, NAB: Number of Active Borrowers

Table 5.4: Multicolinearity Test (Study II)

STUDY III	Multicolinearity Test (VIF) (if VIF<10, there is no Multicolinearity problem)
Model 01 (Financial Index)	Mean VIF = 1.59

Table 5.5: Multicolinearity Test (Study III)

The outcome of the above VIF tests suggests that the levels of multicollinearity within the models estimated for the analysis appear to be at minor levels. Studies often suggest that values above 5 – 10 require that other techniques be applied to the model in order to avert a problem of spurious results (Wooldridge 2001). In order to obtain the VIF results for this analysis, simple regression analysis was conducted (with dependent variables as MFI capital structure variable, MFI performance variables, and Financial Inclusion variable measure). For the MFI capital structure determinants and MFI performance study, the above models representing each MFI performance variable was then tested for multicollinearity using the stata implemented VIF test to determine the instances of multicollinearity within each of the models estimated.

5.3.2 Heteroscedasticity Test

As part of the pre-model selection test, heteroscedasticity was tested. According to DiNardo and Johnston (1997), on assumption of uncorrelated errors, the presence of heteroscedasticity could invalidate statistical tests of significance. An initial post-estimation using stata was implemented to identify the existence of heteroscedasticity. The results reveal that the regression plots indeed have outliers which may influence the outcome of the estimation models employed. A next step was to perform a modified Wald test, which was used to test for heteroscedasticity in fixed-effect estimation. Results are represented in the tables below for this study.

Study 1 Models	**Modified Wald Test for Groupwise Heteroskedasticity** (*if <0.05, there is no Heteroskedasticity)*
Model 01 (BORROWING)	Prob>chi2 = 0.0000
Model 02 (LEV)	Prob>chi2 = 0.0000
Model 03 (DEPOSIT)	Prob>chi2 = 0.0000
Model 04 (DONEQ)	Prob>chi2 = 0.0000

LEV: Leverage, DONEQ: Donated Equity

Table 5.6: Heteroscedasticity Test (Study I)

Study II Model Results

Model	**Modified Wald Test for Groupwise Heteroskedasticity** (*if <0.05, there is no Heteroskedasticity)*
Model 01 (OSS)	Prob>chi2 = 0.0000
Model 02 (ROA)	Prob>chi2 = 0.0000
Model 03 (PAR30)	Prob>chi2 = 0.0000
Model 04 (CPB)	Prob>chi2 = 0.0000
Model 05 (PFB)	Prob>chi2 = 0.0000
Model 06 (ALBPB)	Prob>chi2 = 0.0000
Model 07 (NAB)	Prob>chi2 = 0.0000

OSS: operational Self-Sufficiency, ROA: Return on Asset, PAR30: Portfolio at Risk falling within 30 days, CPB: Cost per Borrower, PFB: Percent of Female Borrowers, ALBPB: Average Loan balance per Borrower, NAB: Number of Active Borrowers

Table 5.7: : Heteroscedasticity Test (Study II)

Study III Model Results

Model	Modified Wald Test for Groupwise Heteroskedasticity (if <0.05, there is no Heteroskedasticity)
Model 01 (Financial Inclusion Index)	Prob>chi2 = 0.0000

Table 5.8: : Heteroscedasticity Test (Study III)

Results above largely indicates a rejection of the null hypothesis in the models estimated, using the fixed effect command in Stata. This indicates an existence of heteroscedasticity in the estimations modelled above.

One method suggested by the literature involves winsorising or trimming outlier values in the variables observed. As suggested by research, winsorising has the effect of altering the data to the point of biased conclusions, and alterations beyond recognition. However, the researcher

avoided amending the data, so as to preserve the integrity of the data, hence performing a winsorise of the data was not pursued. Especially as this data is from SSA, caution has been taken to accurately preserve the data as such. In the absence of winsorising, so as to trim outliers, research suggest/indicates that a potential remedy for this is to robustify the standard errors. For instance, robust standard errors and, trims the standard errors and potentially eliminates the impact of the presence of heteroscedasticity. Hence, the regression output will include a robust estimation so as to account for this.

Other pre and post-estimation panel-data tests have been carried out, and results are displayed in the below tables. For instance, studies indicate that in dealing with panel data, a choice of estimation of an appropriate model is necessary in order to obtain efficient results. The Hausman test was used in determining the choice of either Fixed Effect, or Random Effects for estimation purposes. The Breusch-Pagan Lagrange Multiplier test was implemented to determine the presence of Random Effects. Finally, the Testparm statistical test for potential time (influenced) effect was examined.

5.3.3 Model specification tests (≤≥)

Specification Test	Model 1 (Borrowing)	Model 2 (LEV)	Model 3 (DEPOSIT)	Model 4 (DONEQ)	Outcome
F-Test for fixed effects versus OLS (*if Prob>F ≤ 0.05 = Use Fixed Effects)*	Prob>F=0.2545	Prob>F=0.3485	Prob>F=0.0000	Prob>F=0.0080	
Breusch Pagan LM test for random effects versus OLS (*if ≤ 0.05 = use Random Effect)*	Prob>chibar2 = 0.0000	Prob>chibar2 = 0.0000	Prob>chibar2 = 0.0000	Prob>chibar2 = 0.0000	Random Effect preferable to OLS
Hausman test for fixed versus random effects model (*if ≤ 0.05 = use Fixed Effects)*	Prob>chi2= 0.0000	Prob>chi2= 0.0000	Prob>chi2= 0.0000	Prob>chi2= 0.0000	Fixed Effect more appropriate
Testparm (Test for Time-Fixed Effects) *(if ≤ 0.05 = use time fixed effects)*	Prob>F=0.0032	Prob>F=0.0033	Prob>F=0.0000	Prob>F=0.0001	USE Time Fixed Effects
Decision	Fixed Effect	Fixed Effect	Fixed Effect	Fixed Effect	

LEV: Indicates term for Leverage. DONEQ: indicates a term for Donated Equity.

Table 5.9: Specification Tests (Study I)

Study II Model Results

Specification Test	Model 1 (OSS)	Model 2 (ROA)	Model 3 (PAR30)	Model 4 (CPB)	Model 5 (PFB)	Model 6 (ALBPB)	Model 7 (NAB)
F-Test for fixed effects versus OLS (*if Prob>F ≤ 0.05 = Use Fixed Effects*	Prob>F = 0.00004	Prob>F = 0.0000	Prob>F = 0.0086	Prob>F = 0.0000	Prob>F = 0.0016	Prob>F = 0.0000	Prob>F = 0.0000
Breusch Pagan LM test for random effects versus OLS (*if ≤ 0.05 = use Random Effect)*	Prob>chibar2 = 0.0000	Prob>chibar2 = 0.0000	Prob>chibar2 = 0.0000	Prob>chibar2 = 0.0000	Prob>chibar2 = 0.0000	Prob>chibar2 = 0.0000	Prob>chibar2 = 0.0000
Hausman test for fixed versus random effects model (*if ≤ 0.05 = use Fixed Effects)*	Prob>chi2 = 0.0100	Prob>chi2 = 0.0059	Prob>chi2 = 0.0311	Prob>chi2 = 0.0000	Prob>chi2 = 0.0010	Prob>chi2 = 0.0000	Prob>chi2 = 0.0000
Testparm (Test for Time-Fixed Effects) *(if ≤ 0.05 = use time fixed effects)*	Prob>F = 0.2559	Prob>F = 0.0089	Prob>F = 0.2465	Prob>F = 0.0022	Prob>F = 0.5952	Prob>F = 0.3869	Prob>F = 0.4325
Decision	FE	FE	FE	FE	FE	FE	FE

OSS: operational Self-Sufficiency, ROA: Return on Asset, PAR30: Portfolio at Risk falling within 30 days, CPB: Cost per Borrower, PFB: Percent of Female Borrowers, ALBPB: Average Loan balance per Borrower, NAB: Number of Active Borrowers, RE: Random Effect, FE: Fixed Effect.

Table 5.10: Specification Tests (Study II)

Study III Model Results

Specification Test	Model 1 (FINDEX)	Outcome
F-Test for fixed effects versus OLS (if Prob>F ≤ 0.05 = Use Fixed Effects	Prob>F = 0.0000	
Breusch Pagan LM test for random effects versus OLS (if ≤ 0.05 = use Random Effect)	Prob>chibar2= 0.0000	Reject Null, presence of RE
Hausman test for fixed versus random effects model (if ≤ 0.05 = use Fixed Effects)	Prob>chi2 = 0.0000	FE more efficient and unbiased
Testparm (Test for Time-Fixed Effects) (if ≤ 0.05 = use time fixed effects)	Prob>F = 0.0033	Reject Null, time FE is significant (employ Time dummies in regression).
Decision	Fixed Effect	Use Time dummies

FINDEX: An index of financial inclusion variables for financial inclusion analysis.

Table 5.11: Specification Tests (Study III).

5.3.4 Testing Fixed and Random Effects

In order to determine the existence of FE and RE, standard tests of both methods were employed in this research. Breusch and Pagan (1980), recommends an F-test for FE. This compares a FE model and OLS to determine how much the FE model can improve the goodness-of-fit. On the other hand, a RE is examined by LM test. This contrasts an OLS with a RE model.

A random effect model reduces the number of parameters to be estimated but will produce inconsistent estimates when individual specific random effect is correlated with regressors (Greene 2008). Conversely, FE model examines individual differences in intercepts, assuming the same slopes and constant variance across individual group/entity. Since an individual specific effect is time invariant and considered a part of the intercept, *u* the assumption of exogeneity (that is disturbance term (*u)*, can be correlated with other regressors) is relaxed. Furthermore, FE are tested by the F test, whilst the RE are examined by the Lagrange multiplier (LM) test (breush Pagan 1980).

5.3.5 F-test for Fixed Effects

A test for unobserved factors is deemed necessary, in order to determine the existence of unobserved factors which may exact an (exogenous) influence on the selected regressors. Therefore, in a regression of $y_{it} = a + \mu_i + X_{it}{}'\beta + \varepsilon_{it}$, the null hypothesis is that all dummy parameters except for one for the dropped are all zero, $H_0 : \mu_i = \cdots = \mu_{n-1} = 0$.

The alternative hypothesis is that at least one dummy parameter is not zero. This hypothesis is tested by an F test, which is based on loss of goodness-of-fit. This test contrasts LSDV (robust model) with the pooled OLS (efficient model) and examines the extent that the goodness-of-fit measures (SSE orR^2) changed.

$$F\ (n-1, nT-n-k) = \frac{(e'e_{pooled} - e'e_{LSDV})/(n-1)}{(e'e_{LSDV})/\ (nT-n-k)} = \frac{\left(R^2_{LSDV} - R^2_{pooled}\right)/\ (n-1)}{\left(1- R^2_{LSDV}\right)/\ (nT-n-k)} \qquad (5.10)$$

If the null hypothesis is rejected (at least one group/time specific intercept *ui* is not zero), we may conclude that there is a significant fixed effect or significant increase in goodness-of-fit in the fixed effect model; therefore, the fixed effect model is better than the pooled OLS.

When the collected data is analysed, the F-test result for study 1 indicates the preference of FE over OLS in all but one (LEV model) of the four models identified. An indication of the appropriateness of FE over OLS is reflected in three of the models above (Borrowing, Deposit and Donated Equity Models). The rejection of the null hypothesis in these models indicate that a FE model estimation will be more appropriate than OLS. We therefore conclude that FE model surpasses the OLS in estimating the models identified above. Results for the second study largely indicates similar results, in addition to the results in the third study. This suggests the need for Breusch Pagan Test.

5.3.6 Breusch-Pagan LM Test for Random Effects

Pre analysis estimations and tests reveal the existence of (or the violation of condition 2 of the OLS assumptions)[81] correlation between the unobserved unit effects and the regressors. A Hausman test was therefore employed in each of the analysis carried out. The result of which rejected the null hypothesis of the Hausman estimation tests. Therefore, the FE model of estimation was preferred in this instance.

On analysing the data, a further check for robustness/certainty on the type of data was to implement/scrutinise the data for random effects present within the data sample. In order to check this, the literature suggests the use of the Breusch-Pagans (1980) Lagrange multiplier (LM) test. According to Baltagi (2001), the LM test examines if individual (or time) specific variance components are zero. $H_0 : \sigma_u^2 = 0$. The LM statistic follows the chi-squared distribution with one degree of freedom.

$$LM_u = \frac{nT}{2(T-1)} \left[\frac{T^2 \bar{e}\prime \bar{e}}{e'e} - 1 \right]^2 \sim \chi^2(1) \qquad (5.11)$$

Where: $\bar{e}$ is the n x 1 vector of the group means of pooled regression residuals, and $e'e$ is the SSE of the pooled OLS regression. Baltagi (2000) presents the same LM test in a different way.

[81] The conditions forming the foundation of estimating a least squares regression are well documented. The violating conditions of Exogeneity is of particular consideration within this context.

$$LM_u = \frac{nT}{2(T-1)}\left[\frac{\Sigma(\Sigma\, e_{it})^2}{\Sigma\,\Sigma\, e_{it}^2} - 1\right]^2 = \frac{nT}{2(T-1)}\left[\frac{\Sigma(T\bar{e}_{i\bullet})^2}{\Sigma\,\Sigma e_{it}^2} - 1\right]^2 \sim \chi^2(1). \qquad (5.12)$$

If the null hypothesis is rejected, we conclude that there is a significant random effect in the panel data, and that the random effect model is able to deal with heterogeneity better than does the pooled OLS.

The Breusch Pagan (LM) tests for the randomality of observations in data, by testing for serial correlation in the observed data. The null hypothesis is

$$H_0: \rho_1 = 0 \qquad (5.13)$$

$$H_A: \rho_1 \neq 0. \qquad (5.14)$$

Under the null, pooled OLS regression estimation is appropriate. Conversely, under the alternative hypothesis, random-effect model is appropriate.

In the first model, all estimations indicate the rejection of the null, indicting existence the presence of heteroskedasticity. We therefore reject the null in most equations, confirming the appropriateness of RE estimation technique over OLS.

5.3.7 Hausman Test for Comparing Fixed and Random Effects

The Hausman specification test compares fixed and random effect models under the null hypothesis that individual effects are uncorrelated with any regressor in the model (Hausman, 1978). If the null hypothesis of no correlation is not violated, LSDV and GLS are consistent, but LSDV is inefficient; otherwise, LSDV is consistent but GLS is inconsistent and biased (Greene, 2008: 208). The estimates of LSDV and GLS should not differ systematically under the null hypothesis. The Hausman test uses that "the covariance of an efficient estimator with its difference from an inefficient estimator is zero" (Greene, 2008).

$$LM_u = (b_{LSDV} - b_{random})'\widehat{W}^{-1}(b_{LSDV} - b_{random}) \sim \chi^2(k) \qquad (5.15)$$

Where $\widehat{W} = Var[b_{LSDV} - b_{random}] = Var(b_{LSDV}) - Var(b_{random})$ is the difference in the estimated covariance matrices of LSDV (robust model) and GLS (efficient model). This test statistic follows the chi-squared distribution with *k* degrees of freedom.

The formula reveals that a Hausman test examines if "the random effects estimate is insignificantly different from the unbiased fixed effect estimate" (Kennedy 2008). If the null hypothesis of no correlation is rejected, you may conclude that individual effects *ui* are significantly correlated with at least one regressors in the model and thus the random effect model is problematic. Therefore, you need to go for a fixed effect model rather than the random effect counterpart. Although, a drawback of this Hausman test is, that the difference of covariance matrices *W* may not be positive definite; Then, we may conclude that the null is not rejected assuming similarity of the covariance matrices renders such a problem (Greene, 2008).

The Hausman tests is therefore, a choice to decide which effect (fixed effect or random effect) is more relevant and significant in the panel data. The two hypothesis for the Hausman test are stated in equation 5.16 and 5.17 below.

$$H_0: Cov(u_i, \mathrm{x}'_{it}) = 0 \qquad (5.16)$$

$$H_1: Cov(u_i, \mathrm{x}'_{it}) \neq 0 \qquad (5.17)$$

Under the null hypothesis, fixed effects is consistent and the random effects model is efficient, therefore, random effect model is appropriate. Under the alternative hypothesis however, fixed effect estimator is also consistent, however, random effect is inconsistent, and therefore, the fixed effect model is appropriate. Hence, if we obtain a statistically significant P-value, we employ the fixed-effects model, otherwise we employ the random effect model.

As indicated in the results output table, the tests carried out indicates a preference for FE for all the models in study I, II and III.

5.4 MODEL COMPARISON AND CHOICE

5.4.1 First Difference, Fixed Effect or Random Effect

The choice of model for use in attaining the aims and objectives of this project, largely depends on the data type and specification of the data collected (Kyereboah 2007). This study utilises panel-data for determining the (and identifying) the impact of institutional quality on the capital structure MFIs within the SSA region, for the period 2004-2016. This data contains 38 country data points and 345 sample data points across sections. Utilising panel data eliminates the need for OLS and Pooled OLS (hereafter POLS) for its analysis, as they (OLS and POLS models)

suffer from deficient estimates because of its simplicity (Baltagi 2006). However, the presence (existence) of unobserved effects in such a high-level data suggest the existence of unobserved effects. Furthermore, the use of controls and lags may not fully examine the panel-data collected. Therefore, a model accommodating unobserved effects becomes ideal.

5.4.2 Fixed Effect Estimation

Park (2011) identify two key strategies for estimating a fixed effect model; the within and least squares dummy variable models. Whilst the within estimation does not favour the use of dummy variables, the least squares dummy variable model (LSDV) employs the use of dummy variable in determining the individual group effects in the observed sample. Furthermore, these models produce the identical parameter estimates for regressors (non-dummy independent variables), whilst the between estimation fits a model using individual or time means of dependent and independent variables without dummies.

Research suggest that LSDV with a dummy dropped out of a set of dummies is widely used because it is relatively easy to estimate and interpret substantively. This LSDV, however, becomes problematic when there are many individuals (or groups) in panel data. If *T* is fixed and $n \rightarrow \infty$ (n is the number of groups or firms and *T* is the number of time periods), parameter estimates of regressors are consistent but the coefficients of individual effects, $\alpha + ui$, are not (Baltagi, 2001). The panel data observed/collected for this research project comprises of many individual samples of MFIs across 48 SSA countries. An estimation using the LSDV, therefore/implies that the estimation becomes problematic, because of the shortcomings of the LSDV model. According to Baltagi (2001), in a short panel (in essence with a small section of individual units), the LSDV model includes a large number of dummy variables. Therefore, the number of parameters to be estimated increases as *n* increases. Under the circumstances of a large panel data with large number of individual units, the LSDV loses n degrees of freedom and returns less efficient estimators. This shortcoming therefore renders the LSDV inefficient.

Unlike LSDV, the "within" estimation does not need dummy variables, but it uses deviations from group (or time period) means. That is, "within" estimation uses variation within each individual or entity instead of a large number of dummies. The "within" estimation is,17

$$(y_{it} - \bar{y}_{i\bullet}) = (x_{it} - \bar{x}_{i\bullet})'\beta + (\varepsilon_{it} - \bar{\varepsilon}_{i\bullet}) \qquad (5.18)$$

Where $\bar{y}_{i\bullet}$ is the mean of dependent variable of individual (group) *i*, $\bar{x}_{i\bullet}$ represents the means of independent variables of group *i*, and $\bar{\varepsilon}_{i\bullet}$ is the mean of errors of group *i*.

In this "within" estimation, the incidental parameter problem is no longer an issue. The parameter estimates of regressors in the "within" estimation are identical to those of LSDV. The "within" estimation reports correct the sum of squared errors (SSE). The "within" estimation, however, has several disadvantages.

First, data transformation for "within" estimation wipes out all time-invariant variables (e.g., gender, citizenship, and ethnic group) that do not vary within an entity (Kennedy, 2008: 284). Since deviations of time-invariant variables from their average are all zero, it is not possible to estimate coefficients of such variables in "within" estimation. Consequently, we have to fit LSDV when a model has time-invariant independent variables.

Secondly, a "within" estimation produces incorrect statistics. Since no dummy is used, the within effect model has larger degrees of freedom for errors, accordingly reporting small mean squared errors (MSE), standard errors of the estimates (SEE) or square root of mean squared errors (SRMSE), and incorrect (smaller) standard errors of parameter estimates. Hence, we have to adjust incorrect standard errors using the following formula.

$$se_k^* = se_k \sqrt{\frac{df_{error}^{within}}{df_{error}^{LsDv}}} = se_k \sqrt{\frac{nT-k}{nT-n-k}} \qquad (5.19)$$

Third, R^2 of the "within" estimation is not correct because the intercept term is suppressed. Finally, the "within" estimation does not report dummy coefficients. We have to compute them, if really needed, using the formula.

$$d_i^* = \bar{y}_{i\bullet} - \bar{x}_{i\bullet}{}'\beta \, . \qquad (5.20)$$

Finally, the "between group" estimation, so called the group mean regression, uses variation between individual entities (groups). Specifically, this estimation calculates group means of the dependent and independent variables and thus reduces the number of observations down to n. Then, run OLS on these transformed, aggregated data:

$$\bar{y}_{i\bullet} = a + \bar{x}_{i\bullet} + \varepsilon_i \, . \qquad (5.21)$$

5.4.3 Testing for Time-Fixed Effects (Testparm)

When implementing a fixed effects model, a joint test to ascertain the impact of year dummies is advised (Torres-Reyna 2007). A test for the significance of time when running a fixed model determines whether the time dummies for all observed periods are equal to zero. In this instance, no time fixed effects are needed. However, if the Prob>F is equal or less than 0.05, the null hypothesis is rejected. Yearly coefficients are therefore not jointly equal to zero and, thus, time fixed effects have to be included in the model.

5.5 PRELIMINARY OBSERVATIONS

Pre-analysis observations.

The data analysis employed follows a quantitative approach. The data summary (Table 6.1) places the observable data points at over 3,000 data points. When data is grouped according to MFIs ID, the observation indicates 722 groups. This is expected because MFIs have multiple observations within the sample of data observed. Finally, the data collected spans from 2004-2016 as shown by the descriptive statistics by year (Table 5.12: MFI Summary Statistics (By Year: 2004-2016)

below).

According to Baltagi (2001) for use in analysing panel data two techniques can be employed: Fixed Effect and Random Effect model. The FE model assumes that individual/group effects may impact the explanatory variable, whilst, the RE model assumes a random and uncorrelated variation across entities and the explanatory variables employed in the model. Where the slope of both FE and RE remains the same, the treatment of the unobserved effects are applied to the constant term in the FE model, whilst this is within the error variance change of the RE model. However, based on the output of the Hausman test specifications, the FE method of estimation was employed to determine the institutional factors influencing MFIs capital structure. Furthermore, in order to satisfy the objectives of this research, multiple regressions on the observed variable (capital structure) was employed, with various assumptions about the relationships of the variables (see hypothesis formation). In addition to statistical techniques (measures of central tendency and dispersion), STATA 13 was employed to test the relationship between the explanatory variables and the explained variable. Measures of central tendency and dispersion such as; frequencies, minimum and maximum values, mean and standard deviations were instrumental in painting an initial picture of the nature of the data obtained.

The output reveals the descriptive statistics of 3,228 MFIs in SSA from the year 2004 to 2016. The observation reveals some normality in the form of a relative spread across all observed years.

SSA MFI data by year

	Overall		Between		Within
Fiscal Year	Frequency	Percent	Frequency	Percent	Percent
2004	201	6.23	201	27.84	21.08
2005	253	7.84	253	35.04	20.06
2006	265	8.21	265	36.7	19.71
2007	269	8.33	269	37.26	19.21
2008	288	8.92	288	39.89	19.5
2009	342	10.59	342	47.37	21.91
2010	324	10.04	324	44.88	21.4
2011	312	9.67	312	43.21	26.52
2012	307	9.51	307	42.52	32.94
2013	204	6.32	204	28.25	22.32
2014	171	5.3	171	23.68	22.32
2015	174	5.39	174	24.1	20.91
2016	118	3.66	118	16.34	17.47
Total	3228	100	3228	447.09	22.37
		(n=722)			

Table 5.12: MFI Summary Statistics (By Year: 2004-2016)

The statistical analysis initially employed a simple OLS regression, however, this was only a first step to accessing the appropriate model for the data. In addition, this helped to give the researcher an idea of the properties of the sample population. The results obtained from the initial OLS analysis show a deviation from standard theoretical positions of capital structure influences on firm characteristics. For instance, Age and Asset tangibility (AT), under the OLS model reveals a negative relationship with leverage. Age was also negative and significant. However profitability captured by ROA is negative in line with theory. Risk has a positive influence, and institutional variables show a mixed result. However, these results are not to be taken in serious context, because the OLS regression technique is known to be biased and inefficient when analysing panel data. The nature of panel data suggest that the appropriateness of OLS presents inefficient estimates when employed with panel data analysis (Baltagi 2001).

5.5.1 SSA Summary Statistics

The region of SSA comprises of 4 regions namely; West, East, Central and Southern Africa. These regions comprise of a total of 42 countries. However, other islands lay in an around the ambits of the SSA region. A breakdown of the territories and countries within the SSA can be gleaned from the table below.

SSA by REGIONS			
EAST	WEST	CENTRAL	SOUTH
Burundi	Benin	Angola	Botswana
Comoros	Burkina Faso	Cameroon	Lesotho
Djibouti	Cape Verde	Central African Republic	Namibia
Eritrea	Cote d'Ivoire	Chad	South Africa
Ethiopia	Gambia, The	Congo, Dem. Rep.	Swaziland
Kenya	Ghana	Congo, Rep.	Zambia
Madagascar	Guinea	Equatorial Guinea	Zimbabwe
Malawi	Guinea-Bissau	Gabon	
Mauritius	Liberia	Sao Tome and Principe	
Mozambique	Mali		
Rwanda	Mauritania		
Seychelles	Niger		
Somalia	Nigeria		
South Sudan	Senegal		
Sudan	Sierra Leone		
Tanzania	Togo		
Uganda			

Table 5.13: SSA Countries by Region

Source: Authors Own

As evident from the table, some regions of the continent exhibit more countries in comparison to other regions. For example, West Africa has a total of 19 countries, followed by Southern Africa with 10. East Africa has a total of 9, whilst 5 countries inhabit the central region.

Within SSA, 43 countries occupy the mainland, 49 occupy the mainland and island regions, whilst 51 countries occupy the mainland, island territories, and other territories. The total sample size comprised of 38 countries (including island territories), making the data collected representative of 38 out of 49 countries (not including foreign territories), this amounts to 778

MFIs within the sample. The individual data points however (without grouping data by individual MFI id's) amount to 3845 observations. However, as a result of missing variables and observations for certain variables employed for this analysis, the full observation does not apply. For example where the age of MFIs observed in the sample contain the full sample size of observations (3845 obs), another variable such as the observed leverage comprises of 3488 observations. Hence, 357 observations dropped by Stata when employing the above variables for analysis.

Chapter 6 EMPIRICAL ANALYSIS:MFI FUNDING AND THE INSTITUTIONAL ENVIRONMENT

6.1.1 Objectives of Study

Specifically: a) To identify the MFI specific characteristics that determines the capital structure decisions of MFIs in SSA.

b) To identify specific institutional environmental influences on the capital structure of MFIs in SSA.

6.2 ANALYSIS

Summary Statistics Study 1: Institutional Determinants of MFI capital structure.

An initial descriptive data summation from STATA reveals that the sample comprises of 778 individual cross sections (i) with 12 time periods (t). The frequency distribution table is shown below with individual variable summary statistics of variables in Table 5.7[82].

Study Variables Summary Statistics.

Variable	Obs	Mean	Std.Dev.	Min	Max
Leverage	2,903	0.6705	0.8659	0	40.41
BRWNGTBVA	2,903	0.3070	0.8890	-4.87	40.41
Donated Equity	2,903	0.0731	0.2218	-0.57	3.46
DEPTBVA	2,903	0.3636	0.3716	0	5.70
Log of Assets	2,903	15.0522	2.1858	2.94	22.18
Return on Asset	2,555	-0.0170	0.1374	-2.47	0.8429
Asset Tangibility	2,903	0.0688	0.0837	0	1
PAR30	2,649	0.0808	0.1867	0	6.84
Age	3,228	2.2875	0.8947	0	3
SOIP	3,022	3.5462	2.1157	0	8
ENFCON	3,225	48.8350	11.6698	0	66.17
GOVEFF	3,145	-0.6839	0.4569	-2.17	0.6648
ROL	3,145	-0.6753	0.4484	-1.84	0.3666
CORRPTNCTRL	3,145	-0.6542	0.4613	-1.71	0.8298

[82] BRWNGTBVA (Borrowing); DONEQ (Donated Equity); DEPTBVA (Deposit); Lna (Log Natural of Assets); ROA (Return on Asset); AT (Asset Tangibility), PAR30 (portfolio at risk falling due in 30days); SOIP (Strength of Investor Protection); ENFCON (Enforcing Contracts); GOVEFF (Government Effectiveness); ROL (Rule of Law); CORRPTNCTR (Corruption Control); MONF (Monetary Freedom); TRADEF (Trade Freedom); FINF (Financial Freedom); GNIg (Gross National Income growth); INF (Inflation); REALINT (Real interest rate); DEPINTR (Deposit interest rate); DCTPS (Domestic Credit to Private Sector); NonReg (Non-regulated MFI); RegD (Regulated); NonP (Non Profit); Prof (For Profit MFIs) CreditU (Credit Union); MNO (Mobine Network Operator); NBFI (Non-Bank Financial Institution); NGO (Non-governmental Organisation); RuralB (Rural Bank).

MONF	3,208	72.3793	13.4292	0	90.4
TRADEF	3,208	64.9957	11.9889	0	89
FINF	3,208	43.2793	13.4099	0	70
GNIg	3,161	5.0271	3.7266	-4.53	19.40
Inflation	3,160	7.9726	5.5921	0.2336	19.25
Interest Rate	3,124	4.9067	7.1527	-6.00	22.69
DEPINTR	3,154	7.4063	3.6399	0	13.63
DCTPS	3,207	17.6629	16.1012	-6.85	160.12
New	3,228	0.2066	0.4050	0	1
Young	3,228	0.2082	0.4061	0	1
Mature	3,228	0.5548	0.4971	0	1
Non-Regulated	3,228	0.2144	0.4105	0	1
Regulated	3,228	0.7856	0.4105	0	1
Non-Profit	3,228	0.2066	0.4050	0	1
For Profit	3,228	0.2082	0.4061	0	1
Bank	3,228	0.1413	0.3483	0	1
Credit-Union	3,228	0.2928	0.4551	0	1
MNO	3,228	0.2866	0.4522	0	1
NBFI	3,228	0.2271	0.4190	0	1
NGO	3,228	0.0065	0.0804	0	1
Rural-Bank	3,228	0.0378	0.1907	0	1
N			3228		

BRWNGTBVA (Borrowing as a ratio of book value of assets), DEPTBVA (Deposits to book value of assets), ROA (Return on Assets), AT (Asset Tangibility), PAR30 (Portfolio at Risk > 30 days), SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), CORRPTNCTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom), GNIg (Gross National Income growth), DEPINTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector).

Control Variables
Regulation: Non-Regulated (Non Regulated MFIs), Regulated (Regulated MFIs)
MFI Profit Status: Non-Profit (Non Profit MFIs), For Profit (For Profit MFI)
MFI Orientation: Credit-Union (Credit Union), MNO (Mobile Network Operator), NBFI (Non Bank Financial Institution), NGO (Non Governmental Organisation), Rural-Bank (Rural Bank)

Observation Period: 2004 – 2016.

Table 6.1: Summary Statistics of Variables

In approaching the data analysis for this study, the researcher first performed a correlation estimation. According to the literature, performing a correlation analysis, entails obtaining an estimation of the correlation coefficient between two or more response variables, or predictor variables, and between response and predictor variables) is necessary. A correlation coefficient typically defines a range between -1 and +1. Where an estimation/figure closer to 1 denotes a positive correlation between the units observed, and an estimation closer to -1 denotes a

negative/inverse correlation between the units observed. A correlation analysis therefore quantifies the direction and strength of the association between variables employed within the study. A simple "correlate" command was employed in STATA to access the correlation of the observed variables.

In order to perform the required multiple regression analysis for the sample collected, choice of an appropriate estimation methodology was dependent on the structure of the error term (and the correlation between the components of the error term and the observed explanatory variables). In addition, the nature of the data suggest the type of analysis to perform. The data collected for this analysis was of a panel data nature, hence, panel data estimation techniques have been employed.

6.3 RESULTS DISCUSSION

6.3.1 Deposit Model

Deposits as an integral input of the capital structure of MFIs have been regularly documented in the literature. For instance, Tor (2003) suggest that deposits improves the capital structure of MFIs, in addition to representing a relatively cheap source of financing MFI loan portfolio, deposits could also improve long-term sustainability of MFIs. Current consensus indeed amongst researchers is of the belief that the ability of MFI to mobilise deposits could be the solution to their long-term move away from other types of uncertain funding such as; donor and grant funding (de Sousa-Shields and Frankiewicz 2004). However, the ability of MFIs to mobilise deposits often depends on the prevailing regulatory environment in their operating environment.

Results for the deposit model seems to confirm current literature suggestion on the importance of deposit funding. The fixed effect model reveals a highly significant and positive impact on the firm-specific MFI variables namely: Size, MFI Age, and the measure of Tangible Asset (TA). This is to be expected, because the more deposits an MFI can mobilise, the better it's able to achieve its mission objectives. In addition, this enables the MFI to grow (Size) and expand its asset base (TA). Furthermore, the age variable indicates that MFIs past the new age, are better suited to benefit from mobilising deposits. This suggest that experience of age is a determining factor in the ability of MFIs to mobilise deposits. This could be a screening tool

by regulators, in the sense that older MFIs are better trusted to properly manage client's deposits. This is confirmed in the data, that new MFIs are more likely to fall into difficulty in comparison to larger MFIs. The sensitivity factor also means that older MFIs are less sensitive to operating difficulties, in comparison to smaller newer MFIs. Furthermore, the measure of risk (PAR30), also positively influences deposit taking by MFIs. This is in line with previous literature which examines the effects of firm-specific factors on the capital structure of MFIs.

The institutional variables further suggest that a good enabling environment is of benefit for MFIs in accessing deposit. For instance, the measure for strength of investor protection (SOIP) displays a positive and significant relationship with deposits at the 1% level. This is expected, as the existence of a robust mechanism in place to protect investors is a positive signal for foreign investors. Other institutional factors are largely mixed in results. For instance, the measures for freedom mostly indicate negative albeit insignificant outcomes with deposit. However, the measure GOVEFF indicate a positive relationship with MFI deposits.

Factors measuring the financial sector development are worth mentioning. The literature suggests that the financial sector acts as a complimentary mechanism to MFI efforts (Vanroose and Espallier 2009). The results of this analysis re-affirms that, when financial development measures are introduced to the equation model, the results obtained indicates that the significant FD measure (in this case domestic credit to private sector (DCTPS) is positive and highly significant in explaining the use of deposits by MFIs.

Macroeconomic measures on the other hand, indicate mixed results. The measure for income show expected results, while the GNIg indicates a positive relationship with the mobilisation of deposits, this could be as a result of increased income levels on the aggregate level, influences MFIs ability to mobilise deposit. This could imply that when income increases individuals are more likely to use MFI services such as deposits. Inflation and real interest rate are both negative and significant, indicating that inflation acts as an eroding factor to clients wealth, such that; the higher the inflation the less likely clients are able to save.

MFI Deposit Model Fixed Effect Results.

FE regression Deposit Model	Fixed Effect DEPOSIT	Fixed Effect DEPOSIT	Fixed Effect DEPOSIT	Fixed Effect DEPOSIT
LnA	0.073***	0.065***	0.073***	0.069***
	(0.007)	(0.008)	(0.008)	(0.008)
ROA	-0.089	-0.113*	-0.089	-0.092*
	(0.046)	(0.046)	(0.046)	(0.046)
AT	0.759***	0.736***	0.759***	0.756***
	(0.094)	(0.094)	(0.094)	(0.094)
PAR30	0.063	0.057	0.063	0.060
	(0.050)	(0.049)	(0.050)	(0.050)
SOIP	0.010***	0.010***	0.010***	0.009**
	(0.003)	(0.003)	(0.003)	(0.003)
ENFCON	0.001	0.000	0.001	0.000
	(0.002)	(0.002)	(0.002)	(0.002)
GOVEFF	0.015	0.011	0.015	0.013
	(0.050)	(0.049)	(0.050)	(0.049)
ROL	-0.037	-0.031	-0.037	-0.039
	(0.047)	(0.046)	(0.047)	(0.046)
CORRPTNCTRL	-0.014	-0.017	-0.014	-0.009
	(0.036)	(0.036)	(0.036)	(0.036)
MONF	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
TRADEF	0.000	0.000	0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)
FINF	-0.000	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)
GNIg	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)
INF	-0.004**	-0.004**	-0.004**	-0.005**
	(0.001)	(0.001)	(0.001)	(0.001)
REALINT	-0.002*	-0.003*	-0.002*	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)

DEPINTR	0.006**	0.006**	0.006**	0.006**
	(0.002)	(0.002)	(0.002)	(0.002)
DCTPS	0.005***	0.004***	0.005***	0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
New		-0.062***		
		(0.018)		
Young			0.002	
			(0.012)	
Mature				0.053**
				(0.017)
_cons	-0.950***	-0.797***	-0.949***	-0.882***
	(0.144)	(0.150)	(0.144)	(0.145)
N	1929	1929	1929	1929
R^2	0.228	0.235	0.228	0.234
adj. R^2	-0.092	-0.083	-0.093	-0.085
F	23.66	23.22	22.33	23.05
rmse	0.163	0.163	0.163	0.163
df_r	1363	1362	1362	1362

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

ROA (Return on Assets), AT (Asset Tangibility), PAR30 (Portfolio at Risk > 30 days), SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), CORRPTNCTR (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom), GNIg (Gross National Income growth), INF (Inflation), REALINT (Real Interest Rate), DEPINTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector)

Control Variables:
MFI Age: New, Young, Mature

Study Period: 2004 – 2016.

Table 6.2: Fixed Effect Deposit Model (Deposit Test Results).

6.3.2 Donated Equity Model

The regression model for donated equity reveals some interesting results. For firm-specific influences, the measure of Size (LnA) appears to be significant and negative at the 1% level. This suggest that MFIs who are increasing in size, have little need for further donor funding as they increase in size, donors often are replaced with other types of financing. This confirms the life-cycle theory of MFIs stipulated in (Bogan 2012), which suggest that MFIs change financing structure as they grow and evolve. Asset tangibility on the other hand appears to be positive and significant, whilst profitability measure is negative and significant in explaining MFI use of Donated Equity. The measure for risk is positive, however, insignificant in explaining donated equity in MFIs. The results coefficient (dummy) variable for age further confirms this, suggesting that mature MFIs are less likely to use donated equity in comparison to new MFIs.

Institutional environmental measures reveal that SOIP (the measure for investor protection) is positively significant in explaining the donated equity of MFIs in SSA. Institutional environments that actively protects investors enables MFIs to attract positive inflows of funds. MONF, and TRADEF all indicate negative and significant relationship with donated equity. Conversely financial freedom (FINF) indicates a positive and significant relationship with donated equity. GOVEFF is shown to have a negative and significant relationship with leverage, whilst corruption control also indicates a negative relationship with donated equity. Other institutional variables largely indicate negative relationship albeit insignificant with donated equity.

Measures for financial development (DCTPS) is positive and insignificant at the 1% level. This is in line with studies, indicating the complimentary role between MFI and financial development.

MFI Donated Equity Fixed Effect Model with Age Variables

Don. Equity Model	Fixed Effect DONEQ	Fixed Effect DONEQ	Fixed Effect DONEQ	Fixed Effect DONEQ
Size	-0.033***	-0.035***	-0.035***	-0.028***
	(0.008)	(0.008)	(0.008)	(0.008)
ROA	-0.147**	-0.154**	-0.159***	-0.144**
	(0.047)	(0.048)	(0.047)	(0.047)
AT	0.247*	0.240*	0.235*	0.250*
	(0.097)	(0.098)	(0.097)	(0.097)
PAR30	0.069	0.067	0.068	0.072
	(0.051)	(0.051)	(0.051)	(0.051)
SOIP	0.009**	0.009**	0.010**	0.010***
	(0.003)	(0.003)	(0.003)	(0.003)
ENFCON	-0.003	-0.003	-0.003	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)
GOVEFF	-0.126*	-0.127*	-0.128*	-0.125*
	(0.051)	(0.051)	(0.051)	(0.051)
ROL	0.070	0.072	0.075	0.072
	(0.048)	(0.048)	(0.048)	(0.048)
C-CTRL	-0.052	-0.053	-0.057	-0.056
	(0.038)	(0.038)	(0.038)	(0.038)
MONF	-0.002*	-0.002*	-0.003**	-0.003**
	(0.001)	(0.001)	(0.001)	(0.001)
TRADEF	-0.003**	-0.003**	-0.002**	-0.002**
	(0.001)	(0.001)	(0.001)	(0.001)
FINF	0.003***	0.003***	0.003***	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
GNIg	0.004*	0.004*	0.004*	0.004*
	(0.002)	(0.002)	(0.002)	(0.002)
INF	-0.001	-0.0001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)
INT	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)

D-INTR	-0.002	-0.002	-0.002	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)
DCTPS	0.001	0.001	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.001)
New		-0.0170		
		(0.018)		
Young			0.036**	
			(0.013)	
Mature				-0.051**
				(0.017)
_cons	0.806***	0.848***	0.814***	0.742***
	(0.149)	(0.155)	(0.148)	(0.150)
N	1929	1929	1929	1929
R^2	0.086	0.086	0.091	0.091
adj. R^2	-0.293	-0.293	-0.287	-0.286
F	7.515	7.145	7.572	7.606
rmse	0.169	0.169	0.168	0.168
df_r	1363	1362	1362	1362

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Don. Equity, DONEQ (Donated Equity)

ROA (Return on Assets), AT (Asset Tangibility), PAR30 (Portfolio at Risk > 30 days), SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), C-CTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom), GNIg (Gross National Income growth), INF (Inflation), INT (Real Interest Rate), D-INTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector)

Control Variables:
MFI Age: New, Young, Mature
Study Period: 2004 – 2016.

Table 6.3: Fixed Effect Donated Equity Model with Age Variables

6.3.3 Borrowing Model

Borrowing is measured by the debt acquired by MFIs on their capital structure. Studies suggest that firm-specific factors are responsible for influencing borrowing levels amongst MFIs (Tchuigoua 2014). The results however, indicates some new findings. Firm specific factors such as Size (LnA), is negative and significant with borrowing. MFIs tend to mobilise internal resources as they grow in size, and hence, use substantial internal equity to mobilise their operations. The measure of tangibility (tangible assets) when regressed against borrowing indicates a negative and insignificant relationship with borrowing. The age dummy further highlights the life-cycle theory assertion that New MFIs are less likely to use borrowing in their capital structure as compared to Young and Mature MFIs.

The measure of Risk is positive albeit insignificant, suggesting that a positive (high quality) portfolio loan book (measured by the portfolio at risk due after 30 days) is positive for MFIs ability to borrow funds with credibility. Furthermore, profitability (measured by ROA) appears to be positively associated with borrowing, however, this effect is insignificant. When institutional factors are regressed against borrowing, the results appear to be mixed, whilst institutional indicators show mostly positive influence on borrowing. Specific indicators show significant impact. For instance, TRADEF is positive and significant at the 5% level. This suggest that creditors are incentivised by the ability of business to trade freely, and this is positive for MFI borrowing. Finally, the measures of financial development (DCTPS) indicates a positive and insignificant relationship with borrowing.

MFI Borrowing Model Results with Age Dummies.

Borrowing Model	Fixed Effect BRWNGTBVA	Fixed Effect BRWNGTBVA	Fixed Effect BRWNGTBVA	Fixed Effect BRWNGTBVA
Size	-0.330***	-0.360***	-0.332***	-0.341***
	(0.043)	(0.045)	(0.043)	(0.044)
ROA	0.254	0.164	0.239	0.246
	(0.264)	(0.267)	(0.265)	(0.264)
AT	-0.755	-0.841	-0.769	-0.764
	(0.545)	(0.546)	(0.546)	(0.545)
PAR30	0.229	0.205	0.227	0.221
	(0.287)	(0.287)	(0.287)	(0.287)
SOIP	0.0262	0.0259	0.0269	0.0240
	(0.016)	(0.016)	(0.016)	(0.017)
ENFCON	0.014	0.014	0.014	0.013
	(0.011)	(0.011)	(0.011)	(0.011)
GOVEFF	-0.009	-0.026	-0.010	-0.012
	(0.286)	(0.286)	(0.286)	(0.286)
ROL	0.282	0.302	0.287	0.278
	(0.269)	(0.269)	(0.269)	(0.269)
C-CTRL	-0.136	-0.149	-0.142	-0.126
	(0.210)	(0.210)	(0.211)	(0.211)
MONF	-0.005	-0.006	-0.005	-0.004
	(0.005)	(0.005)	(0.005)	(0.005)
TRADEF	0.010*	0.010*	0.010*	0.009
	(0.005)	(0.005)	(0.005)	(0.005)
FINF	-0.002	-0.002	-0.002	-0.002
	(0.005)	(0.005)	(0.005)	(0.005)
GNIg	0.001	0.000	0.001	0.000
	(0.009)	(0.009)	(0.009)	(0.009)
INF	-0.006	-0.005	-0.005	-0.006
	(0.008)	(0.008)	(0.008)	(0.008)
INT	0.001	0.000	0.001	0.001
	(0.006)	(0.006)	(0.006)	(0.006)

D-INTR	0.004	0.004	0.004	0.004
	(0.013)	(0.013)	(0.013)	(0.013)
DCTPS	0.002	0.002	0.002	0.001
	(0.007)	(0.007)	(0.007)	(0.007)
New		-0.224*		
		(0.102)		
Young			0.043	
			(0.072)	
Mature				0.126
				(0.097)
_cons	4.513***	5.067***	4.522***	4.672***
	(0.832)	(0.868)	(0.832)	(0.841)
N	1929	1929	1929	1929
R^2	0.044	0.048	0.045	0.045
adj. R^2	-0.352	-0.348	-0.352	-0.351
F	3.718	3.791	3.530	3.606
rmse	0.944	0.942	0.944	0.943
df_r	1363	1362	1362	1362

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

BRWNGTBVA (Borrowing to Book Value of Asset)

ROA (Return on Assets), AT (Asset Tangibility), PAR30 (Portfolio at Risk > 30 days), SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), C-CTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom), GNIg (Gross National Income growth), INF (Inflation), INT (Real Interest Rate), D-INTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector)

Control Variables:
MFI Age: New, Young, Mature
Study Period: 2004 – 2016.

Table 6.4: Fixed Effect Borrowing Results (Fixed Effect Borrowing Model with Age Dummies).

6.3.4 Leverage Model

MFI leverage measures the total borrowing and donor funds available to MFIs in SSA. Previous studies indicate that leverage is sensitive to firm-specific factors such as size, and asset tangibility, however, for MFIs in SSA, this is not clear. Whereas, previous research indicates that size, tangibility and risk impact on leverage, results of the regression analysis reveal that MFI firm-specific measures such as; size is negative and significant in determining the leverage levels of MFIs. However, other firm-specific measures such as; profitability, tangibility and risk are insignificant in explaining the leverage levels of MFIs in SSA.

The positive influence observed from the dummy variable for age (young and mature MFIs) indicate that; as an MFI advances in age, a move towards the use of leverage is expected. This is in line with the life-cycle theory of MFI financing (Bogan 2012), which posits that MFI financing is attributable to various stages of MFI growth and maturity. As MFIs start out, they commence operations using predominantly donor funding, but as they mature, a shift towards debt focus funding is expected.

Within the African context, evidence remains scarce. For example, only one study examines the determinants of capital structure of MFIs[83]. Kyereboah (2007) finds a positive and significant relationship between the age of MFIs and short-term leverage. For long-term leverage this is positive and significant, and for total leverage, a positive and insignificant relationship exists. Although the above study employs the use of short-term, long-term and total debt in analysing the capital structure determinants of MFIs, leverage employed in this study has similar characteristics with STLEV, LTLEV and TLEV. For example, borrowings in the model employed for this study -will typically- represent short-term borrowing, whilst deposits and donated equity typically signifies long-term debt for MFIs. Modelling specific MFI capital structure components (e.g Donated equity, borrowing, and deposits) gives a more detailed examination of the responsiveness of the explanatory variables on the capital structure of MFIs.

Institutional and macroeconomic measures show little significance, albeit a positive influence. Specifically, the measure for trade (TRADEF) is positive and significant in

[83] This study was carried out by Kyereboah in 2007. In which he examines the determinants of the capital structure of MFIs in Ghana.

explaining the use of leverage by MFIs in SSA. However, measures of income (GNIg) show a positive but insignificant relationship with leverage. This could indicate that as wealth permeates through the population, the general clientele base of MFIs shrinks, forcing MFIs to use less leverage. In addition, as the society gets wealthier, the banking system captures more of these wealthier communities, leaving MFIs to focus on the bottom of the pyramid. This therefore indicates that MFIs focus solely on their social mission therefore seeking complimentary funding to this end. The measure for inflation and interest rates are both negative and insignificant.

In addition to being used as a measure of risk, the size of an MFI provides useful insight into the capital structure decisions of various MFIs. Theory suggest that larger firms tend to be more diversified, and therefore better able to absorb risks (Rajan & Zingales 1995). Furthermore, they are more likely to have easy access to credit and a more diluted ownership. However, previous studies have found inconclusive results when it relates to firm size. The pecking order theory of capital structure suggest that larger firms exhibit lower information asymmetry and are therefore able to issue more equity, this surmises that a negative relationship between size and leverage should be in place.

Using the natural logarithm of total assets (LnA), the results of this analysis show a negative and significant relationship between leverage and size (in three models examined namely; LEV, BORROWING and DONEQ). This follows traditional capital structure theory predictions. However in the DEPOSIT model examined, size of MFIs indicate a positive and significant relationship. This is a unique finding for MFIs especially in SSA region. This would suggest that the size of MFIs do not influence the willingness of local clients to use the deposit facilities offered by MFIs in the SSA region. In the study by Kyereboah (2007), although he finds a negative significant relationship between MFIs capital structure and size, the specific effect on the deposits element of capital structure composition of MFIs was not examined. Hence this presents a significant addition to the literature on the MFI sector.

The agency theory of capital structure considers debt to be a disciplining device, which implores managers to increase shareholders wealth and discourage empire building (Jensen 1986). The pecking order theory further indicates that profitable MFIs face lower costs in raising equity, This therefore indicates that an inverse relationship should exist between profitability and capital structure. An important measure of profitability for the MFI sector is

return on asset (ROA) and return on equity (ROE). This study employs the use of ROA, as this measure depicts the efficiency at which management utilises its available resources. For the leverage model, the results reveal a positive and insignificant relationship between ROA and leverage choices for MFIs. This indicates that on average, profitability is irrelevant in explaining the capital structure choices of MFIs. This is to be expected however, because MFIS are hybrid institutions which incorporate a social missions with their operations. Hence, investors might not be initially swayed by the opportunity to earn but rather a social impact to investing in these institutions. Furthermore, findings indicate that MFIs with higher profits will tend to increase financing of projects via internal funding, thereby preferring retained earnings to external debt for its financing.

In other models (Deposit and Donated Equity Models), ROA is negative, however this measure if significant in the DONEQ model and insignificant in the Deposit model. In addition to a negative relationship an interesting finding is observed in the deposit model. In this model ROA depicts insignificance although investors do not play a role in financing MFIs with deposits, clients do. The results here could indicate that depositors are conscious of MFI profitability as measured by ROA. MFIs could therefore be sensitive to their client's perceptions of success as measured by ROA, in order to attract more deposits as a source of long-term funding option. In addition, MFIs could improve on their bottom lines in order to make deposits more attractive to clients. This could in turn improve their financing constraints. Results of this finding is in line with Kyereboah (2007).

Asset tangibility measures the tangible assets employed by a business in its operations. MFIs often use this as collateral to secure loans in addition to minimising information asymmetry in the contractual relationship between lenders and borrowers (Cohen 2009, Berger and Black 2011, Hall 2012). According to Almeida and Campello (2007), the collateral dynamics of AT (using this measure as collateral in the borrowing agreement to mitigate contract problems) means that a firm can sustain more external financing. Therefore, we surmise that the actuality of AT implies that MFIs can pledge adequate collateral to raise funds.

The results in the leverage model indicates a positive and insignificant relationship with leverage. Largely confirming with the competing theories of capital structure which predict the positive relationship between leverage and AT. A closer examination of the components of leverage employed by this study, reveals that AT displays a negative and insignificant

relationship in our borrowing model, whilst this relationship reveals a positive and significant relationship within our deposit (1%) and donated equity (10%) models.

The deposit model indicates that deposits is sensitive to the AT of MFIs in SSA. For instance, the positive and significant influence could signal that clients associate physical MFI asset holdings (such as; brick-and-mortar buildings) with trust. Clients would therefore, prefer to see physical MFI buildings in order to trust MFIs with their deposits.

Similarly, for the donated equity model, this also falls in line with capital structure theory of a positive relationship between AT and capital structure. Most donated equity from an MFI point of view is obtained from international development organisations. Hence, these organisations want to see MFIs facilities and preferably operational capacity in order to donate funds to these MFIs. This result is therefore consistent with capital structure theory, and empirical evidence observed in Ghana.

The theoretical position of the relationship between risk and leverage claims that risk should have an inverse relationship with leverage. According to the static trade-off theory of capital structure, the higher the volatility of earnings, the more likelihood of a financial distress by firms (the higher the probability of financial distress by firms). Hence, when bankruptcy costs are higher, a firm's debt ratio falls in the face of high earnings volatility (RISK). This suggests that risk has an inverse relationship with leverage (Marsh, 1982; Bradley *et al*., Jarrell and Kim, 1984; Mackie-Mason, 1990; de Miguel and Pindado, 2001).

For the leverage model, the regression results show a positive but insignificant relationship, in addition to other funding models (BORROWING, DONEQ, and DEPOSITS), the measure of risk was positive albeit insignificant. This lines up with earlier research carried out by Rajan and Zingales (1995) and Frank and Goyal (2009) who find that risk is not a reliable driver of capital structure. This study findings however, disagrees with Lemmon et al (2008) who finds a negative and significant relationship between risk and leverage. Within the capital structure debate of MFIs, Kyereboah (2007) using the volatility of earnings, finds a negative relationship between the short-term leverage and total leverage of MFIs in Ghana (significant at the 5% level for short-term leverage model). However, the same research estimates indicates a positive and significant relationship between long-term leverage and earnings volatility.

MFI Leverage Model Fixed Effect Result.

Leverage Model	Fixed Effect LEV	Fixed Effect LEV	Fixed Effect LEV	Fixed Effect LEV
Size	-0.256***	-0.295***	-0.258***	-0.272***
	(0.043)	(0.045)	(0.043)	(0.044)
ROA	0.165	0.0510	0.150	0.154
	(0.263)	(0.265)	(0.264)	(0.263)
AT	0.004	-0.105	-0.010	-0.009
	(0.543)	(0.543)	(0.543)	(0.542)
PAR30	0.292	0.262	0.290	0.280
	(0.286)	(0.285)	(0.286)	(0.286)
SOIP	0.036*	0.036*	0.037*	0.033*
	(0.016)	(0.016)	(0.016)	(0.016)
ENFCON	0.014	0.014	0.014	0.013
	(0.011)	(0.011)	(0.011)	(0.011)
GOVEFF	0.006	-0.012	0.004	0.001
	(0.285)	(0.284)	(0.285)	(0.285)
ROL	0.245	0.271	0.251	0.240
	(0.268)	(0.267)	(0.268)	(0.267)
C-CTRL	-0.150	-0.166	-0.156	-0.135
	(0.210)	(0.209)	(0.210)	(0.210)
MONF	-0.006	-0.007	-0.006	-0.005
	(0.005)	(0.005)	(0.005)	(0.005)
TRADEF	0.011*	0.010*	0.011*	0.009
	(0.005)	(0.005)	(0.005)	(0.005)
FINF	-0.003	-0.002	-0.002	-0.002
	(0.005)	(0.005)	(0.005)	(0.005)
GNIg	0.001	0.001	0.001	0.001
	(0.009)	(0.009)	(0.009)	(0.009)
INF	-0.010	-0.010	-0.010	-0.011
	(0.008)	(0.008)	(0.008)	(0.008)
INT	-0.002	-0.002	-0.002	-0.002
	(0.006)	(0.006)	(0.006)	(0.006)

D-INTR	0.011	0.011	0.011	0.010
	(0.013)	(0.013)	(0.013)	(0.013)
DCTPS	0.007	0.006	0.007	0.006
	(0.006)	(0.006)	(0.006)	(0.006)
New		-0.286**		
		(0.101)		
Young			0.045	
			(0.072)	
Mature				0.179
				(0.097)
_cons	3.563***	4.269***	3.573***	3.790***
	(0.829)	(0.864)	(0.829)	(0.837)
N	1929	1929	1929	1929
R^2	0.029	0.034	0.029	0.031
adj. R^2	-0.374	-0.367	-0.375	-0.371
F	2.370	2.693	2.259	2.431
rmse	0.940	0.938	0.940	0.939
df_r	1363	1362	1362	1362

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

LEV (Leverage)

ROA (Return on Assets), AT (Asset Tangibility), PAR30 (Portfolio at Risk > 30 days), SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), C-CTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom), GNIg (Gross National Income growth), INF (Inflation), INT (Real Interest Rate), D-INTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector)

Control Variables:
MFI Age: New, Young, Mature
Study Period: 2004 – 2016.

Table 6.5: MFI Fixed Effect Leverage Model Result.

6.4 CONCLUSION

This study set out to examine three central themes within the MF sector. Firstly, in view of the current efforts by governments in SSA to improve institutional governance quality, and consequently implementing Microfinance as a blanket development policy tool. We set out to establish the role of institutions on the funding structure of MFIs. Secondly, we identified MFI performance and its perceived importance within the continent, whilst also identified capital structure as a tool for enabling performance; we therefore set out to determine the impact of capital structure on MFI sustainability, risk, efficiency and outreach (MFI performance). Finally, within the context of the financially excluded in SSA, we question just how much important MFIs are in influencing MFIs are in the drive towards financial inclusion on the continent.

Key findings for the first enquiry reveal that observed institutional measures largely influence leverage of MFIs positively, in particular, the measure for investor protection. This is a new finding within the Microfinance literature. This confirms the importance of a strong institutional environment in attracting funding for the sector. This measure was positive in all models and significant in our leverage model, donated equity and deposit models. For policy makers, the option is clear. Creating an enabling environment for funders to come into the sector and feel protected should be apriority. Policies that strengthen financial reporting practices, transparency in government, and embracing the absolute power of the rule of law are important for the continent in the short and longer term. From a macro-environment standpoint improving national income via increased productivity of local institutions, is a positive signal to international funders. For instance, a look at the donated equity model (which forms the bulk of MFI long-term financing in SSA), suggest that improving productive capacity to increase national income amongst countries in SSA is an attractive approach to lure in long-term institutional investors into the MF sector.

More importantly, in order for MFIs to stand any chance of being relevant, and achieving its objectives in the continent, the long-term funding of these institutions have to be addressed. Whilst donated equity forms the bulk of MFI long-term financing, as seen in our second empirical analysis of sustainability -long term financing hinders overall MFI sustainability-.

Therefore, continual use of this, will be detrimental to the long-term sustainability of the sector in SSA. A preferred longer term strategy could well aim to transition these longer-dated donated-equity financing into local currency generated and managed markets accessible for MFIs.

Whilst the ideal long-term financing option would be local deposits, utilised in a transparent framework of governance. However, it is clear that, creating and implementing major policy practices in much of the continent moves at a snail pace. Within this context, the local apex banks can take the lead and implement an ecosystem such that, MFIs are able to directly access local denominated currency in a longer dated funding pool supported by international funders and the prevailing apex bank. Special Deposit money banks could act as intermediaries. Local savers should be incentivised to save via intermediaries such as; deposit money banks (savers funds are protected through an apex bank), deposit money banks then pool savers funds and lend at attractive local rates to MFIs. International funders could then invest directly (during times of liquidity constraints) in deposit money banks. In essence, deposit money banks could borrow at a discounted rate from international funders if needed, to cover shortfalls in liquidity management. This would be as a last resort, as MFI loan books have been shown to be resilient sources of capital repayment. An initiative like this will provide not only long-term sources of finance to MFIs, it will also create deeper financial systems in many of the countries in SSA.

A slight variation of the above would be a scenario which works in the form of guarantees. With respect to the deposit money banks as an intermediary, international funders could support the local intermediary (or a handful of local intermediaries in an ecosystem) with direct investments via equity holdings, bond issuances, or market debt. These local intermediaries could then be guaranteed by an apex bank, thereby providing assurance to international funders and also guaranteeing the efficiency of the local financial ecosystem. This would also deepen already established local financial markets, creating a boon for sustainable development and local businesses. More importantly, local solutions for unique challenges that plague the African continent.

Chapter 7 EMPIRICAL ANALYSIS: CAPITAL STRUCTURE AND PERFORMANCE OF MICROFINANCE INSTITUTIONS:

Introduction

The aim of this empirical chapter is to interrogate the impact of capital structure on financial and social performance of MFIs.

Objective: To identify the influence of MFI funding structure on MFI performance.

Objective: To identify the role of Institutional quality on MFI performance.

Summary Statistics Variables and Dummy Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Dep Variables					
OSS	2902	1.067	0.876	-0.92	31.96
ROA	2555	-0.017	0.137	-2.47	0.8429
PAR30	2649	0.081	0.187	0	6.843
CPB	2904	222	476	0	12185
PFB	2900	0.584	0.286	0	6.689
ALPB	2901	802	5337	0	267710
NAB	2902	28038	91411	0	2561000
Capital Structure V's					
STLEV	2,903	0.008	0.039	-0.011	0.954
LTLEV	2,903	0.049	0.092	-0.652	1.242
TLEV	2,903	0.671	0.866	0.000	40.41
Firm Variables					
Size	2,903	15.05	2.186	2.936	22.176
Age	3,228	2.3	0.895	0	3.000
AT	2,903	0.069	0.084	0	1.000

Variable	Obs	Mean	Std. Dev.	Min	Max
Macro Indicators					
GNIg	3,161	5.027	3.727	-4.53	19.40
INF	3,160	7.9726	5.592	0.234	19.25
REALINT	3,124	4.9067	7.153	-6.00	22.69
Financial Sector V's					
DEPINTR	3,154	7.41	3.64	0	13.63
DCTPS	3,207	17.66	16.10	-6.85	160.12
MFI Age Dummy V's					
New	3,228	0.207	0.405	0	1
Young	3,228	0.208	0.406	0	1
Mature	3,228	0.555	0.497	0	1

Ease of Doing Biz Index					
SOIP	3,022	3.55	2.12	0	8.00
ENFCON	3,225	48.83	11.67	0	66.17
WGI Indicators					
GOVEFF	3,145	-0.68	0.46	-2.17	0.66
ROL	3,145	-0.68	0.45	-1.84	0.37
CORRPTNCTRL	3,145	-0.65	0.46	-1.71	0.83
Heritage Indicators					
MONF	3,208	72.38	13.43	0	90.4
TRADEF	3,208	65.00	11.99	0	89
FINF	3,208	43.28	13.41	0	70

MFI Type Dummy					
NonReg	3,228	0.214	0.411	0	1
Reg	3,228	0.787	0.411	0	1
NonP	3,228	0.207	0.405	0	1
Prof	3,228	0.208	0.406	0	1
Bank	3,228	0.141	0.348	0	1
CreditU	3,228	0.293	0.455	0	1
MNO	3,228	0.287	0.452	0	1
NBFI	3,228	0.227	0.419	0	1
NGO	3,228	0.007	0.080	0	1
RuralB	3,228	0.038	0.191	0	1
N	3228				

OSS (Operational Self-Sufficiency), ROA (Return on Assets), PAR30 (Portfolio at Risk > 30 days), CPB (Cost Per Borrower), PFB (Percent of Female Borrowers), ALPB (Average Loan Balance Per Borrower), NAB (Number of Active Borrowers).
STLEV (Short-Term Leverage), LTLEV (Long-Term Leverage), TLEV (Total Leverage). AT (Asset Tangibility), SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), CORRPTNCTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom). GNIg (Gross National Income growth), INF (Inflation), REALINT (Interest Rate), DEPINTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector). Non-Reg (Non Regulated MFIs), Reg (Regulated MFIs), NonP (Non Profit MFIs), Prof (For Profit MFIs). CreditU (Credit Union), MNO (Mobile Network Operator), NBFI (Non Bank Financial Institution), NGO (Non Governmental Organisation), RuralB (Rural Bank).

Study Period 2004-2016

Table 7.1: Summary Statistics for Performance Study.

As can be seen in Table 7.1, in the first sample (SSA), MF Performance measures indicates an observation of 3228 across the country sampled in SSA for 2004-2016.

7.1 ANALYSIS

7.1.1 Results and Discussions of the Panel Data Regression Approach

The first set of regressions tests the financial performance indicators against a set of independent variables. This takes into consideration a regression model which regresses the performance Y variables on the independent variables, in addition to other vector of variables (Capital structure measures, Institutional factors, Macro-economic factors, Financial Development indicators, control variables and the error term), the analysis thus reveal some interesting findings. Results suggest that on average, MFIs in SSA tend to favour the use of short-term leverage in their operations. Results further suggest that close to 74% of MFI sustainability can be explained by the short-term leverage of MFIs (see Table 7.2 below: OSS Regression model output).

There is harmony on the need for MFIs to be sustainable, to navigate liquidity shocks associated with donor failure (Christen, et al. 2004). For MFIs in Africa this is a priority; recent data suggest that donor funding as a share of capital structure for MFIs have been unsteady in recent years, in addition this often makes MFIs inefficient and non-resilient (Haque et al., 2016). For MFIs sustainability, the ability to cover their costs of operation is essential to maintaining stability in the long run. In addition, prudent efficiency management by MFIs could signal a readiness for commercial capital, which further allows MFIs to increase and grow their loan portfolio and clientele outreach (Olivares-Polanco 2005).

The regression output of the chosen econometric model (with OSS as the dependent variable) confirms that the impact of short-term leverage on the sustainability of MFIs is positive and significant at the below the 10% % level, in line with previous studies such as (Michaelas et, al 1999; Kyereboah 2007; Bogan 2012). This is in direct contrast with research from Caesar and Holmes (2003), Esperance et al, (2003), and Hall et al (2004).

7.2 MFI FINANCIAL PERFORMANCE

7.2.1 MFI Sustainability Results

Leverage measures for long term and total leverage largely appear insignificant in explaining the sustainability of MFIs in SSA. Both measures appear to inversely influence the dependent variable (sustainability of MFIs). This could be as a result of the cost of funding for capital in

these time frames (interest paid to investors, and dividend payments, and interest on deposits). Cost of capital as relates to long-term and total leverage, are usually at commercial rates or subsidised (soft loans). The use of debt therefore increases the financial expenses and therefore have negative implications on the net income of MFIs (Meyer et al., 1996; Zeller and Meyer, 2002). When we contrast the results with the sustainability measure this could reveal that MFIs in SSA do not earn enough income and/or revenue to cover their total costs of operations when commercial capital is utilized as a long-term financing option. Calls for the commercialisation of MFIs further puts this finding into serious questions. For instance, if MFIs are unable to generate enough revenue to cover cost, borrowing at higher commercial rates could further drive these institutions into perpetual delinquencies around the region. Furthermore, MFI borrowing are mostly constituted in foreign currency denominations (primary US dollar). This creates a negative cascading effect, as long-term financing in dollar denominated currency, whilst generating revenue in local currency, leaves MFIs susceptible to loss of currency value, as these institutions often operate on the margins and often cannot afford adequate risk hedging consultation on their loan portfolio and repayment quality.

This implies that MFIs would then have to rely on savings and deposit financing. This is an attractive avenue for MFIs, as this presents a more sustainable long-term financing option for MFIs. However, the quality of the institutional environment (for instance government quality, regulatory quality, and ensuring a total reliance on the rule of law for legal and contractual disputes) for guaranteeing savers income becomes vital, in order to transition into a reliance on savings and deposits. The implications of the negative influence on long-term financing on MFI sustainability suggests that MFIs perhaps need to re-evaluate the source of funding of their longer-term tenure financing to more suitable and sustainable modes of financing, in comparison to current practices.

When the measure of sustainability (OSS), is examined against institutional indicators, we discover that, within the observed sample, no institutional variable appear to be significant in influencing the sustainability of MFIs in SSA. Although a host of these measures appear to have a negative bias towards sustainability, some measures appear to be positive. For instance, measures such as; corruption control, and monetary freedom, although insignificant, both influence MFI sustainability positively. However, the measure for financial development indicates a positive impact on OSS, confirming the complimentary role of the financial sector in the MFI sector development. This is in line with findings from (Chikalipah 2017) who find

some positive impact of the institutional environment (significantly Freedom index) on the performance of MFIs.

The negative relationship between some of the selected institutional environment indicators and MFIs could possibly suggest the infancy of institutions (or the non-existence) of it, in forming the businesses environment that MFIs operate in. this implies that various measures implemented in improving the institutional environment, although favourable for the long-term development prospects of countries in SSA, appears less important in the direct performance of MFIs in SSA when compared with capital structure measures.

Macroeconomic factors show a positive however insignificant impact. For instance, inflation, and gross national income all appear to impact positively on the performance of MFIs, albeit insignificant. MFI firm-specific indicators reveal a positive impact on MFI sustainability. For instance, the measure of MFI asset tangibility is negative and significant, suggesting that MFIs with substantial tangible assets are less likely to utilise leverage, and are more likely to rely on financing their operations through internal revenue as a result of their relative bigger size. This finding is in line with previous research. The measure of Asset tangibility is also in line with previous research and the theory of capital structure, in signalling a negative relationship with sustainability. This relationship is negative and highly significant. The more tangible assets MFIs possess, the less they are able to be agile in reaching the bottom of the pyramid, as costs of landed properties impact on the bottom line thereby increasing the cost of operations and therefore limiting MFI reach.

Finally MFI size reveals a positive and significant relationship with sustainability. This confirms capital structure theory which asserts that the bigger the MFIs (size), the bigger likelihood that an MFI will be sustainable in comparison to smaller MFIs, as a result of scale economics.

When the dummy for MFI Age is introduced to the equation, the analysis suggest that MFI financing follows a life-cycle theory of performance, which suggests that for new MFIs (those aged between 0-3 years) sustainability is less attainable in comparison to the younger MFIs (3-7 years). The output therefore confirms that younger MFIs are more likely to be sustainable in their operations in comparison to New MFIs. This suggests that experience of operating in a market is a comparative advantage for Young MFIs.

MFI Sustainability Fixed Effect model regression results with MFI Age and profit status dummy.

MFI SUSTAINABILITY	OSS	OSS	OSS	OSS	OSS	OSS	OSS	OSS
Size	0.085***	0.083***	0.085***	0.086***	0.083***	0.085***	0.085***	0.085***
	(0.022)	(0.023)	(0.022)	(0.022)	(0.023)	(0.022)	(0.022)	(0.022)
AT	-0.669*	-0.671*	-0.671*	-0.669*	-0.671*	-0.671*	-0.669*	-0.669*
	(0.261)	(0.261)	(0.261)	(0.261)	(0.261)	(0.261)	(0.261)	(0.261)
STLEV	0.749*	0.750*	0.753*	0.750*	0.750*	0.753*	0.749*	0.749*
	(0.371)	(0.371)	(0.372)	(0.372)	(0.371)	(0.372)	(0.371)	(0.371)
LTLEV	-0.093	-0.095	-0.093	-0.093	-0.095	-0.093	-0.093	-0.093
	(0.157)	(0.157)	(0.157)	(0.157)	(0.157)	(0.157)	(0.157)	(0.157)
TLEV	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
SOIP	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
ENFCON	-0.006	-0.007	-0.006	-0.006	-0.007	-0.006	-0.006	-0.006
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
GOVEFF	-0.047	-0.048	-0.047	-0.047	-0.048	-0.047	-0.047	-0.047
	(0.143)	(0.143)	(0.143)	(0.143)	(0.143)	(0.143)	(0.143)	(0.143)
ROL	-0.080	-0.079	-0.080	-0.080	-0.079	-0.080	-0.080	-0.080
	(0.136)	(0.136)	(0.136)	(0.136)	(0.136)	(0.136)	(0.136)	(0.136)
C-CTRL	0.150	0.149	0.149	0.150	0.149	0.149	0.150	0.150
	(0.107)	(0.107)	(0.107)	(0.107)	(0.107)	(0.107)	(0.107)	(0.107)
MONF	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
TRADEF	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
FINF	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004	-0.004
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
GNIg	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
INF	0.001	0.002	0.002	0.001	0.002	0.002	0.001	0.001
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
INT	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
D-INTR	-0.001	-0.002	-0.001	-0.001	-0.002	-0.001	-0.001	-0.001
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
DCTPS	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
New		-0.014						
		(0.051)						

Young			0.008					
			(0.036)					
Mature				-0.003				
				(0.050)				
NonP					-0.014			
					(0.051)			
Prof						0.0084		
						(0.036)		
NonReg							0	
							(.)	
Reg								0
								(.)
_cons	-0.131	-0.0918	-0.124	-0.134	-0.0918	-0.124	-0.131	-0.131
	(0.383)	(0.410)	(0.384)	(0.387)	(0.410)	(0.384)	(0.383)	(0.383)
N	2300	2300	2300	2300	2300	2300	2300	2300
R^2	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021
adj. R^2	-0.339	-0.340	-0.340	-0.340	-0.340	-0.340	-0.339	-0.339
F	1.971	1.870	1.869	1.866	1.870	1.869	1.971	1.971
rmse	0.524	0.524	0.524	0.524	0.524	0.524	0.524	0.524
df_r	1681	1680	1680	1680	1680	1680	1681	1681

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

OSS (MFI Operational Self-Sufficiency)

AT (Asset Tangibility), STLEV (Short-Term Leverage), LTLEV (Long-Term Leverage), TLEV (Total Leverage). SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), C-CTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom). GNIg (Gross National Income growth), INF (Inflation), INT (Interest Rate), D-INTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector). NonP (Non Profit MFIs), Prof (For Profit MFIs). Non-Reg (Non Regulated MFIs), Reg (Regulated MFIs).

Study Period 2004-2016

Table 7.2: OSS Fixed Effect model regression results with MFI Age and profit status dummy.

7.2.2 MFI Profitability

Profitability, is captured by ROA, and it measures the return on MFI assets employed. The ROA model provides some interesting results. Firm specific MFI characteristics such as SIZE and Asset Tangibility (AT) significantly influence MFI profitability. Whilst size shows a significant positive relationship, the measure for AT is negative and significant at the 1% level.

As regarding the impact of capital structure on MFI profitability, both the measures of short-term and long-term leverage are significant. Short term leverage is positive at the 5% level in influencing ROA for MFIs in SSA. Results further reveal that up to 20% of the explained measure of the ROA can be attributed to the STLEV of MFIs in SSA. Surprisingly, LTLEV reveals a negative and significant relationship between ROA and LTLEV. On the coefficient of TLEV, this is positive albeit insignificant.

Selected macro-economic variables reveal a positive influence on MFI profitability. Although insignificant, Real interest rate (REALINTR), Inflation and GNIg all reveal positive influence on MFI profitability. Financial development indicators measured by domestic credit to private sector reveals a negative relationship with MFI ROA. This suggest that financial development thought to be a compliment to MFI performance (Vanroose and D'Espellier 2009) is not the case for MFIs in SSA. This could suggest that the financial development sector is still at an infancy stage in most countries within the sample (Lafourcade et al. 2006). Income indicator (GNIg) shows positive but insignificant relationship with ROA.

Indicators measuring the institutional environment reveal mixed evidence. Whilst the rule of law (ROL) negatively explains the ROA, corruption control (CRRPTNCTRL) is positive. Corruption control conversely reveals that the perception, of the appearance of controlling corruption the beneficial for MFI financial performance. Finally the measure of enforcing contract (ENFCON) is negative. Enforcing contracts could be seen in similar light to ROL, this should ensure a level of institutional fairness between contract holders, and hence a positive for performance, however, in this case the relationship is negative.

MFI firm characteristics (age -dummy variable-) measured by new, young and mature dummy variables MFI appear to be positive and highly significant in explaining the ROA of MFIs. The dummy variable for New and Young MFI is significant at the 1% level. This result strongly support the profit-incentive theory of MFI, which suggest that young MFIs are less

likely to be profitable in comparison to Older MFIs. New MFIs often lack adequate experience and less operational nous, and are often thought to be less effective in improving asset returns, the results for the sample from SSA supports this theory.

MFI Profitability Fixed Effect Result.

MFI ROA FE Model	ROA	ROA	ROA	ROA	ROA	ROA	ROA	ROA
Size	0.035***	0.026***	0.033***	0.034***	0.026***	0.033***	0.035***	0.035***
	(0.004)	(0.005)	(0.004)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)
AT	-0.257***	-0.269***	-0.263***	-0.257***	-0.269***	-0.263***	-0.257***	-0.257***
	(0.054)	(0.053)	(0.054)	(0.054)	(0.053)	(0.054)	(0.054)	(0.054)
STLEV	0.194**	0.200**	0.207**	0.193**	0.200**	0.207**	0.194**	0.194**
	(0.073)	(0.073)	(0.073)	(0.073)	(0.073)	(0.073)	(0.073)	(0.073)
LTLEV	-0.076*	-0.079*	-0.074*	-0.076*	-0.079*	-0.074*	-0.076*	-0.076*
	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)	(0.031)
TLEV	0.001	0.000	0.001	0.001	0.000	0.001	0.001	0.001
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
SOIP	-0.010	-0.010	-0.005	-0.010	-0.010	-0.005	-0.010	-0.010
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
ENFCON	-0.002	-0.002	-0.015	-0.002	-0.002	-0.002	-0.002	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
GOVEF	-0.025	-0.027	-0.025	-0.025	-0.027	-0.025	-0.025	-0.025
	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
ROL	-0.037	-0.033	-0.035	-0.037	-0.033	-0.035	-0.037	-0.037
	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
C-CTRL	0.040	0.038	0.037	0.041	0.038	0.037	0.040	0.040
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
MONF	0.008	0.006	0.006	0.008	0.006	0.006	0.008	0.008
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
TRADEF	0.006	0.004	0.002	0.005	0.004	0.003	0.006	0.006
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FINF	-0.006	-0.005	-0.006	-0.006	-0.005	-0.006	-0.006	-0.006
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GNIg	0.005	0.003	0.005	0.005	0.003	0.005	0.005	0.005
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
INF	-0.004	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
INT	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
D-INTR	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001

	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
DCTPS	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
New		-0.055***						
		(0.010)						
Young			0.026***					
			(0.007)					
Mature				0.002				
				(0.010)				
NonP					-0.055***			
					(0.010)			
Prof						0.026***		
						(0.007)		
NonReg							0	
							(.)	
Reg								0
								(.)
_cons	-0.547***	-0.391***	-0.532***	-0.545***	-0.391***	-0.532***	-0.547***	-0.547***
	(0.083)	(0.087)	(0.083)	(0.084)	(0.087)	(0.083)	(0.083)	(0.083)
N	2131	2131	2131	2131	2131	2131	2131	2131
R^2	0.074	0.091	0.081	0.074	0.091	0.081	0.074	0.074
adj. R^2	-0.286	-0.264	-0.276	-0.287	-0.264	-0.276	-0.286	-0.286
F	6.768	8.033	7.153	6.410	8.033	7.153	6.768	6.768
rmse	0.102	0.101	0.101	0.102	0.101	0.101	0.102	0.102
df_r	1534	1533	1533	1533	1533	1533	1534	1534

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

ROA (Return on Asset)

AT (Asset Tangibility), STLEV (Short-Term Leverage), LTLEV (Long-Term Leverage), TLEV (Total Leverage). SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), C-CTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom). GNIg (Gross National Income growth), INF (Inflation), INT (Interest Rate), D-INTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector). NonP (Non Profit MFIs), Prof (For Profit MFIs). Non-Reg (Non Regulated MFIs), Reg (Regulated MFIs).

Study Period 2004-2016

Table 7.3: MFI Profitability Result.

7.2.3 MFI Portfolio Quality

The measure for portfolio quality; Portfolio at Risk (PAR30) falling due 30 days, was measured by identifying outstanding loans falling more than 30days within an MFI loan portfolio. The PAR30 measure signals the quality of the loan portfolio, in addition to the health of an MFIs lending operations. This is therefore a key measure of an MFI's (loan) performance and repayment capacity. When regressed against capital, institutional, macro variables and firm-specific variables we reveal that; PAR30 is largely positive however insignificant with the measures of leverage. LTLEV and TLEV are both positive and insignificant, whereas, STLEV is negative and also insignificant. As the nature of short-term leverage is such that it is implemented heavily by New MFIs (negative relationship), this implies that with the nature of this type of financing, the repayment risk falling within a short period, will usually be sensitive to short-term financing.

Short-term leverage exhibits a negative albeit insignificant relationship with MFI portfolio risk. As seen from the regression analysis, this is more pertinent with New MFIs whom often rely heavily on short-term financing (as they are just starting out with less reputation/goodwill of operations and experience), in comparison to younger and more mature MFIs who may have built the operational reputation (that comes with age and length of operation), and therefore are more likely to attract long-term favourable financing. This is further exacerbated by the often short loan repayment schedules implemented by MFIs (usually between 7-20 days). The regression results when the age dummies are introduced confirm this. The dummy variable for young and mature MFIs indicate that their operational experience (years of existence) appears to be positive with the risk associated with loan portfolio.

This result is a new finding for MFIs in the literature, that although the measure of LTLEV is insignificant within this sample, we surmise that on average, the use of long-term leverage is more beneficial for the sustainment of the health of an MFIs loan portfolio, whilst short-term leverage is likely to be detrimental to improving the quality of an MFIs loan portfolio. This makes logical sense; because in the event of a delinquency, this first affects the short-term borrowing pool, before the long-term leverage. Moreover, with the use of LTLEV MFIs can afford longer repayment periods as portfolio refinancing takes longer over a time in comparison to STLEV.

This supports the age dummy variable for new MFIs, which indicates a negative relationship with portfolio quality. This could be explained by the indication that New MFIs are likely to heavily employ the use of STLEV in their operations. An infant MFI such as a New one would have limited experience required to command long-term capital at favourable terms. MFI firm specific factors such as SIZE is significant, and has a negative impact on MFI risk.

Institutional indicators and macro-economic measures appear to have little or no significant impact on portfolio quality. From the, macro-environment, the observable measure of real interest rate appears to be significant and negative in its impact on the PAR30. This is expected, because the real-interest rate acts as an opportunity cost to lending activity of MFIs to clients at the bottom of the pyramid. Furthermore, the interest rates levied on the disbursed loans from MFIs could also be negatively sensitive to the real-interest rate such that; when there is a change in the real rate, MFIs are likely to adjust their rates to keep in step with real-rates. When there is an upward move on rates, the resultant increase in MFI lending rate could negatively impact on borrower's repayment abilities.

Another key finding is observed when we introduce the dummy for MFI profit status, adding to the evidence for the preference for commercially focused MFIs; the dummy for profit and non-profit oriented MFIs reveal that for-profit MFIs are more likely to be resilient from shocks to their loan portfolio. As indicated by the positive moderation on the measure of risk. On the other hand not-for-profit MFIs are more prone to be negatively impacted by a shock to their portfolio quality, as revealed by the negative influence of the dummy variable on the measure of risk. Furthermore, the regulation dummy indicates that regulated MFIs are more likely to possess a healthy portfolio quality in comparison to non-regulated MFIs. This adds to the literature on the need for better regulation in the MFI sector especially in SSA, in order to avert widespread delinquencies amongst these institutions.

MFI Risk Fixed Effect Model.

MFI RISK	PAR30	PAR30	PAR30	PAR30	PAR30	PAR30	PAR30	PAR30
Size	-0.008**	-0.007*	-0.007*	-0.007*	-0.007*	-0.007*	-0.007**	-0.007**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
AT	-0.009	-0.010	-0.010	-0.010	-0.0010	-0.010	-0.011	-0.011
	(0.067)	(0.067)	(0.067)	(0.067)	(0.067)	(0.067)	(0.067)	(0.067)
Age	0.008							
	(0.006)							
STLEV	-0.0048	-0.004	-0.003	-0.006	-0.004	-0.003	-0.003	-0.003
	(0.107)	(0.108)	(0.108)	(0.108)	(0.108)	(0.108)	(0.108)	(0.108)
LTLEV	0.028	0.029	0.029	0.029	0.029	0.029	0.029	0.029
	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)	(0.045)
TLEV	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
SOIP	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
ENFCON	-0.002**	-0.002**	-0.002**	-0.002**	-0.002**	-0.002**	-0.002*	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
GOVEFF	0.007	0.008	0.008	0.008	0.008	0.008	0.009	0.009
	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)	(0.028)
ROL	-0.018	-0.017	-0.016	-0.017	-0.016	-0.016	-0.016	-0.016
	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)
C-CTRL	0.003	0.001	0.001	0.002	0.001	0.001	-0.001	-0.001
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.023)	(0.023)
MONF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
TRADEF	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
FINF	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
GNIg	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
INF	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
REALINT	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
DEPINTR	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)

DCTPS	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
New		-0.006						
		(0.012)						
Young			0.005					
			(0.010)					
Mature				0.006				
				(0.011)				
NonP					-0.006			
					(0.012)			
Prof						0.005		
						(0.010)		
NonReg							-0.011	
							(0.015)	
Reg								0.011
								(0.015)
_cons	0.270***	0.277***	0.268***	0.272***	0.277***	0.268***	0.272***	0.261***
	(0.065)	(0.067)	(0.065)	(0.065)	(0.067)	(0.065)	(0.065)	(0.066)
N	2101	2101	2101	2101	2101	2101	2101	2101
R^2	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024
adj. R^2	-0.219	-0.217	-0.219	-0.219	-0.218	-0.219	-0.219	-0.219
rmse	0.169	0.169	0.169	0.169	0.169	0.169	0.169	0.169

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

PAR30 (Portfolio at Risk falling due 30 days)

AT (Asset Tangibility), STLEV (Short-Term Leverage), LTLEV (Long-Term Leverage), TLEV (Total Leverage). SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), C-CTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom). GNIg (Gross National Income growth), INF (Inflation), INT (Interest Rate), D-INTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector). NonP (Non Profit MFIs), Prof (For Profit MFIs). Non-Reg (Non Regulated MFIs), Reg (Regulated MFIs).

Study Period 2004-2016

Table 7.4: MFI Risk Fixed Effect Model.

7.2.4 MFI Efficiency

The indicator for efficiency: cost per borrower; measures the cost incurred per MFI for one client. This measure is regularly employed in efficiency studies within the MFI literature (CGAP 2013). This measure examines the cost to MFIs as relates to one borrower. Therefore, the bigger the MFI clientele, the higher the CPB. However large MFIs are able to lower the cost of operation due to scale, on the other hand, smaller MFIs with large borrower numbers with limited scale/size are likely to have a higher cost per borrower than their larger counterparts.

Measures of leverage in this model appear to be highly significant. STLEV exerts a negative relationship, whilst LTLEV exerts a positive relationship on CPB. Total leverage on the other hand, although, has a negative influence on efficiency, is insignificant. This indicates that for MFIs to be efficient in managing its operations (reducing its CPB), long-term leverage is optimal. This is logical, as long-term debt matures at a longer-tenure in comparison to short-term debt. Therefore, the number of clients serviced with long-term debt are more cost-effective in comparison to those serviced on short-term debt. The firm-specific dummy control variable used to capture new and young MFIs seem to capture this reality. the measure of new MFIs show a positive and insignificant relationship with CPB, whilst the opposite is true for young MFIs. This suggests that new MFIs due to their nascency are more likely to be cost effective as a result of low client numbers (as a ratio to available loan officers), in comparison to young MFIs.

Size variable is negative and highly significant to MFI cost borrower efficiency measure. Without deploring adequate technology which reduces tasks time and cuts out a lot of inefficiency, MFI size often acts as a deterrent. The idea being that without technological advances, the more clients MFIs adopt, the more loan officers it requires, leading to a more favourable cost coefficient in the regression for new MFIs when examined against cost per individual borrower. This is confirmed by the new and young dummy variables: the initial capture phase of the new MFIs are conditioned on a limited amount of staff required. However in order to increase the client capture and progress unto the young stage, new loan officers will be required. This therefore creates an inverse relationship. However this is only temporary, as the Mature MFI dummy indicates that, when a certain stage of maturity is attained by MFIs, the economies of scale take effect, creating a positive relationship with efficiency. The dummy variables for profit status reveal a negative and significant influences on MFI efficiency, whilst

Non-Profit MFIs reveal a positive and significant relationship with MFI efficiency. this indicates that -given identical staff numbers-, for-profit MFIs (due to pressure on performance targets and KPIs) are more likely to be aggressive in client acquisition, thereby leading to higher cost per borrower, in comparison to non-profit MFIs (who may not be under any pressure to repay investors funds). Institutional variables show some effects on efficiency. Of note, the measure of investor protection is positive and significant. Macro-economic indicators appear to be insignificant when observed against MFI efficiency.

MFI Efficiency Regression Result Fixed Effect Model

EFFICIENCY	CPB	CPB	CPB	CPB	CPB	CPB	CPB	CPB
Size	-72.63***	-58.30**	-69.99***	-78.37***	-58.30**	-69.99***	-72.63***	-72.63***
	(18.477)	(19.573)	(18.470)	(19.027)	(19.573)	(18.470)	(18.477)	(18.477)
AT	381.2	404.7	410.1	388.8	404.7	410.1	381.2	381.2
	(220.68)	(220.58)	(220.52)	(220.70)	(220.58)	(220.52)	(220.68)	(220.68)
STLEV	-1039***	-1052***	-1073***	-1055***	-1052***	-1073***	-1039***	-1039***
	(287.6)	(287.2)	(287.3)	(287.8)	(287.2)	(287.3)	(287.6)	(287.6)
LTLEV	1225.3***	1242.1***	1226.8***	1217.5***	1242.1***	1226.8***	1225.3***	1225.3***
	(133.5)	(133.6)	(133.3)	(133.7)	(133.6)	(133.3)	(133.6)	(133.6)
TLEV	-9.955	-8.338	-10.06	-10.88	-8.338	-10.06	-9.955	-9.955
	(9.461)	(9.474)	(9.441)	(9.487)	(9.474)	(9.441)	(9.461)	(9.461)
SOIP	14.26*	13.81*	13.09*	13.69*	13.81*	13.09*	14.26*	14.26*
	(6.456)	(6.449)	(6.460)	(6.470)	(6.449)	(6.460)	(6.456)	(6.456)
E-CON	-1.614	-1.534	-1.712	-1.724	-1.534	-1.712	-1.614	-1.614
	(3.855)	(3.849)	(3.847)	(3.855)	(3.849)	(3.847)	(3.855)	(3.855)
GOVEFF	-19.68	-15.47	-18.66	-21.19	-15.47	-18.66	-19.68	-19.68
	(111.5)	(111.3)	(111.2)	(111.4)	(111.3)	(111.2)	(111.5)	(111.5)
ROL	93.37	90.00	95.35	96.52	90.00	95.35	93.37	93.37
	(105.5)	(105.4)	(105.3)	(105.5)	(105.4)	(105.3)	(105.5)	(105.5)
C-CTRL	-152.9	-149.6	-148.7	-151.7	-149.6	-148.7	-152.9	-152.9
	(82.9)	(82.7)	(82.7)	(82.8)	(82.7)	(82.7)	(82.9)	(82.9)
MONF	-1.704	-1.289	-1.089	-1.498	-1.289	-1.089	-1.704	-1.704
	(1.908)	(1.914)	(1.921)	(1.915)	(1.914)	(1.921)	(1.908)	(1.908)
TRADEF	3.430	3.305	2.858	3.100	3.305	2.858	3.430	3.430
	(1.837)	(1.835)	(1.848)	(1.855)	(1.835)	(1.848)	(1.837)	(1.837)
FINF	-1.250	-1.317	-1.146	-1.143	-1.317	-1.146	-1.250	-1.250
	(1.747)	(1.744)	(1.744)	(1.749)	(1.744)	(1.744)	(1.747)	(1.747)
GNIg	-4.182	-3.843	-4.079	-4.290	-3.843	-4.079	-4.182	-4.182
	(3.355)	(3.353)	(3.348)	(3.355)	(3.353)	(3.348)	(3.355)	(3.355)
INF	-2.288	-2.415	-2.736	-2.531	-2.415	-2.736	-2.288	-2.288
	(3.073)	(3.069)	(3.072)	(3.079)	(3.069)	(3.072)	(3.073)	(3.073)
INT	-1.829	-1.610	-1.690	-1.849	-1.610	-1.690	-1.829	-1.829
	(2.287)	(2.286)	(2.283)	(2.287)	(2.286)	(2.283)	(2.287)	(2.287)
D-INTR	1.782	1.719	1.399	1.551	1.719	1.399	1.782	1.782
	(4.999)	(4.991)	(4.991)	(5.001)	(4.991)	(4.991)	(4.999)	(4.999)
DCTPS	2.456	2.659	2.480	2.366	2.659	2.480	2.456	2.456
	(2.570)	(2.568)	(2.565)	(2.571)	(2.568)	(2.565)	(2.570)	(2.570)
New		88.57*						
		(40.423)						

Young			-67.59* (27.680)					
Mature				46.72 (37.157)				
NonP					88.57* (40.423)			
Prof						-67.59* (27.680)		
NonReg							0 (.)	
Reg								0 (.)
_cons	1177.7*** (319.667)	917.8** (340.478)	1158.7*** (319.081)	1255.3*** (325.491)	917.8** (340.478)	1158.7*** (319.081)	1177.7*** (319.667)	1177.7*** (319.667)
N	1620	1620	1620	1620	1620	1620	1620	1620
R^2	0.099	0.103	0.104	0.100	0.103	0.104	0.099	0.099
adj. R^2	-0.256	-0.252	-0.251	-0.255	-0.252	-0.251	-0.256	-0.256
F	7.106	7.007	7.075	6.819	7.007	7.075	7.106	7.106
rmse	332.6	332.1	331.9	332.5	332.1	331.9	332.6	332.6
df_r	1161	1160	1160	1160	1160	1160	1161	1161

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

CPB (MFI Cost Per Borrower)

AT (Asset Tangibility), STLEV (Short-Term Leverage), LTLEV (Long-Term Leverage), TLEV (Total Leverage). SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), C-CTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom). GNIg (Gross National Income growth), INF (Inflation), INT (Interest Rate), D-INTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector). NonP (Non Profit MFIs), Prof (For Profit MFIs). Non-Reg (Non Regulated MFIs), Reg (Regulated MFIs).

Study Period 2004-2016

Table 7.5: Efficiency Regression Result Fixed Effect Model.

7.3 MFI SOCIAL PERFORMANCE

7.3.1 MFI Outreach (Breadth and Depth)

The hybrid nature of MFIs means that the social performance is measured by MFI outreach The measure of percentage of female borrowers (PFB) is an essential social indicator for evaluating MFI social performance. This is because female borrowers are less likely to access capital for entrepreneurial purposes in comparison to their male counterparts in many developing countries. Hence, MFIs often have lending mandates to prioritise female borrowers as a mission of social outreach. Therefore, the higher the PFB, the better MFIs are judged to achieve their social mandate.

Outreach is further examined on two levels: the depth and breadth of outreach. Depth measures how close to the bottom of the pyramid MFIs reach, whilst breadth measures how extensive their coverage of operations are amongst their client base. Breadth of outreach is measured by the number of active borrowers (NAB), whilst depth is measures by average loan balance per borrower (ALPB). The rationale here being that, the lower the average loan balance per borrower, the less well-off the borrower profile. Hence, the closer to the bottom of the pyramid the MFI is able to reach.

The tables below (7.6, 7.7, and 7.8), document the regression outputs for identified social performance of MFIs.

MFI SOCIAL PER'MANCE	PFB	PFB	PFB	PFB	PFB	PFB	PFB	PFB
Size	0.01	0.016	0.012	0.015	0.016	0.012	0.012	0.012
	(0.010)	(0.011)	(0.010)	(0.010)	(0.011)	(0.010)	(0.010)	(0.010)
AT	0.161	0.167	0.160	0.158	0.167	0.160	0.161	0.161
	(0.119)	(0.119)	(0.120)	(0.119)	(0.119)	(0.120)	(0.119)	(0.119)
STLEV	-0.035	-0.039	-0.034	-0.018	-0.039	-0.034	-0.035	-0.035
	(0.169)	(0.169)	(0.169)	(0.169)	(0.169)	(0.169)	(0.169)	(0.169)
LTLEV	0.084	0.091	0.083	0.086	0.091	0.083	0.084	0.084
	(0.079)	(0.080)	(0.080)	(0.079)	(0.080)	(0.080)	(0.079)	(0.079)
TLEV	-0.013*	-0.012*	-0.013*	-0.012*	-0.012*	-0.013*	-0.013*	-0.013*
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
SOIP	-0.006	-0.006	-0.006	-0.006	-0.006	-0.006	-0.006	-0.006

	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
ENFCON	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
GOVEFF	0.014	0.015	0.014	0.014	0.015	0.014	0.014	0.014
	(0.064)	(0.064)	(0.064)	(0.064)	(0.064)	(0.064)	(0.064)	(0.064)
ROL	0.142*	0.139*	0.142*	0.143*	0.139*	0.142*	0.142*	0.142*
	(0.063)	(0.063)	(0.063)	(0.063)	(0.063)	(0.063)	(0.063)	(0.063)
C-CTRL	-0.124*	-0.121*	-0.124*	-0.124*	-0.121*	-0.124*	-0.124*	-0.124*
	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)
MONF	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
TRADEF	-0.003**	-0.003**	-0.003**	-0.003**	-0.003**	-0.003**	-0.003**	-0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
FINF	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
GNIg	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
INF	-0.005*	-0.005*	-0.005*	-0.004*	-0.005*	-0.005*	-0.005*	-0.005*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
INT	-0.004**	-0.004**	-0.004**	-0.004**	-0.004**	-0.004**	-0.004**	-0.004**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
D-INTR	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
DCTPS	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
New		0.024						
		(0.022)						
Young			0.003					
			(0.016)					
Mature				-0.029				
				(0.022)				
NonP					0.024			
					(0.022)			
Prof						0.003		
						(0.016)		
NonReg							0	
							(.)	

Reg								0 (.)
_cons	0.511**	0.442*	0.513**	0.479**	0.442*	0.513**	0.511**	0.511**
	(0.167)	(0.179)	(0.168)	(0.169)	(0.179)	(0.168)	(0.167)	(0.167)
N	1701	1701	1701	1701	1701	1701	1701	1701
R^2	0.033	0.034	0.033	0.034	0.034	0.033	0.033	0.033
adj. R^2	-0.394	-0.394	-0.396	-0.394	-0.394	-0.396	-0.394	-0.394
F	2.228	2.170	2.110	2.199	2.170	2.110	2.228	2.228
rmse	0.198	0.198	0.198	0.198	0.198	0.198	0.198	0.198
df_r	1179	1178	1178	1178	1178	1178	1179	1179

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

PFB (Percentage of Female Borrowers)

AT (Asset Tangibility), STLEV (Short-Term Leverage), LTLEV (Long-Term Leverage), TLEV (Total Leverage). SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), C-CTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom). GNIg (Gross National Income growth), INF (Inflation), INT (Interest Rate), D-INTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector). NonP (Non Profit MFIs), Prof (For Profit MFIs). Non-Reg (Non Regulated MFIs), Reg (Regulated MFIs).

Study Period 2004-2016

Table 7.6: MFI Social Performance (Percentage of Female Borrowers) Fixed Effect Regression Results.

When the social indicator for MFI outreach is regressed against selected observed independent variables, the measure of leverage (TLEV) reveals a negative and significant influence on MFI social performance (PFB). This results are similar for STLEV however the influence is insignificant. Conversely, the measure for LTLEV is positive and insignificant. Measures of institutional indicators observed by the ROL reveals a positive and significant effect on PFB at the 10% level. This could be interpreted that, as MFIs adhere to their mandate or operating mission, this has a positive impact on the number of female clients served. The age dummy supports this logic. When Age dummies are introduced to the model, new and young MFIs exhibits a positive effect on PFB, whilst mature MFIs have a negative influence. As new MFIs start out, they often stick to their social mission, however, as they get older and commercialise operations, the move away from their mandate. This is in line with the trade-off literature of microfinance (Hermes et al., 2011).

MFI BREADTH	NAB	NAB	NAB	NAB	NAB	NAB	NAB	NAB
Size	22488.4***	25046.9***	22934.7***	22678.3***	25046.9***	22934.7***	22488.4***	22488.4***
	(2745.455)	(2948.708)	(2762.028)	(2817.200)	(2948.708)	(2762.028)	(2745.455)	(2745.455)
AT	3616.9	7725.1	5043.2	3716.0	7725.1	5043.2	3616.9	3616.9
	(28522.261)	(28535.660)	(28530.105)	(28532.123)	(28535.660)	(28530.105)	(28522.261)	(28522.261)
STLEV	-3110.5	-5630.8	-6659.8	-2395.4	-5630.8	-6659.8	-3110.5	-3110.5
	(47107.5)	(47053.7)	(47156.5)	(4718.0)	(47053.7)	(47156.5)	(47107.5)	(47107.5)
LTLEV	1909.1	5124.2	2629.2	2101.5	5124.2	2629.2	1909.1	1909.1
	(20163.558)	(20181.516)	(20163.137)	(20179.248)	(20181.516)	(20163.137)	(20163.558)	(20163.558)
TLEV	1184.7	1500.5	1196.3	1220.7	1500.5	1196.3	1184.7	1184.7
	(1705.878)	(1708.754)	(1705.336)	(1710.522)	(1708.754)	(1705.336)	(1705.878)	(1705.878)
SOIP	-381.1	-433.8	-502.7	-352.5	-433.8	-502.7	-381.1	-381.1
	(1012.097)	(1010.928)	(1015.284)	(1016.819)	(1010.928)	(1015.284)	(1012.097)	(1012.097)
ENFCON	364.3	402.5	369.5	367.6	402.5	369.5	364.3	364.3
	(525.853)	(525.367)	(525.692)	(526.110)	(525.367)	(525.692)	(525.853)	(525.853)
GOVEFF	15021.2	16248.1	15059.8	15163.2	16248.1	15059.8	15021.2	15021.2
	(17554.990)	(17538.165)	(17549.233)	(17566.181)	(17538.165)	(17549.233)	(17554.990)	(17554.990)
ROL	10990.3	10420.0	11140.9	10875.4	10420.0	11140.9	10990.3	10990.3
	(17283.255)	(17260.780)	(17277.885)	(17292.268)	(17260.780)	(17277.885)	(17283.255)	(17283.255)
C-CTRL	-22436.1	-21853.5	-21989.3	-22492.9	-21853.5	-21989.3	-22436.1	-22436.1
	(13528.037)	(13511.379)	(13527.150)	(13533.129)	(13511.379)	(13527.150)	(13528.037)	(13528.037)
MONF	-144.5	-104.2	-103.9	-151.3	-104.2	-103.9	-144.5	-144.5
	(302.204)	(302.267)	(303.423)	(303.115)	(302.267)	(303.423)	(302.204)	(302.204)
TRADEF	33.82	30.58	-7.631	45.45	30.58	-7.631	33.82	33.82
	(280.447)	(280.058)	(281.832)	(283.148)	(280.058)	(281.832)	(280.447)	(280.447)

FINF	50.34 (273.578)	41.37 (273.222)	58.69 (273.550)	46.79 (273.905)	41.37 (273.222)	58.69 (273.550)	50.34 (273.578)	50.34 (273.578)
GNIg	-759.3 (516.349)	-739.3 (515.696)	-773.8 (516.277)	-752.6 (516.968)	-739.3 (515.696)	-773.8 (516.277)	-759.3 (516.349)	-759.3 (516.349)
INF	1019.5* (477.364)	978.7* (477.012)	965.7* (478.669)	1030.0* (478.761)	978.7* (477.012)	965.7* (478.669)	1019.5* (477.364)	1019.5* (477.364)
INT	1156.4*** (334.045)	1188.4*** (333.853)	1154.7*** (333.937)	1160.9*** (334.467)	1188.4*** (333.853)	1154.7*** (333.937)	1156.4*** (334.045)	1156.4*** (334.045)
D-INTR	-1010.6 (811.053)	-1026.1 (809.945)	-1029.3 (810.890)	-1007.1 (811.362)	-1026.1 (809.945)	-1029.3 (810.890)	-1010.6 (811.053)	-1010.6 (811.053)
DCTPS	-219.8 (357.504)	-206.3 (357.049)	-212.3 (357.424)	-220.3 (357.608)	-206.3 (357.049)	-212.3 (357.424)	-219.8 (357.504)	-219.8 (357.504)
New		14886.7* (6316.304)						
Young			-6406.1 (4452.533)					
Mature				-1858.5 (6149.094)				
NonP					14886.7* (6316.304)			
Prof						-6406.1 (4452.533)		
NonReg							0 (.)	
Reg								0 (.)

_cons	-315443.4***	-360757.7***	-320306.0***	-317851.4***	-360757.7***	-320306.0***	-315443.4***	-315443.4***
	(47631.864)	(51304.109)	(47735.984)	(48306.766)	(51304.109)	(47735.984)	(47631.864)	(47631.864)
N	2219	2219	2219	2219	2219	2219	2219	2219
R^2	0.070	0.073	0.071	0.070	0.073	0.071	0.070	0.070
adj. R^2	-0.270	-0.266	-0.269	-0.271	-0.266	-0.269	-0.270	-0.270
F	6.763	6.718	6.520	6.409	6.718	6.520	6.763	6.763
rmse	62856.3	62768.4	62835.6	62873.9	62768.4	62835.6	62856.3	62856.3
df_r	1625	1624	1624	1624	1624	1624	1625	1625

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

NAB (Number of Active Borrowers)

AT (Asset Tangibility), STLEV (Short-Term Leverage), LTLEV (Long-Term Leverage), TLEV (Total Leverage). SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), C-CTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom). GNIg (Gross National Income growth), INF (Inflation), INT (Interest Rate), D-INTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector). NonP (Non Profit MFIs), Prof (For Profit MFIs). Non-Reg (Non Regulated MFIs), Reg (Regulated MFIs).

Study Period 2004-2016

Table 7.7: NAB Fixed Effect Regression Model Results (Number of Active Borrower).

7.3.2 MFI Breadth of Outreach

For the measure of MFI Breadth (NAB), STLEV indicates a negative but insignificant influence on the breadth of MFI outreach, whilst both the LTLEV and TLEV, are positive however insignificant. The results reveal that the use of short-term financing, is detrimental to, and is less likely to spur MFIs into aggressively reaching out to new clients, in comparison to the use of long-term leverage. The implications of the results suggest that in order to improve social outreach (and thereby social performance), MFIs should be financed with favourable long-term capital funding. Although the coefficient appear insignificant, the use of long-term favourable financing adds credence to the efforts and calls for MFIs to be sustainable. In addition to strengthening the institutional environment to create an environment that can act to intensely protect depositors and savers funds, such measures could lead to cheap and sustained level of MFI long-term financing in order to reach more of the unbanked within SSA. We see this from the negative relationship between the measure of corruption control, and positive influence from enforcing contracts, government effectiveness and rule of law. Macro indicators of real interest rate further positively strengthens the outreach of MFIs.

Average Loan Balance per Borrower (ALPB) Fixed Effect Regression Results.

MFI DEPTH	ALPB	ALPB	ALPB	ALPB	ALPB	ALPB	ALPB	ALPB
Size	113.9***	115.5***	115.1***	111.7***	115.5***	115.1***	113.9***	113.9***
	(31.383)	(33.758)	(31.604)	(32.174)	(33.758)	(31.604)	(31.383)	(31.383)
AT	-58.08	-55.40	-53.76	-58.89	-55.40	-53.76	-58.08	-58.08
	(328.8)	(329.7)	(329.3)	(328.9)	(329.7)	(329.3)	(328.9)	(328.9)
STLEV	-42.80	-44.25	-51.92	-51.81	-44.25	-51.92	-42.80	-42.80
	(538.0)	(538.3)	(538.9)	(538.9)	(538.3)	(539.0)	(538.0)	(538.0)
LTLEV	-42.55	-40.51	-40.54	-44.97	-40.51	-40.54	-42.55	-42.55
	(236.2)	(236.8)	(236.4)	(236.3)	(236.8)	(236.4)	(236.2)	(236.2)
TLEV	-4.251	-4.064	-4.223	-4.689	-4.064	-4.223	-4.251	-4.251
	(19.4)	(19.5)	(19.4)	(19.5)	(19.5)	(19.5)	(19.4)	(19.4)
SOIP	18.35	18.32	18.03	17.98	18.32	18.03	18.35	18.35
	(11.6)	(11.6)	(11.6)	(11.6)	(11.6)	(11.6)	(11.6)	(11.6)
ENFCON	7.942	7.962	7.948	7.899	7.962	7.948	7.942	7.942
	(6.1)	(6.1)	(6.1)	(6.1)	(6.1)	(6.1)	(6.1)	(6.1)
GOVEFF	-39.75	-39.01	-39.52	-41.34	-39.01	-39.52	-39.75	-39.75
	(200.6)	(200.7)	(200.7)	(200.7)	(200.7)	(200.7)	(200.6)	(200.6)
ROL	595.1**	594.8**	595.3**	596.3**	594.8**	595.3**	595.1**	595.1**
	(197.8)	(197.9)	(197.9)	(197.9)	(197.9)	(197.9)	(197.8)	(197.9)
C-CTRL	17.44	17.78	18.54	18.09	17.78	18.54	17.44	17.44
	(154.9)	(154.9)	(154.9)	(154.9)	(154.9)	(154.9)	(154.9)	(154.9)

MONF	1.466	1.491	1.572	1.552	1.491	1.572	1.466	1.466
	(3.462)	(3.468)	(3.479)	(3.473)	(3.468)	(3.479)	(3.462)	(3.462)
TRADEF	1.399	1.397	1.295	1.260	1.397	1.295	1.399	1.399
	(3.221)	(3.222)	(3.238)	(3.251)	(3.222)	(3.238)	(3.221)	(3.221)
FINF	-6.190*	-6.196*	-6.167*	-6.144*	-6.196*	-6.167*	-6.190*	-6.190*
	(3.122)	(3.124)	(3.124)	(3.126)	(3.124)	(3.124)	(3.122)	(3.122)
GNIg	-3.286	-3.273	-3.320	-3.366	-3.273	-3.320	-3.286	-3.286
	(5.918)	(5.920)	(5.920)	(5.925)	(5.920)	(5.920)	(5.918)	(5.918)
INF	-6.866	-6.891	-7.005	-6.995	-6.891	-7.005	-6.866	-6.866
	(5.452)	(5.458)	(5.471)	(5.469)	(5.458)	(5.471)	(5.452)	(5.452)
INT	-6.714	-6.693	-6.714	-6.767	-6.693	-6.714	-6.714	-6.714
	(3.844)	(3.849)	(3.845)	(3.849)	(3.849)	(3.845)	(3.844)	(3.844)
D-INTR	14.46	14.45	14.40	14.41	14.45	14.40	14.46	14.46
	(9.281)	(9.284)	(9.285)	(9.285)	(9.284)	(9.285)	(9.281)	(9.281)
DCTPS	7.178	7.186	7.202	7.191	7.186	7.202	7.178	7.178
	(4.111)	(4.113)	(4.113)	(4.112)	(4.113)	(4.113)	(4.111)	(4.111)
New		8.887						
		(72.069)						
Young			-16.28					
			(50.876)					
Mature				22.67				
				(70.370)				
NonP					8.887			
					(72.069)			
Prof						-16.28		
						(50.876)		
NonReg							0	
							(.)	
Reg								0
								(.)
_cons	-1140.1*	-1167.0*	-1153.0*	-1111.7*	-1167.0*	-1153.0*	-1140.1*	-1140.1*
	(544.198)	(586.624)	(545.855)	(551.396)	(586.624)	(545.855)	(544.198)	(544.198)
N	2185	2185	2185	2185	2185	2185	2185	2185
R^2	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
adj. R^2	-0.302	-0.302	-0.302	-0.302	-0.302	-0.302	-0.302	-0.302
F	4.661	4.414	4.419	4.419	4.414	4.419	4.661	4.661
rmse	714.6	714.8	714.8	714.8	714.8	714.8	714.6	714.6
df_r	1594	1593	1593	1593	1593	1593	1594	1594

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

ALPB (Average Loan Balance Per Borrower)

AT (Asset Tangibility), STLEV (Short-Term Leverage), LTLEV (Long-Term Leverage), TLEV (Total Leverage). SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), C-CTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom). GNIg (Gross National Income growth), INF (Inflation), INT (Interest Rate), D-INTR (Deposit Interest Rate), DCTPS (Domestic

Credit to Private Sector). NonP (Non Profit MFIs), Prof (For Profit MFIs). Non-Reg (Non Regulated MFIs), Reg (Regulated MFIs).

Study Period 2004-2016

Table 7.8: Average Loan Balance per Borrower (ALPB) Fixed Effect Regression Results.

7.3.3 MFI Depth of Outreach

For the measure of MFI depth, all measures (STLEV, LTLEV, and TLEV) appear to influence depth of outreach negatively. However the coefficient appears insignificant in influencing MFI depth of outreach. The negative influence of all measures of MFI leverage on depth of outreach further questions the commercialisation debate, as the leverage measures are largely inversely influenced by MFI depth. This could suggest that at the bottom of the pyramid, standardised capital structure funding is less likely to influence the ability of MFIs to reach further depth in the pyramid. This could therefore imply that creative ways of funding MFI capital structure could positively compliments MFIs drive towards the bottom of the pyramid. For instance, MFIs could implement a graduated model of financing, as such that the lower it extends deeper to the bottom of the pyramid, the less obligation attached to funding repayments by MFIs. Subsequently, as clients hereafter graduate into higher levels of the pyramid, an ordered funding structure could then be implemented. The dummy for MFI age in this model corroborates this. When MFI age dummy is introduced, it is evident that new MFIs are more likely to go towards the bottom of the pyramid (as evident from the positive moderating influence), as MFIs become experienced, they become less likely to lend towards the bottom of the pyramid (as evident from the negative relationship), finally, as MFIs become larger institutions, the economies of scale enables MFIs to comfortably lend towards the bottom of the pyramid. For profit and non-profit MFIs, non-profits are more likely to be favourable towards lending to the bottom of the pyramid in comparison to for-profit MFIs. Firm characteristics such as MFI size, reveal appositive and highly significant relationship with MFI depth of outreach. Which seems to confirm that the size of an MFI creates a positive enabler for lending to those below the pyramid. The institutional measure of ROL shows a positive and significant influence on depth of outreach, suggesting that the perception of an equal legal opportunity creates an enabler for opportunity, whilst the measure for financial freedom is negative and significant at the 10% level.

7.4 CONCLUSION

The rationale behind the sustainability and performance of MFIS have become a point of debate within the MFI literature ((Nurmakhanova et al., 2015; Churchill, 2018). A summary of the literature and the evidence indicates clearly that whilst MF performance is often analysed in silos, the practice in Africa needs more scrutiny. Especially at a time these institutions are needed to drive financial inclusion and fight against the swell of poverty. Fortunately, the policy implications are somewhat evident. Governments in SSA and policy makers, are required to create suitable local capital markets and healthy ways of providing long-term favourable financing to MFIs within the SSA region. It is clear from the various models of analysis that long-term leverage on favourable terms on average is crucial for the long-term performance of MFIs within the SSA region. In addition, the institutional environment could be further strengthened to create the right conditions for MFI optimum operations. For instance strengthening the institutional environment, to enable deposit taking and encourage savings as a longer term solution for MFI funding. This should then feed through to a shift away from the current practice of the directed use of short-term leverage as its currently applied within the current context to enhance the operational sustainability of MFIs in SSA.

Implementing a long-term funding strategy via affordable local currency denominated markets could tremendously improve the sector in SSA. The rationale being that with long-term funding MFIs are able to operate with more scope to expand operations without the pressure of meeting foreign denominated funding repayment obligations. Furthermore, this creates viability and a local humdrum of market funds readily available for MFIs to tap into. Viability could further improve MFIs capacity for organic growth by expanding its outreach and social capabilities. It is also clear that from a macro standpoint, a favourable and conducive legal environment without regulative interest rate ceilings is beneficial for MFI performance, this is in line with Dichter, (2007). Additionally, from a firm-specific stand-point, MFI Size, improved assets, and efficient market infrastructure are all beneficial for MFIs in meeting their dual objectives.

However, in order for MFIs to have capacity that is more penetrative and fulfil the financial inclusion promise effectively, problems of governance need addressing at the MFI level. Very often, MFIs start off as NGOs or cooperatives with unclear governance structures, regularly depending on a single person, who simultaneously plays the role of founder, general manager

and president of the board. This poses an acute risk factor, especially amongst economies in SSA. Furthermore, weak infrastructural networks connecting clients in rural areas to MFIs remain a key limitation barrier for the transmission of financial services. Weak infrastructural framework often increases the transactional exchange (cost) between providers of micro-financial services and end-users. This often translates into high operating expenses for MFIs, often limiting the geographical expansion of MFIs in less cost-efficient geographical areas, in addition to high rates of interests charged to end users. Therefore, an MFI lending low amounts -and truly targeting the bottom of the pyramid- will have very high operating costs, which often translates into a higher interest rate levy to micro-borrowers.

Secondly, sub-Saharan Africa is a region in dire need of sufficiently mobilising deposits, and efficiently utilising this form of capital within the capital structure. This has several advantages for microfinance institutions: first, savings are usually cheaper than borrowings, especially in Africa where currency hedging costs are often on the high end, making costs of funding through international providers expensive; another advantage is that offering savings provides strong roots into local communities, and as such helping developing a strong market positioning. However harnessing this potential remains a key issue of challenge for MFIs in the region. The role of the regulatory institutions in creating an enabling environment to allow MFIs access and deploy deposits is key. For instance, data shows that, of the MFIs in SSA, only a fraction are fully licensed to accept deposits. For policy purposes therefore, the findings present opportunities to proscribe efficient policy solutions in improving both the financial and social performance of MFIs in SSA.

Chapter 8 EMPIRICAL ANALYSIS: MICROFINANCE AND FINANCIAL INCLUSION

Introduction

In order to examine the scope of this research project, the main lines of enquiry for the final part of this three-part analysis asks the question: how does MFIs (through MFI penetration rate) influence the financial inclusion rate amongst countries in SSA?

The aim of this empirical chapter is to establish the influence of Microfinance on Financial Inclusion, specifically:

a) identify the Impact of MFI on financial inclusion levels in SSA.

b). identify other unique institutional, firm level and macro-economic enablers of financial inclusion in SSA.

c) Establish the role of technology as an enabler of financial inclusion in SSA.

8.1 EMPIRICAL ANALYSIS.

8.1.1 Summary Statistics

This project utilizes a sample size for the period 2004-2011. MIX data is available for 120 countries. Of the 120 countries in the MIX sample, 7 do not have the necessary information to calculate the MF Penetration Rate. Although at this stage, the researcher concentrates on countries located in SSA as stipulated by official WB information. However, for the relevant sample population (SSA), some countries with little or no data availability for deriving the MF penetration rate, were dropped. A sum of thirteen countries in total from the SSA region[84]. This leaves the researcher with data from 35 countries in SSA. Specifically, the omitted countries show no microfinance penetration during some of the years under examination. This variable of interest MF Penetration Rate can be seen in table 8.4 for all the countries in the data sample.

Summary of Financial Inclusion Index.

Summary of Finclusion Index Sub-Saharan Africa			
Year	Mean	Std. Dev.	Freq.
2004	0.027	0.030	43
2005	0.026	0.028	43
2006	0.027	0.030	43
2007	0.029	0.033	43

[84] These countries in SSA include; Botswana, Cape Verde, Comoros, Djibouti, Equatorial Guinea, Eritrea, Lesotho, Mauritania, Mauritius, Sao-Tome and Principe, Seychelles, Somalia and South-Sudan.

2008	0.032	0.036	43
2009	0.033	0.033	43
2010	0.034	0.035	43
2011	0.038	0.037	43
Total	0.031	0.033	344

Study Period: 2004-2011

Table 8.1: Summary of Financial Inclusion Index Scores in SSA by Year.

The dependent variable identified as financial inclusion index is a multidimensional-set of measures, consisting of commercial banking indicators often employed for use in financial inclusion studies.

Summary of Financial Inclusion Composite Index

Outreach Indicators	Usage Indicators	Cost Indicators	Methodology	Time Period	Countries
Number of Branches per one lakh Population	Deposit-income Ratio	Bank Cost-income Ratio	OECD's Handbook on Constructing Composite Indicators Methods	2004-2011	179 Countries
Number of ATM's per one lakh Population	Credit-income Ratio				
Number of Branches per 1000 sq. km	Private Credit by Deposit Money Banks and other Financial Institutions / GDP				
Number of ATM's per 1000 sq. km	Life Insurance Premium Volume / GDP				
Deposit Accounts per 1000 Adults					
Credit Accounts per 1000 Adults					

ATM (Automated Teller Machines.
Source: Yorulmaz (2016).

Table 8.2: Summary of Financial Inclusion Composite Index 2004 - 2011.

Summary of Financial Inclusion Score SSA.

Summary of Finclusion Index							
Country	Mean	Std. Dev.	Freq.	Country	Mean	Std. Dev.	Freq.
Angola	0.010	0.003	8				
Benin	0.015	0.003	8	Madagascar	0.005	0.001	8
Botswana	0.046	0.008	8	Malawi	0.017	0.003	8
Burkina Faso	0.016	0.003	8	Mali	0.018	0.002	8
Burundi	0.020	0.002	8	Mauritania	0.102	0.015	8
Cameroon	0.018	0.004	8	Mauritius	0.094	0.015	8

Cape Verde	0.078	0.011	8	Mozambique	0.030	0.003	8
CAR	0.011	0.003	8	Namibia	0.097	0.014	8
Chad	0.006	0.001	8	Niger	0.013	0.003	8
Comoros	0.009	0.002	8	Nigeria	0.023	0.005	8
Congo, Dem. Rep.	0.004	0.001	8	Rwanda	0.007	0.002	8
Congo, Rep.	0.007	0.004	8	Sao Tome and Principe	0.038	0.007	8
Djibouti	0.047	0.007	8	Sierra Leone	0.015	0.003	8
Equatorial Guinea	0.019	0.002	8	South Africa	0.169	0.014	8
Ethiopia	0.026	0.002	8	South Sudan	0.007	0.001	8
Gabon	0.019	0.002	8	Sudan	0.021	0.005	8
Gambia, The	0.022	0.001	8	Swaziland	0.033	0.006	8
Ghana	0.032	0.006	8	Tanzania	0.010	0.002	8
Guinea	0.018	0.003	8	Togo	0.019	0.002	8
Kenya	0.036	0.004	8	Uganda	0.011	0.003	8
Lesotho	0.015	0.005	8	Zambia	0.027	0.007	8
Liberia	0.042	0.006	8	Zimbabwe	0.047	0.011	8
				Total	0.031	0.033	344

Study Period: 2004-2011

Table 8.3: Summary of Financial Inclusion Score SSA.

Summary of MFI Penetration Rates in SSA.

Summary of Microfinance Penetration Rate							
Country	Mean	Std. Dev.	Freq.	Country	Mean	Std. Dev.	Freq.
Angola	0.273	0.116	8				
Benin	9.605	3.421	8	Madagascar	0.825	0.265	8
Botswana	0.000	0.000	8	Malawi	4.348	1.599	8
Burkina Faso	3.816	0.739	7	Mali	6.499	1.389	8
Burundi	0.749	0.890	8	Mauritania	0.000	0.000	8
Cameroon	3.562	1.083	8	Mauritius	0.000	0.000	8
Cape Verde	0.000	0.000	8	Mozambique	0.931	0.291	8
CAR	0.151	0.063	8	Namibia	0.372	0.327	8
Chad	0.580	0.105	8	Niger	1.502	0.657	8
Comoros	0.000	0.000	7	Nigeria	1.072	0.815	7
Congo, Dem. Rep.	0.306	0.161	8	Rwanda	1.751	0.785	8
Congo, Rep.	0.295	0.182	6	Sao Tome and Principe	0.000	0.000	8
Cote d'Ivoire	0.621	0.650	8	Senegal	7.460	1.927	8
Djibouti	0.000	0.000	8	Seychelles	0.000	0.000	8

Equatorial Guinea	0.000	0.000	8	Sierra Leone	1.933	0.682	8
Eritrea	0.000	0.000	8	Somalia	0.000	0.000	8
Ethiopia	10.423	2.239	6	South Africa	5.466	4.100	8
Gabon	0.062	0.120	8	Sudan	0.134	0.228	8
Gambia, The	2.709	2.354	8	Swaziland	1.525	0.927	8
Ghana	6.872	2.614	8	Tanzania	3.995	0.936	8
Guinea	4.116	1.525	7	Togo	4.259	1.230	8
Guinea-Bissau	0.166	0.254	8	Uganda	6.771	2.439	8
Kenya	9.238	4.090	8	Zambia	0.645	0.243	8
Lesotho	0.000	0.000	8	Zimbabwe	0.138	0.154	8
Liberia	0.895	1.009	8	Total	2.133	3.132	376
Study Period: 2004-2011							

Table 8.4: Summary of MFI Penetration Rates in SSA.

As can be seen in Table 8.4, in the first sample (SSA), MF Penetration Index indicates an observation of 376 across the country sampled in SSA for 2004-2011. This displays a mean value of 2.13, and 1 standard deviation points away from the mean at 3.13, and 0 minimum and 17.37 maximum value. A look at a detailed description reveals that the sample deviation from the 25% quantiles and 75% quantiles is 3.14. On the other hand, the FINDEX measure exhibits a value of 344 observation with mean of 0.0306, with a standard deviation of 0.326 away from the mean value. A look at the detailed information reveals a positive value in the 75th quantile of 0.04, in comparison to the max value of 0.19. The FINDEX indicator reveals a mean value of 0.08 and standard deviation of 0.04, with and values at the 75% quantile of 0.12, with a maximum value of 0.15.

In comparison to countries in LAC, the differences are quite stark. For instance the MF Penetration Index indicates a mean value of 6.19 and 10.81 standard-deviation points away from the mean value. The 75% quantiles show a value of 8.9 and a maximum value of 74.48 (appendix figure 2, 3, and 4). This indicates that the permeability of microfinance is more visible in LAC than it is in SSA, with a mean value difference of (6.19 LAC – 2.13 SSA) 4.06. Also, the maximum penetration rate for LAC occurs at 74.49%, in comparison to a value of 17.38%. This indicates that MF activities are more efficient in delivering its objectives in LAC in comparison to SSA.

Consequently, the FINDEX value shows a mean difference of (0.08 LAC – 0.03 SSA) 0.05 and maximum values of 0.15 in LAC in comparison to 0.19 in SSA). Although the maximum FINDEX value is at 0.19 for SSA (South Africa) the next country following is 0.11 for Namibia and Mauritius. This is in comparison to a number of countries in LAC; with maximum sample value of 0.15, for Barbados, and The Bahamas. This reveals that on average, financial inclusion levels are higher in LAC than is obtainable in SSA (appendix figure 2, 3, and 4).

The median in all countries in the basic model sample (SSA) is 0.59%, this in comparison to a value of 0.67% in LAC. For the FINDEX measure, the median value for the sample SSA is 0.02, with a corresponding value of 0.08 for LAC (appendix figure 4 and 5). For the observed sample, South Africa possesses the highest FINDEX value of 0.19, followed by Namibia 0.115, Mauritius 0.113, Mauritania 0.112, Cape-Verde 0.092, and Botswana at 0.058.

8.1.2 Recent Trends of MF Penetration Rate

Table 8.3 below presents the MF Penetration Rate index between 2004 and 2011. We exclude outlier countries identified in the previous section.

Summary of MFI Penetration Rate in SSA by Year.

Summary of Microfinance Penetration Rate			
Year	Mean	Std. Dev.	Freq.
2004	1.394	2.234	48
2005	1.825	2.557	48
2006	2.130	2.849	48
2007	2.155	3.167	48
2008	2.519	3.450	48
2009	2.768	3.987	46
2010	2.041	2.966	46
2011	2.267	3.594	44
Total	2.133	3.132	376

Study Period: 2004-2011

Table 8.5: Summary of MFI Penetration Rate in SSA by Year.

The picture in Africa, points to interesting issues/points. According to obtained data- Africa has the least penetration rates of Microfinance, whilst LAC have on average the highest amount of penetration, followed by the EEC region (appendix figure 4 and 5).

Specifically, within the SSA sample, Ethiopia, Benin, Kenya, Senegal, Ghana, Uganda, Mali, and South Africa possess the highest average MF Penetration levels within SSA. These range between 10.4 and 5.4 from the highest to the lowest. In comparison to their counterparts in LAC (see Appendix: table 2, 3 and 3); Peru, Paraguay, Nicaragua, Ecuador, Chile and Colombia possess highest levels of MF penetration rates. These range from the highest of 38.2 to 13.5.

Countries in LAC have had a very high and stable microfinance market penetration in the last years (see Appendix: table 17 and 18). Consequently, the SSA market has had below-par and unsustainable

microfinance market, muddled with failure (bankruptcies), indebtedness and poor corporate governance measures. This is evident in the sample, for instance; the average MF penetration rate for LAC in 2003 is 2.29, in 2004 this is at 3.02. This then increases to 4.12 and 4.99 from 2005 – 2006, and then at 2007 this value is 5.9, this steadily increases until the last sample collection of 2012 at which this value is 10.42 (a range of 2.29 – 10.42 from 2003 – 2012). However when the data from the sample is observed we see a stark contrast, for instance; the average MF penetration rate data point at the earliest collection period of 2004 is at 1.39, followed by 1.82 in 2005. This value then increases to 2.13 in 2006, and 2.15 in 2007. However the measure remains at this value as at last reading of 2011, at 2.67 (hence, a range of 1.39 in 2004 to 2.26 in 2011).

The statistic is also similar for the average FINDEX measure, for SSA (see appendix Table 0.26), this ranges from 0.026 in 2004 and steadily increases to 0.037 in 2011, indicating little or no growth in financial inclusion within the continent. On the other hand, the values for LAC show that, on average, financial inclusion measure commences at 0.073 in 2004 to 0.09 in 2011. This indicates that various strides taken amongst government parastatals to tackle financial inclusion especially in SSA is having little or no effect, in comparison to countries in LAC. The policy application of microfinance looks to be –so far- ineffective in SSA in comparison to LAC. Furthermore governments in SSA need to do more in order to increase MF penetration rate within the continent, so as to improve financial inclusion levels.

8.1.3 Summary of Study Variables

Table 11 includes the descriptions and summary statistics of the variables that we consider in the model specifications. These summary statistics are presented for the sample in which our MF Penetration Index is available between 2004 and 2011.

MFI and Financial inclusion Summary Statistics.

Variable	Obs	Mean	Std.Dev.	Min	Max
FINDEX	344	0.031	0.033	0.002	0.190
MFPENRATE	376	2.133	3.132	0.000	17.377
MOBSUBP100	374	32.19	29.04	0.208	141.38
POPDENS	376	89.23	116.57	2.441	616.95
PUBCREDREG	350	1.735	5.432	0.000	49.800
CORRCTRL	386	-0.638	0.611	-1.869	1.160
LENDr	270	15.592	8.348	4.752	36.500
INF	360	7.781	5.817	0.234	22.112
DEPINTR	290	7.343	3.160	3.033	13.698
GNIk	300	2.944	10.255	-27.63	136.56
DCTPS	359	19.359	23.634	0.443	160.12

FINDEX (Financial Inclusion Index), MFPENRATE (Microfinance Penetration Rate), MOBSUBP100 (Mobile Subscription per 100,00 adults), POPDENS (Population density), PUBCRREDREG (Public Credit Registry), CORRCTRL (Corruption Control), LENDr (Lending Rate), INF (Inflation), DEPINTR (Deposit Interest Rate), GNIk (Gross National Income per Capita), DCTPS (Domestic Credit to Private Sector).
Study Period 2004-2011

Table 8.6: MFI and Financial inclusion Summary Statistics.

8.2 RESULTS AND DISCUSSIONS

The first model of regression entails a regression model which regresses the Y variable (FINDEX) on the independent variable Microfinance penetration rate (MFPENRATE), in addition to other vector of X variables (Institutional factors, Macro-economic factors, Financial Development indicators, control variables and the error term), the analysis thus reveal some interesting findings.

Financial Inclusion Fixed Effect Model Result.

Financial Inclusion	(FE model) FINDEX	(Robust) FINDEX
MFPENRATE	-0.0001	-0.0001
	(0.000)	(0.000)
MOBSUBP100	0.0002***	0.0002***
	(0.000)	(0.000)
POPDENS	-0.0001*	-0.0001
	(0.000)	(0.000)
PUBCREDREG	0.0004***	0.0004***
	(0.000)	(0.000)
CORRCTRL	0.0055	0.0055
	(0.003)	(0.005)
LENDr	0.00004	0.00004
	(0.000)	(0.000)
INF	0.0001	0.0001
	(0.000)	(0.000)
GNIk	-0.0000	-0.0000*
	(0.000)	(0.000)
DEPINTR	-0.0001	-0.0001
	(0.000)	(0.000)
DCTPS	-0.0002	-0.0002
	(0.000)	(0.000)
_cons	0.0413***	0.0413***
	(0.006)	(0.010)
N	171	171
R^2	0.656	0.656
adj. R^2	0.556	0.634
F	25.13	214.4
rmse	0.00335	0.00305
df_r	132	28

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

FINDEX (Financial Inclusion Index), MFPENRATE (Microfinance Penetration Rate), MOBSUBP100 (Mobile Subscription per 100,00 adults), POPDENS (Population density), PUBCRREDREG (Public Credit Registry), CORRCTRL (Corruption Control), LENDr (Lending Rate), INF (Inflation), DEPINTR (Deposit Interest Rate), GNIk (Gross National Income per Capita), DCTPS (Domestic Credit to Private Sector).

Study Period 2004-2011

Table 8.7: Financial Inclusion Fixed Effect Model Result.

8.2.1 Results of the Panel Data Regression Approach

Following the aim of this study, The results from the first estimation are discussed below.
The fixed effect regression result reveal that the indicator for MF (in this case MFPENRATE) exhibits a negative relationship with the dependent variable (FINDEX). As a result of the generally low financial inclusion rates in SSA, it appears that MF exacerbates this phenomenon in SSA. When the penetration measure is observed closely, we observe that current practice of universally adopting MFI (especially in SAS) as a policy measure in order to combat financial inclusion lacks considerable merit as a result of the method of application of MF within the continent.

This is particularly relevant, when we observe the data on MF operations in SSA.in particular, MFIs often operate in urban areas and therefore their services are mostly pitched towards clients above the poverty line (This can be observed by the average loan size disbursed). This therefore implies that–for MFIs- within the continent, the delivery cost associated with operating in rural areas might be too exorbitant to bear. This could then have a knock-on effect on the cost to service ratio for rural operations in comparison to lower cost of operating in large cosmopolitan urban areas (bigger scale and volume). This failure and inability to reach the poorest of the poor, further questions the efficacy of MFIs as a policy tool for sustainable development in SSA.

Current Interventions such as delivery of services through mobile channels Could help to reduce this gap, enabling MFIs to reach the last mile without establishing physical locations (which is known to come with heavy capital outlay). However, the infrastructure needed is still not available for a number of countries in the sample. The majority of markets with a strong distribution of financial services disbursement through mobile phones are predominantly in East Africa; where mobile money penetration are amongst the highest in the world. In these markets, it is therefore easier to reach remote areas without –so much as- having a physical operation, thereby limiting the cost involved in delivering financial services to these hard-to-reach rural areas. The measure of mobile subscription per 100 adults within the regression model, confirms this line of logical reasoning. As observed, this measure is positive and highly significant at the 0.01% level within the model regression.

As indicated in the review of the existing literature, only a few researchers examine this phenomenon. Of the few that examine this, there has been some consensus of the importance of MFIs, albeit using simplistic measurement metrics and indicators. For instance, one study by Adeola and Evans (2017) examined the impact of MF on financial inclusion using an MFI measure of number of microfinance banks as the predictor variable. Whilst financial inclusion was a measure of total

commercial banks loans and advances. This study found a positive albeit insignificant impact of MF on financial inclusion in the short-run (whilst long-run estimates indicates a positive and significant impact). However, this study was only carried out with a sample of MFIs from Nigeria, and a relatively small set of regressor variables. This unwittingly excludes key variables which could influence the predicted variable (financial inclusion). Such as; mobile phone subscriptions, geographical and financial sector indicators. Furthermore, a closer look at the data, the significance of the results come under some questions. Firstly, the location of MFIs in Nigeria are mostly situated in urban areas, resulting in extremely poor usage in rural areas. This can be evident from the MF penetration rate in Nigeria as seen by the data. Measures such as number of MFBs therefore skews the results towards significance of MFIs. A simple measure such as this, does little to really explain the extent of the usefulness of MF, especially within the SSA region. For instance, simply increasing the number of MFBs (especially in urban areas) could result in improving the value of the dependent variable (within a model), whilst poverty and exclusion levels remain the same, meaning that nothing really changes at the base level of the financial inclusion pyramid.

Secondly only implementing a single commercial banking measure for financial inclusion, means that a comprehensive scope of financial inclusion is not measured by one indicator. Therefore, drawing policy conclusions from this study requires a rethink. Other such studies which examine this phenomenon include Chakrabarti and Sanyal (2015). Elzahi and Ali (2015). However, these projects are mostly descriptors in nature, and offer no empirical analysis for reference pointing.

8.2.2 Income

The estimation model employed reveals that income appears to be insignificant and conversely related with financial inclusion. This could be as a result of the low MFI penetration levels amongst the sample. This could also indicate that as the income -on average- increases financial inclusion levels generally improves. In addition to higher MFI penetration, ease of access to financial services increases.

Previous studies such as Martinez and krauss (2015) establish that the effect of GDP per capita is stronger in countries with stronger microfinance market development. This heterogeneous effect across different stages of microfinance market development show that; as markets develop, MFIs may already have the tools to allow rapid response to unmet needs, in comparison to MFIs in less developed markets, where more barriers to reach the poor may be in place. As observed in the data sample, the market development of MF in SSA is below par, therefore the effect of income estimates such as GNIk is less impactful on the financial inclusion levels of the population in SSA. In addition it is often seen that there is less of a trickledown effect of growth in less developed economies, this could be responsible for the inverse relationships observed in the sample. Furthermore, in developing countries, the high

growth rates are no longer perceived as a differentiating factor for countries where microfinance has a high penetration. These findings corroborate with those of Ahlin et al. (2011), who do not find significant effects of real GDP growth on a MFI-level measure of borrower growth.

8.2.3 Enabling Institutions

Our measure for financial development; Domestic Credit to Private Sector (DCTPS) has a negative and insignificant effect on financial inclusion. On the other hand, the measure of Public credit registry reveals a positive and significant (at the 1% level) impact on the financial inclusion index. This suggests that Enabling Institutions are increasingly more important as relates to the levels of financial inclusion within the sample. This may be due to increasing density of microfinance services, which may require better support from the existing range of enabling institutions. This is in line with the findings of Assefa et al. (2013) suggesting that credit information sharing among lenders could have a positive effect on the implementation of microfinance.

Similar to our Income indicators, Domestic Credit to Private Sector is not significant in the full sample, however, Public Credit registry coverage is significant in the sample regression distribution. This is an interesting finding as it confirms the perception that quality enabling Institutions are important both for financial inclusion and crucial MFI decision making in already penetrated markets. For instance the availability of a public credit registory enables MFIs to make better loan disbursement and client onboarding decisions (improves information asymmetry), whilst reducing instances of potential client indebtedness.

Public credit registries are more important than Private Bureaus amongst countries aiming to increase the level of financial participation in the continent. The rationale being, public credit registries, development finance institutions like MFIs are able to enforce credit information sharing. Indeed, this may not be possible in the case of private credit information agencies. This suggests that in more complex credit markets in SSA (for instance in South Africa), MFIs should have access to all relevant credit information in order to improve general financial inclusion levels.

The institutional quality as observed by the measure for corruption control reveal some interesting results. As expected amongst the sample, the measure for corruption control influences the measure of financial inclusion positively. Although this measure is not significant, this might suggest the relatively low development placement of the countries within the sample.

8.2.4 Formal Financial Development

The financial development measures (DEPINTR, DCTPS) suggests an inverse relationship with the dependent variable financial inclusion. Quite interestingly the measure of DCTPS appears to have an

inverse influence, some studies highlight the role of the financial sector as complimentary towards financial inclusion. A possible explanation for this within the SSA context could be that the informal sector, uncaptured by the private sector is often larger or similar in size to the observable private sector. Hence, credit to the private sector will have an effect of widening the schism between the formal and the informal sector, leading to an inverse relationship with financial inclusion.

On the contrary, increasing access to financial services through mediums such as mobile phones could improve the level of inclusive financial services available for access by those in need of these services. This is evident when we examine the coefficient and significance of the variable for technological advances (MOBSUBP100). This variable captures the recent emergence and seemingly importance of mobile phones in the seamless delivery of cost-effective financial services in SSA.

Mobile Phones subscriptions (per 100 people) exhibits a positive and significant effect on financial inclusion across the sample. In particular, MOBSUBP100 is significant at the 1% level. This suggests that in SSA, an information technology is playing a more important role in advancing/enabling financial inclusion amongst countries in SSA. Furthermore, it is very interesting to see that Mobile subscriptions have a highly significant effect in the sample. This relates with the developments in e-money solutions which implements mobile technologies to increase financial inclusion at the bottom of the pyramid. It suggest that these technologies can be important enablers in the early stages of market development, as they can help countries overcome potential geographical constraints and transaction costs that may limit their ability to reach the poor with affordable services.

The geographical measure of population density as expected, exerts a negative influence on financial inclusion. This relationship is significant at the 10% level. suggesting that at current conditions, as more people come into workforce age, without a commensurate increase in financial inclusion efforts, this friction will naturally create a position of regressive financial inclusion.

8.2.5 Macroeconomic Environment

The measures of macroeconomic environment employed within the sample include; lending rate, and r inflation. These measures –although all positive-, appear to be insignificant in explaining the financial inclusion measure of the SSA sample. This could be as a result of the remedial roles these measures play in the development of much of the countries in SSA. For example lending rates are high on average at 21.5%, and inflation levels on average at 80.2%. These estimates are simply volatile in comparison to other developing regions, therefore, the impact on the ability for ordinary people to access and use financial services is less reliant on the above factors. However, it impacts the financial sectors development, funding and efficiency in delivering services to end users (supply side).

We also examine the role of different Interest Rates on financial inclusion. In particular, we considered the role of the lending rate (LendingRate), and deposit rate (DepositRate). Interestingly, we find no significant relationship between financial inclusion and any of the observed rate, although these relationships appear to be positive. This may be because MFIs need some human capital in order to reach the poor, but also tend to go where human capital is the lowest and there are higher development needs.

Fixed Effect with Time and Year Dummy Variables.

Financial Inclusion	(FE Model) FINDEX	(FE Model) FINDEX	(FE Model) FINDEX	(FE Model) FINDEX	(FE Model) FINDEX	(FE Model) FINDEX	(FE Model) FINDEX	(FE Model) FINDEX
MFPENRATE	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
MOBSUBP100	0.0002***	0.0002***	0.0002***	0.0002***	0.0002***	0.0002***	0.0002***	0.0002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
POPDENS	-0.0001*	-0.0001*	-0.0001*	-0.0001*	-0.0001*	-0.0001*	-0.0001*	-0.0001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
PUBCREDREG	0.0004***	0.0004***	0.0004***	0.0004***	0.0004***	0.0004***	0.0004***	0.0004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CORRCTRL	0.0058*	0.0054	0.0057*	0.0056	0.0050	0.0055	0.0052	0.0064*
	(-0.003)	(-0.003)	(-0.003)	(-0.003)	(-0.003)	(-0.003)	(-0.003)	(-0.003)
LENDr	0.0000	0.0001	0.0000	0.0000	0.0001	0.0000	0.0001	0.0000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
INF	0.0001	0.0001	0.0001	0.0001	0.0000	0.0001	0.0000	0.0001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GNIk	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000	-0.0000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

DEPINTR	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
DCTPS	-0.0002	-0.0002	-0.0002*	-0.0002	-0.0002	-0.0002	-0.0002	-0.0003*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Y2004	0.0008							
	-0.001							
Y2005		-0.0004						
		-0.001						
Y2006			-0.0012					
			-0.001					
Y2007				-0.00016				
				-0.001				
Y2008					0.0011			
					-0.001			
Y2009						-0.0003		
						-0.001		
Y2010							-0.0017	
							-0.001	

Y2011								0.0027**
								-0.001
_cons	0.0414***	0.0414***	0.0432***	0.0416***	0.0404***	0.0413***	0.0395***	0.0454***
	-0.006	-0.006	-0.006	-0.006	-0.006	-0.006	-0.006	-0.006
N	171	171	171	171	171	171	171	171
R^2	0.657	0.656	0.661	0.656	0.66	0.656	0.665	0.676
adj. R^2	0.555	0.554	0.56	0.553	0.559	0.553	0.566	0.58
F	22.79	22.71	23.21	22.68	23.11	22.7	23.67	24.85
rmse	0.0034	0.0034	0.0033	0.0034	0.0034	0.0034	0.0033	0.0033
df_r	131	131	131	131	131	131	131	131

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

FINDEX (Financial Inclusion Index)

MFPENRATE (Microfinance Penetration Rate), MOBSUBP100 (Mobile Subscription per 100,00 adults), POPDENS (Population density), PUBCRREDREG (Public Credit Registry), CORRCTRL (Corruption Control), LENDr (Lending Rate), INF (Inflation), DEPINTR (Deposit Interest Rate), GNIk (Gross National Income per Capita), DCTPS (Domestic Credit to Private Sector). Y2004 – Y2011 (Year Dummies).

Study Period 2004-2011

Table 8.8: Fixed Effect with Time and Year Dummy Variables.

8.3 CONCLUSION

Over one-third of the young population of Africa remains unbanked. This lack of financial inclusion affects disproportionately the bottom of the pyramid, mostly situated in rural communities in countries in SSA. So far, the data to understand how to include the poorer segments of the population in financial services within SSA has been lacking, however, this research employs a financial index measurement developed by Sarma (2008), and Yorulmaz (2016), in addition to microfinance data to begin this examination.

In particular, the use of OECD development index methodology was used to calculate an index of commercial banking, demand and supply side measures of financial access by users in SSA. These measures included cost, usage, and outreach. The microfinance market penetration (MF Penetration Rate), considering the total number of microfinance borrowers as a share of working age population below the national poverty line. This measure is provided by (Martinez and Krauss 2015) for 109 countries around the world, together with a detailed comparison with the best proxies from the currently available Findex and FAS datasets. We use fixed effects panel-data model (with robust option for heteroscedasticity, and absorbed predicted values for correlation correction. see appendix results) to understand the dynamics of our financial inclusion data and the key variable for observation (MFPENRATE).

This methodology has several advantages: It accounts for the dynamic and heterogeneous impacts that key drivers of microfinance market penetration have across different regions of the observed sample. Secondly, It correctly acknowledges the non-normality of our variable of interest and helps to better understand the outliers in the sample. Thirdly, It allows us to address potential endogeneity concerns. By using our panel dataset on microfinance market penetration and other capital structure variables, we are able to contribute to the literature with a more precise and robust understanding on: 1) the key institutional drivers of the capital structure of MFIs; 2) MFI performance as influenced by the capital structure, and finally, 3) the dynamics of microfinance penetration across different stages on financial inclusion in SSA.

Our findings indicate that the penetration of MFIs in SSA is still below standards obtainable in other regions of the world, despite being implemented as a policy tool to combat financial inclusion and improve poverty levels in SSA. Broader results indicates that MF as measured by the MF penetration rate, is less impactful on financial inclusion. Possible explanation of this could be that as microfinance penetration increases, the MF sector almost forms an existing embryonic financial ecosystem, totally removed from the formal financial system entirely (as viewed from the negative influence of DCTPS),

such that MFIs do not improve financial access to the level of promoting users into the formal financial system in SSA. Where previous research have alleged that the formal financial system acts as a complimentary function of the MF sector in bringing financial inclusion to the poor. Our research suggests otherwise, elaborating on the divergence between current MFI penetration levels in SSA and the drive towards increased financial inclusion. At current state of MFIs in SSA the goal of financial inclusion for the continent remains a fleeting vision.

This is not difficult to see why, with the current operations of MFIs in SSA (microfinance activities are largely concentrated in urban areas), there remains a large risk of indebtedness. In addition, MFI coverage in rural areas (areas with the most need) is still largely poor in comparison to its potential reach. This seems to be the failure of implementation and a fractured approach. The current client profile of MFIs in SSA are largely not identified as "poor. According to Dominicé and Dufresne, (2011), their clients are not poor, neither are they businesses as led to believe. Rather, they are mainly above-the-poverty-line; these include individuals who are facing cash shortages and need cash for consumption smoothing. This therefore creates a competition with commercial banks for clients in urban areas. This could further explain the diametrical relationship between MFIs and Financial inclusion.

Where previously it has been thought that microfinance penetration institutions (MFIs) are more responsive to the needs of the bottom of the pyramid (Maritnez and Krauss (2015), the opposite is the case in SSA, where the operations of MFIs are predominantly in Urban areas. Hence, microfinance penetration institutions (MFIs) are more responsive to the needs of clients not below the poverty line. In addition, where previous research indicates the complimentary nature of MFIs and formal financial sector, our research suggest that in fact, MFIs in SSA are often in direct competition with the formal financial sector as a result of competition in urban areas. This therefore asserts that the MF sector is not effective in its role as an enabler of financial inclusion, therefore the linkages between this sector and the formal financial sector at least at a certain mature level is non-existing within the markets of SSA.

8.3.1 Limitations

Where this research appears to make an important contribution to the literature, some limitations are identified. Firstly, the data collected for use with this research project deserves a mention. The data collected was obtained from MIX Market database. Although this is the premier source of data available for evaluation of MFIs and usage of MFI data, the method of reporting to The MIX is specific to reporting MFIs. Whilst The Mix verify financial statements and balance sheet reports submitted by MFIs, and although MFIs often are subject to strict reporting requirements, there is always a possibility of errors in reporting within information reported to The MIX. Whilst these levels are ignorable, these flaws do not affect the materiality of the quality of data and result output reported in this research

project. Furthermore, the dataset has been used extensively within the literature and peer reviewed in Microfinance studies and does present very credible analysis (see Tingbani *et al.*, 2019).

Second the study period coincided from 2004-2016, however, for the third study the data for the explanatory variable (financial inclusion -the key variable of choice for explaining the financial inclusion levels for countries in SSA-), did not match the full length of study period above. This could be because of the relatively nascent nature of the interest in financial inclusion, in addition to the resources needed to map out this information and quantify it. This data was only available for the period (2004-2011). This was also the case for the variable of interest (explanatory variable) Microfinance Penetration Rate (MPR). Although the variables for the other variables identified for the model of this study incorporated data from 2004-2016. Whilst the researcher would have preferred a commensurate dataset length to the two previous empirical studies (2004-2016), the results nonetheless provide impactable insight into the relationship between MFIs, Institutional Environment, Technology, and their impacts on Financial Inclusion in Africa. The results confirm compliance with research in this field.

Finally, the study is presented in 2020, with data up to 2016. This is due to two factors,: firstly, the availability of data, and the legitimacy of data. On the first issue, on commencing this research project (2016), the data identified with the maximum usability and coverage, coincided with the period ending 2016. Secondly, when data is collected by The MIX, this data is then audited and further verified by the data vendor (The MIX), this process often requires one to two year period. Further research could incorporate new data for confirmation. Furthermore, global events which could have impacted the funding of MFIs globally (during the period) such as; the global financial crisis of 2008, and the current covid-19 impacts could be insightful for the MF literature.

8.3.2 Practice Implications

For MFIs, the practice of financial services delivery is a responsible task. Whilst strides are being made to improve financial inclusion amongst countries in SSA, key chasms still exist. MFIs must radically change the operational activities to reflect the realities of the rural population to which they serve. For instance, a key finding for this study is observed in the measure of technology and its power in translating financial inclusion. Our result indicates that technologies can help to overcome market entry barriers, in particular, Mobile Phones subscriptions. This suggests that e-money solutions can be important enablers in the stages and levels of financial inclusion, as they can help users and in particular MFIs overcome potential geographical constraints and transaction costs that may limit their ability to reach the poor with affordable services. Mobile Phones subscriptions are significantly important in determining the financial inclusion amongst the sample. This suggests that technologies enable MFIs

to have a more timely relationship with their customers, which may be crucial as markets mature and become more complex.

Consequently, for MFI capital structure and performance operations, improved governance within the institutional environment can go a long way in helping MFIs attract better funding (or improve domestic capital environment so as to access local currency funding, thereby moving away from the use of expensive $USD funding. A move to local currency debt, could reduce the pressure of repayment at higher repayment rate, in addition to eliminating/reduction in the foreign exchange risk to loan repayments. The move towards local funding affords MFIs access to longer-term capital, which then enables MFIs to improve their performance and outreach to the bottom of the pyramid.

8.3.3 Policy Implications

Fortunately, the policy implications are somewhat evident. Creating an enabling environment for funders to come into the sector and feel protected should be apriority. Policies that strengthen financial reporting practices, transparency in government, and embracing the absolute power of the rule of law are important for the continent in the short and longer term. This finding corroborates the findings of (Okafor et al. 2015, Webster and Piesse 2018) who conclude that improving efficiency in areas such as corruption control and human development, could improve the level and quality of FDI inflow to a destination country. From a macro-environment standpoint improving national income via increased productivity of local institutions, is a positive signal to international funders. Governments in SSA and policy makers, are required to create suitable local capital markets and healthy ways of providing long-term favourable financing to MFIs within the SSA region. It is clear from the various models of analysis that long-term leverage on favourable terms on average is crucial for the long-term sustainability and performance of MFIs within the SSA region. Therefore, Implementing a long-term funding strategy via affordable local currency denominated markets will tremendously improve the sector in SSA, and hence, should be the priority for policy makers. The rationale being that with long-term funding MFIs are able to operate with more scope to expand operations without the pressure of meeting foreign denominated funding repayment obligations.

A key finding for this research is the revelation that MFIs are less impactful in helping the efforts to attaining financial inclusion through. Conversely, we find that the measure for mobile penetration is highly significant in influencing financial inclusion in SSA. Despite the findings

for MFIs, the use of MFIs to achieve this goal could indeed still be attainable, however in their current capacity this is not possible. Therefore, re-tooling MFIs to meet such demands is crucial, and should be of high priority for policy makers and funders of the MFI sector. One of such ways to achieve deeper rural coverage could be an implementation of mobile banking technology in executing financial services. Some of the more important findings indicate that –with some hope- the implementation of financial technology such as mobile money could be of benefit to countries in SSA. Policy makers are therefore better off putting in place sound institutional framework such as strengthening and localising public credit registries. This research analysis indicates that this is significant in aiding/impacting financial inclusion in SSA. Establishment of functional and efficient public credit registries, will greatly improve the processing of financial information and aid information asymmetry. In addition to this MFIs can then be trimmed down in their operative capacities, so as to aid agility in their operations, to better enable them reach the bottom of the pyramid competently.

8.3.4 Study Conclusions and Contributions

The detailed insights provided in this paper are specific for the effects of MF and other control variables on the measure of financial inclusion in SSA, and can better guide policymakers and investors to prioritize their efforts in a particular context to increase financial inclusion at the bottom of the pyramid. Our findings are also important for other industries reaching the poor with products, services and opportunities in commercially viable ways. Using the rich and widely available microfinance data, our results can guide industries for which less comparable information is available. In particular, our findings can shed light on which are the most important barriers to scale-up other inclusive innovations.

Our results further indicate that, overall indicators of credit information quality are very important. For a higher level of market participation and influence (penetration), a more refined institutional setting must be in place to help MFIs deal with increasing levels of complexity, and therefore better refine delivery practices of financial services, adding value to their clients at the bottom of the pyramid. These findings also presents a unique insight for policymakers with targets for increasing financial inclusion and ensuring the sustainability of MFIs in developing policy for the SSA region.

Key findings reveal that observed institutional measures such as; corruption control (CORRPCTRL), appear to be positive in influencing financial inclusion, reiterating the need for good governance and strong institutions. The macroeconomic environment largely reveals a positive relationship. For instance, the measure of lending rate (DEPINTR), and inflation (INF) measures are positive influences on financial inclusion. However, these measures are insignificant in impacting

financial inclusion. The measures of income (GNIk) indicates a negative and insignificant influence on financial inclusion.

Worthy of note however is the measure for the information environment as measured by public credit registry (PUBCRED). For instance, the results of the analysis showed that the presence of a public credit registry is significantly a role player in influencing the financial inclusion in SSA. In SSA, there is still a great deal of work to be accomplished in the area of harmonising a quality centralized credit data. This is a crucial element on the road to deepening the penetration of MFIs and enabling the seamless information flow between lenders and borrowers of credit. According to Krauss (2015), a well-functioning and compulsory credit bureau is a key success factor in the microfinance sector. This is because, loans offered by MFIs (microloans) are largely unsecured. Therefore, knowing and evaluating the liability structure and the repayment capacity of micro-entrepreneurs is crucial in avoiding the possibility of indebtedness, often associated with the non-existence of adequate information and credit record keeping infrastructure.

Secondly, within the SSA context, there is a distinct lack of governance within the MFI sector. The MFI sector in SSA particularly suffers from the prevalence of weak governance structure at the level of micro-lenders. Although in comparison to MFIs in LAC and Asia, the MF sector in SSA is in a younger position, this can be seen as teething problems. However, in order for MFIs to have more penetrative capacity and fulfil the financial inclusion promise effectively, problems of governance need addressing at the MFI level. Very often, MFIs start off as NGOs or cooperatives with unclear governance structures, regularly depending on a single person, who simultaneously plays the role of founder, general manager and president of the board. This poses an acute risk factor, especially amongst economies in SSA. Furthermore, weak infrastructural networks connecting clients in rural areas to MFIs remain a key limitation barrier for the transmission of financial services. Weak infrastructural framework often increases the transactional exchange (cost) between providers of micro-financial services and end-users. This often translates into high operating expenses for MFIs, often limiting the geographical expansion of MFIs in less cost-efficient geographical areas, in addition to high rates of interests charged to end users. For example, the operating cost of providing a USD 2,000 loan is similar for an amount of USD 500 loan. Therefore, an MFI lending low amounts -and truly targeting the bottom of the pyramid- will have very high operating costs, which often translates into a higher interest rate levy to micro-borrowers.

With an average loan size in Africa, amounting to USD 425 (Microfinance Barometer 2017) (the second lowest after South Asia with USD 220), this is well above the average portfolio yield of a typical

MFI portfolio in SSA[85]. Despite the highs yield, MFIs in SSA are lagging behind in terms of profitability[86]. This illustrates one of the main operational challenges faced by MFIs in SSA: achieving financial inclusion whilst being efficient. As such, MFIs in Africa often serve a mix of poor but more often middle class clients in order to achieve better cost coverage. Hence, sampled data suggests that coverage rate of financial services to the poor (as measured by the MF penetration rate) in Africa is only 2.23%, the lowest in the developing world. When compared to the LAC region, the penetration rate doubles to 4.26%. This suggests that Africa still has a long way to go before it bridges the gap between demand by poor households for financial services and supply. Furthermore, there are an average of 2.5 branches for 100,000 adults in SSA, this is in comparison to 15 in the rest of the world, and an average 6 branches per 1,000 square kilometres compared to 34 in the rest of the world. The challenge then for governments in SSA is how to bring into the financial ecosystem those in need of financial services in rural areas. This holds the key for deliverance of a universal financially included society target as set by the WB development committee- for 2020.

One of such ways to achieve deeper rural coverage could be the full implementation of mobile banking technology in implementing financial services. Some of the more important findings indicate that –with some hope- the use and implication of financial technology such as mobile money in the drive towards universal financial inclusion could be of benefit to countries in SSA. This is because the delivery cost and efficiency, robustness in introducing programs and services to its end users present a truly lean and nimble opportunity for MFIs in SSA. The data further suggest that a mobile phone subscription is a positive enabler of financial inclusion in SSA. This should not be surprising; when we examine the penetration of mobiles phones in SSA, and the current impacts of mobile money transactions in countries east of the Nile, this possibilities have to be harnessed en-masse in SSA, in order to be relevant in delivering financial services to the hard to reach areas in SSA.

Africa is clearly ahead of other regions in this field, trying to bank on the fast growing mobile networks and avoid dependency on poor transportation systems. Kenya has led the way so far in mobile banking, as illustrated by the success story of the M-Pesa system launched in 2007 and which has now over 17 million registered accounts, making it by far the biggest branchless banking system in emerging markets. M-Pesa is now also in use in Tanzania, South Africa and is expanding into Asia as well.

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[85] Symvest, a market leading analytics firm for microfinance investments and portfolio characteristics reveal the portfolio yield of their benchmark SYM50 (this is the Symbiotics worldwide microfinance index). This index reveals an aggregate yield of MFIs at 45% vs. 30% in SYM50)(www.symvest.com)

[86] Symvest further reports on the roe yields of MFIs, placing an average ROE of 7.3% in SSA vs. 16.4% in the SYM50)

Many aspects of the microfinance business are quite promising in Africa such as its ability to offer a rich variety of services owing to the rich diversity within the continent. For instance in a country like Nigeria where there exists over 230 ethnicities, the scope of designing products to cater to different groups along the demand chain should be latched upon as an opportunity to expand MF services to key end-users, whilst improving lives. Research indicates that when products are designed for a particular group in society, the long-standing benefits are evident. Secondly, with sub-Saharan Africa being the only place in the world where there are more savers than borrowers. This has several advantages for microfinance institutions: first, savings are usually cheaper than borrowings, especially in Africa where currency hedging costs are often on the high end, making costs of funding through international providers expensive; another advantage is that offering savings provides strong roots into local communities, and as such helping developing a strong market positioning. However harnessing this potential still remains a key issue of challenge for MFIs in the region. The role of the regulatory institutions in creating an enabling environment so as to allow MFIs access and deploy deposits is key. For instance, data shows that, of the MFIs in SSA, only a fraction are fully licensed to accept deposits. This is in comparison to more than three quarters in LAC. This has to change in order to enable MFIs get to the bottom of the pyramid.

Financial sector measures of the lending rate (LENDr), positively influencer financial inclusion, with the often high levels of lending rates in SSA, this suggests that factors such as rate is less important in determining the appetite for usage of financial services in SSA. Although the above measures (lending rate) indicate a positive influence on financial inclusion, these are not significant in explaining financial inclusion in SSA. The main measure of financial sector development; domestic credit to the private sector (DCTPS), presents an inverse relationship with financial inclusion. We find that financial development, both informal and formal, acts as a direct competition to MFIs in promoting financial inclusion. Therefore the financial development indicators in this case play an inverse role in comparison to MF penetration, such that; for increased financial inclusion, and an increase in private credit levels, this does not trickle down to the bottom of the pyramid, thereby creating a negative relationship.

A key finding for this study is observed in the measure of technology and its power in translating financial inclusion. Our result indicates that technologies can help to overcome market entry barriers, in particular, Mobile Phones subscriptions. This suggests that e-money solutions can be important enablers in the stages and levels of financial inclusion, as they can help users and in particular MFIs overcome potential geographical constraints and transaction costs that may limit their ability to reach the poor with affordable services. Mobile Phones subscriptions are significantly important in determining the financial inclusion amongst the sample. This suggests that technologies enable MFIs to have a more timely relationship with their customers, which may be crucial as markets mature and become more complex.

Leavy and White (2000), suggest that there is no complete set of competitive markets in rural areas, of developing countries, but a broad variety of spot markets exist and operate competitively, in addition to some informal mechanisms which may fill at least some of the same functions as a competitive market. however, labour (productive capacity) in rural areas are characterised under four areas namely; smallholder production, commercial agriculture, nonfarm activities, and migration.

In view of the evident distinctions between the urban and rural dweller, it is therefore important for policy makers to direct development capacity to better/efficiently cater for both the needs of urban and rural dwellers, according to identified needs. For instance, higher productive capacity of urban dwellers in comparison to their rural counterparts, suggest a possible development win for MFIs through coherent policy making. Applying the Lewis model of development, a better direction for these institutions lies in refocusing on a graduated model of MFI funding. In this scenario, the rural subsistence agriculturist is funded until able to move towards a more sustainable and predictable source of income in the urban areas, thereby affording MFIs the ability to both capture scale, and in so doing, help the overall development (in the ecosystem) of communities to higher productive capacity via a shift towards inclusive industrialisation activities.

This could be in the form of re-organising MFIs activities (an ecosystem within the financial system) as multi-purpose institutions; the multiplicity of purpose could both serve rural dwellers and urban dwellers efficiently. With distinct policy direction, MFIs could have several distinctions. For instance, a segment of MFIs could focus solely on rural markets, and a 'graduated'[87] MFI will offer more productive capacity, focusing solely on urban markets consisting of graduated rural subsistence labour. This distinction could further streamline the sector in Africa, and provide a more seamless operational nous within the African continent, as a result of the unique nature of labour within rural and urban poor demographics within the countries in SSA.

[87] A higher capitalised MFI with deeper capital buffers for increased operational capability.

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APPENDICES

8.4 CAPITAL STRUCTURE SELECTED STUDIES

Table 0.1: Journal of Capital Structure Selected Studies & Variables.

Author	Title	Focus /Region	P	S	A	AT	R	L	r	i	G	NDTS	OTHER Variables
Aremu, Mukaila Ayanda et al (2013)	Determinants of Capital Structure in Nigerian Banking Sector	Nigeria	✓	✓	-	✓	✓	-	-	-	✓	-	Dividend Pay-out, Tax charge
Alberto De Miguel and Julio Pindado (2001)	Determinants of capital structure: new evidence from Spanish panel data	Spain	-	-	-	-	-	-	-	-	-	✓	Public debt ratio, Ownership Concentration, Asymmetric information. Financial Distress Cost, Investment, Cash Flow, Replacement Value of Capital, Tobins Q, Free Cash Flow.
Abrar, Afsheen and Javaid, Attiya (2016)	The Impact of Capital Structure on the Profitability of Microfinance institutions.	World	✓	✓	✓	✓	Y	✓	✓	✓	✓	✓	
Rajan & Zingales (1995)	What Do We Know about Capital Structure? Some Evidence from International Data	International	✓	✓	-	✓	-	-	-	-	-	-	Dependent variables: (LEV - adjusted debt-capitalisation ratio, and Mkt Lev). Explanatory: Market-to Book ratio.
Booth et al (2001)	Capital Structures in Developing Countries	10 Developing Countries	✓	✓	-	✓	✓	-	-	✓	-	-	Macro variables (Stock Mkt-V/GDP, Liquid Liabilities/GDP, Real GDP growth r, Inflation,

													Miller tax-term). Tax-r, Market-to-Book,
De Migurl and Pindado (2001)	Determinants of Capital Structure: New Evidence from Spanish Panel-Data	Spain	-	-	-	-	-	-	-	-	-	✓	Cost of financial distress, firms investment decisions. Institutional characteristics: Public debt ratio, Ownership Control, Asymmetric information variable
Delcoure, Natalya (2007)	The Determinants of Capital Structure in Transitional Economies	emerging CEE countries	✓	✓	-	✓	✓	-	-	-	✓	✓	The impact of Taxes. Dependent Variables; Total Assets, TD/TA, LTD/TA, STD/TA
Deesomsak et al (2004)	The Determinants of Capital Structure: Evidence from the Asia-Pacific region	Asia Pacific Region	✓	✓	-	✓	✓	✓	✓	-	✓	✓	Country-specific variables; degree of stock market's activity, level of interest rates, legal protection of creditors rights, ownership concentration, country dummies.
Tchakoute Tchuigoua, Hubert (2014)	Institutional Framework and Capital Structure of Microfinance Institutions.	World	✓	-	-	✓	✓	-	-	-	-	-	Reputation; Board Independence; (all significant positive impacts capital structure decisions)
Kyereboah Coleman (2007)	Determinants of Capital Structure of MFIs in Ghana	Ghana	✓	✓	✓	✓	✓	-	-	-	-	-	Board characteristics; Size, independence, CEO duality, and CEO tenure. Dependent vas; Short-term lev,

													Long-term lev, and Leverage (total).
Pati , A. P. (2014)	Indian MFIs: The Funding Structure and its Determinants.	India	✓	-	✓	-	-	-	-	-	-	-	Regulation
Tchakoute Tchuigoua (2015)	Capital Structure of Microfinance Institutions	World	✓	✓	✓	✓	✓	-	-	-	-	-	MFIs level variables; Ratings, OSS, For-profit status, Profit distribution. Control variables: Regulation, Loan portfolio, Deposits, Fin Dev, Macroeconomic variables, Regions Dummies. Outreach, Loan Size
Hartarska & Nadolnyak (2007)	Does Ratings help MFIs raise Funds? Cross-country Evidence.	World	-	✓	✓	-	✓	-	-	✓	-	-	OSS, NAB, Rating, Fin Aid, ACCION, M-CRIL, MicroRate, Microfinanza Ltd, Planet Rating, CAPITAL (TE to TA), SAVINGS (ratio of Savings to TA), LOAN (ratio of Loans outstanding to TA, measures Risk exposure), Bank dummy, NGO dummy, DEPOSIT dummy).
Chen et al (2015)	An Empirical Research: The Determining Factors of	China	✓	✓	-	✓	-	✓	-	-	✓	✓	Explanatory variables: uniqueness of products, shareholding concentration.

	Capital Structure of Strategic Emerging Industry: based on data on listed Enterprises in China												
Titman & Wessels (1988)	The Determinants of Capital Structure Choice		✓	✓	-	✓	-	-	-	-	✓	✓	Uniqueness, Industry, Earnings Volatility
Harris & Raviv (1991)	The Theory of Capital Structure		✓	✓	-	✓	-	-	-	-	✓	Y	Volatility, Bankruptcy, Advertising, R&D expenditure, Free cash flow, and Uniqueness.
Frank & Goyal (2003)	Testing the Pecking Order Theory of Capital Structure		✓	✓	-	✓	-	-	-	-	-	-	Dividend, Intangibles, Market-to-Book-ratio, Macroeconomic.
Huang & Song (2006)	The Determinants of Capital Structure: Evidence from China		✓	✓	-	✓	-	-	-	-	✓	-	Tax, Volatility, Managerial shareholding, Industry, Region.
Frank & Goyal (2009)	Capital Structure Decisions: Which Factors are Reliably Important?	US	✓	✓	-	✓	✓	-	-	✓	✓	-	Industry: (industry Leverage, Industry Growth & Capex), Taxes (Tax rate, NOLCF, Depreciation, Investment Tax Credit), Rating, stock market conditions (Stock Ret, Corresponding Ret), Debt Market conditions (Term Spread), Macro-economic conditions (Inflation, Macro

													Profitability, Macro Growth).

Source: Authors Own

Table 0.2: Selected empirical studies (Summary of key evidence).

Author	Title	Methodology	Data	Findings	Variables
Modigliani & Miller (1963)	The Cost of Capital, Corporation Finance, and the Theory of Investment.	Two stage IV approach	Publicly traded firms	capital structure of firms is IRRELEVANT to firm value	Assumption of perfect markets
Rajan & Zingales (1995)	What Do We Know about Capital Structure? Some Evidence from International Data	Basic Regression (Lev = a +B TA, BMTB, B-Log sales, B ROA + E)	Global Vantage	Finds that at an aggregate level, firm lev is similar across the G-7 than previously thought, and existing differences are not easily explained by institutional differences previously thought important.	Asset Tangibility, Profitability, Market-to-Book, Size
Booth et al (2001)	Capital Structures in Developing Countries	Regression models	IFC data	This paper finds that variables relevant in explaining capital structure in US and EU countries, are also relevant for explaining capital structures in developing market economies, despite PROFOUND differences in Institutional factors across these countries. Highlights that SYSTEMATIC differences in the way debt ratios are affected by country factors, such as; GDP growth rates, inflation rates, and the development of capital markets.	
De Migurl and Pindado (2001)	Determinants of Capital Structure: New Evidence from Spanish Panel-Data	Two-step GMM	CNMV database of Panel-data	Finds that transaction costs borne by Spanish firms are inferior to US firms, results show	

				consistency with tax and financial distress theories, in addition to the interdependence between investment and financing decisions. Providing evidence on the pecking order and free cash-flow theories. This study also confirms the impact of some institutional characteristics on capital structure.	
Jean, J Chen (2004)	Determinants of Capital Structure of Chinese-listed Companies	Panel-Data regression models	Dow-China 88 Index database with annual report of 88 public-listed Chinese companies	Finds portability with some of the insights from modern finance theory of capital structure (certain firm-specific characteristics are relevant in explaining the capital structure in developed economies are also relevant in Chinese context). However, neither the trade-off nor the pecking order theory provides convincing explanation of capital structure choices of Chinese firms. A 'new-pecking' order theory is followed by the sample, namely; retained profit, equity, and long-term debt.	Dependent variables: LEV (overall lev ratio of Book Value of Total Debt to Total Asset), Long-term Leverage. Independent variables; Profitability, Size, Growth Opportunity, Asset Tangibility, Cost of Financial distress, Tax-Shield effects (NDTS)
Barry and Tacneng (2014)	The Impact of Governance and Institutional Quality on MFI Outreach and Financial Performance in SSA	Panel-data methods	MIX MARKET	Results indicate a weak institutional environment in SSA	Institutional variables: Government effectiveness, rule of law, and information sharing. Governance variables: Ownership type.
Barr (2005)	Microfinance and Financial Development			Argues on the importance of MF for financial development and poverty alleviation..	

Delcoure, Natalya (2007)	The Determinants of Capital Structure in Transitional Economies	Panel data Regression methodology	Thompson Financials WorldScope database	Findings indicate that some traditional capital structure theories are portable to companies in CEE countries. However, neither the trade-off theory, pecking order, nor agency cost theories explain the capital structure choices. Factors influencing firms leveraging decisions are the differences and financial constraints of banking systems, disparity in legal systems governing firms operations, shareholders, and bondholder rights protection, sophistication of equity and bond markets, and corporate governance.	Profitability, Size, AT, Risk, Growth, NDTS, The impact of Taxes. Dependent Variables; Total Assets, Total Debt/Total Asset, Long-term debt/Total Asset, Short-term debt/Total Asset
Deesomsak et al (2004)	The Determinants of Capital Structure: Evidence from the Asia-Pacific region	OLS	DataStream (sample of all non-financial listed firms within sampled region/Countries)	Results suggest the operating environment influences capital structure of firms in the AsiaPac region. As well as firm-specific factors. The financial crisis of '97 is also found to have had a significant but diverse impact on firm's capital structure decisions across the sampled region.	Tangibility, Profitability, Firm-Size, Growth Opportunities, NonDebtTaxShields, Liquidity, Earnings Volatility/risk, Share price performance. Dependent Variables; Leverage (debt to capital ratio). Country-specific variables; degree of stock market's activity, level of interest rates, legal protection of creditors rights, ownership concentration, and 3 country dummies. Also uses Share price performance
Abor (2004)	The Effect of Capital Structure on Profitability: An Empirical Analysis of Listed Firms	Panel-data regression method	Annual statements	Capital Structure was found to be negatively related to firm performance, supporting the pecking order theory.	ROSDA, LDA, DA, Size, Sales growth

Boateng (2004)	Determinants of Capital Structure: Evidence from International Joint Ventures in Ghana	T-test and ANOVA	Sectional survey on equity joint ventures.	Results indicates that size, industry classification and ownership are important determinants of capital structure.	Leverage (short-term, long-term and total lev). Size, Ownership, Industry classification.
Monzural Hoque (2011)	Commercialization and changes in capital structure in microfinance institutions : An innovation or wrong turn	OLS regression	MIX MARKET	Leverage decreases the relative level of outreach to the very poor.	Dep variable; Yield rate. Endogenous: Outreach, Productivity, and risk area. Explanatory variables: Leverage, Return on Equity, Size of loan portfolio, Age, Women Clientele
Ayayi and Sene (2010)	What Drives MFI's Financial Sustainability	OLS regression		High quality credit portfolio is instrumental to financial sustainability. Age and client outreach have positive impact on financial sustainability.	No of Women borrowers, Outreach, Portfolio at Risk. Return on Equity, Return on Asset.
Ebaid, Ibrahim El-Sayed (2009)	The Impact of Capital Structure on Firm Performance: Empirical Evidence from Egypt.	Pooled regression analysis	MISR Information Services & Trading (database agency for Egyptian listed firms)	Results indicate that capital structure choice decision pose a weak-to-no impact on firms performance.	Dep Variables: Return on Equity, Return on Asset, and Gross Profit Margin.
Kar, Ashim Kumar (2012)	Does Capital and Financing Structure have any relevance to the performance of MFIs?	GMM & IV estimations with Instruments	Panel-dataset of 782 MFIs in 92 countries	Results confirm the agency-theoretic claim that an increase in leverage raises profit-efficiency in MFIs. Further findings indicate that cost-efficiency deteriorates with decreasing leverage. Negative significant impact of leverage on depth of outreach. Finally, capital structure has no significant/noticeable impact on breadth of outreach, and neither is it significantly related with women's participation as loan clients.	Leverage, Risk, Size, Age.

Kyereboah-Coleman, Anthony (2007)	The Impact of Capital Structure on the Performance of MFIs.	FE and RE techniques.	Panel-data for 1995 - 2004	Most MFIs employ high leverage, choosing to finance their operations with long-term debt. Highly leveraged MFIs perform better by reaching more clientele, enjoy scale economies, and are therefore better able to deal with moral hazard and adverse selection, enhancing ability to deal with risk.	Return on Equity, Return on Asset, Outreach, Default rate, Portfolio at risk, Asset Tangibility, Short-term debt ratio, Long-term debt ratio, Total-Debt ratio, Size, Age.
Sekabira (2014)	Capital Structure and Its Role on Performance of Microfinance Institutions: The Ugandan Case	Panel regression methods	Financial and Income statements	Debt and grants negatively correlated to OSSS and FSS. Capital structure is essential for MFI sustainability.	Dep Variables: OSS: Cap structure variables: % of debt on assets, % of grants on assets, % of share capital on assets, % of total equity on assets & % of debt on total equity. MFI characteristic: Size, Risk, Log of borrowers, Log of Savers & Borrowers per cred officers. MFI fixed effects.
Bogan, Vicki L. (2012)	Capital Structure and Sustainability: An Empirical study of Microfinance Institutions.	OLS	MIX data	Size, and Capital structure significantly affects MFI performance.	Cap structure Variables: Debt relative to assets, Deposits relative to assets, Grants as % of assets, RE as % of assets, Share cap as % of assets. Other: Size, ROA, PAR, OSS, FSS, % of Unsustainable, % with no credit rating, Active borrowers, Borrowers below poverty line, AVG cost per borrower and Age.
Tchuigoa, Tchakoute (2015)	Capital Structure of Microfinance Institutions	Multiple (OLS, Pooled..) panel-data techniques	MIX data and MFI ratings database.	Results fail to establish that for-profit MFIs are more able to raise external financing than not-for-profit MFIs. Furthermore barring profitability, other variables at the MF level have the same impact on both for	Dep Variables: External Debt, and Donations. MFI-Level: Ratings, Size, Profitability, MFI for-profit status, Portfolio at Risk, Asset Tangibility, OSS, profit distribution. Control variables;

				and non-for-profit MFIs.	Regulation, Level of Financial Sector development, MFI activity (fin-services provided by MFIs like; Deposits, and Savings), Loan portfolio, Macro-economic variables (annual growth r of GDP), Region Dummies. Rating decision variables; Age, Outreach, & gross loan portfolio
Gudu, Gemchu Feyissa (2013)	The Impact of Capital structure on Microfinance Institution Performance: Evidence From Ethiopia	RE GLS Regression. .	Panel-data of 16 MFIs	Significant negative relationship between total debt and ROE and ROA. Furthermore, a significant and negative capital adequacy, portfolio quality and ROA. Also, negative and significant relationship between asset tangibility, liquidity and ROE. However, firm age, ownership, and both ROE and ROA, show a significant positive impact on performance.	Return on Equity, Return on Asset
Abrar, Afsheen and Javaid, Attiya (2016)	The Impact of Capital Structure on the Profitability of Microfinance institutions.	RE treatment of Panel data	MIX (cross-sectional unbalanced Panel Data)	This paper affirms the role of deposit as the cheapest financial source for MFIs, whilst noting that highly leveraged MFIs enjoy higher profitability relative to less levered MFIs. Also, MFIs with more female clients enjoy higher profits. The author also note that Industry-regulations, Age, and Size have an insignificant impact on MFIs profitability.	Dependent (Return on Equity, Return on Asset, OSS); Independent (Deposit to assets, net-deposits, debt-to-equity ratio); Control Variables (Women borrowers, size, regulation, and age)
Hartarska & Nadolnyak (2007)	Does Ratings help MFIs raise Funds? Cross-country Evidence.	Panel Data Methods	MIX, and 6 MFI ating agencies)	This paper finds that ratings impact is inconsistent across board (i.e, not all rating agencies have the same impact on	OSS, Number of active borrowers, Rating, Financial Aid, MicroRate, Microfinanza Ltd, Planet Rating,

				MFIs), whilst ratings by some agencies helped MFI raise funds, ratings from the other agencies did not. Finally, subsidizing ratings failed to help MFIs raise more funds.	CAPITAL (Total Equity to Total Asset), SAVINGS (ratio of Savings to Total Asset), LOAN (ratio of Loans outstanding to Total Asset, measures Risk exposure), Bank dummy, NGO dummy, DEPOSIT dummy). Inflation, Age, Size and PAR.
Kinde, Bayeh Asnakew (2012)	Financial Sustainability of MFIs in Ethiopia	Panel data methods	MIX Market	Breadth and depth of outreach, dependency ratio and cost per burrower affect the financial sustainability of MFIs in Ethiopia.	Financial self-sufficiency, Breadth and Depth, Cap structure variable (DE), Dependency ratio, cost per borrower, Size and Productivity.
Tehulu Tilahun Aemiro (2013)	Determinants of Financial Sustainability of MFIs in East Africa	binary probit and ordered probit regression models	Annual statements	Loans intensity and Size show a significantly positive impact on financial sustainability of MFIs in East Africa. Conversely, management inefficiency and PAR show a significant negative impact on fin sus.	Management inefficiency, Size, Leverage, PAR, Breadth of Outreach, Loans intensity, Deposit mobilization
The acronyms at the top of the table indicate common observed indicators which have been examined by previous studies. They include: P (Profitability), S (Size), A (Age), AT (Asset Tangibility), R (Risk), L (Liquidity), r (Interest Rate), i (Inflation) G (Growth), NDTS (non-debt Tax Shields). Under the columns are tick marks for studies that have employed these measures in their analysis.					

Source: Authors Own

8.5 CAPITAL STRUCTURE THEORIES

8.5.1 Capital Structure Theoretical Developments

This section of this report is devoted to the review of theoretical and empirical studies conducted on the capital structure of firms, its determinants, and effects on performance, with a view of addressing a portion of gaps identified from the literature. A detailed critical review of empirical studies is carried out on studies in the capital structure literature that have examined firm specific and country factors as determinants of capital structure. Amongst these, the key studies identified have been represented in a mapping matrix (See Table above for the summary of selected studies, some reviewed literature, and employed variables for the individual studies).

8.5.2 The Traditional View of Capital Structure

Before the intervention by Miller and Modigliani, the prevailing theory on capital structure was known as the 'Traditional' view/approach to Capital structure (Frentzel, 2013). This view of capital structure assumes that there exist, a specific level of optimal gearing, which eventually minimizes the cost of capital and maximizes the value of the firm and hence shareholder wealth (Frentzel 2013); Watson and Head 2013) p. 297). Hence, the proposition of the traditional approach to capital structure posits that an optimal capital structure does exist, one that aims to increase firm value with the use of financial leverage within its capital structure (Wrightsman 1978). Firms should therefore use the combination of debt and equity that minimizes its overall cost of capital in order to maximise shareholder wealth.

Like other theories of finance this proposition is based on underlying assumptions of; non-existence of taxes, companies possess two choices of finance (perpetual debt finance or ordinary equity shares), companies can change their capital structure without incurring issue or redemption costs; increase in debt finance is accompanied by a simultaneous decrease in equity finance of the same amount; all distributable earnings are paid out as dividends; business risk associated with firms are constant over time; and company earnings and hence dividends do not grow over time.

8.5.3 Miller Modigliani 'The Irrelevance Position[88]

The capital structure irrelevance position postulated by Modigliani and Miller (1958) in their seminal publication, assumes that in perfect capital markets, leverage financing is irrelevant to the value of a firm.

Given the assumptions of perfect capital markets and no taxes on corporate income, an equilibrium in the capital market requires that firm value V_t, should be independent of any proportions of debt and equity in the firm's capital structure. As represented in eqn.1 below.

$$V_t = V_{B.t} + V_{E.t} \qquad \text{(Equation 9.1)}$$

Where;
V_B = market value of debt
V_E = market value of equity

8.5.4 M&M and Other Theories

Miller & Modigliani (1958) first proposition, starts on the assumption that firms have a particular set of expected cash-flows, hence when the firm chooses a certain proportion of debt and equity to finance its operation; it merely divides up the cash-flows among investors. Investors and firms are also presumed to have equal access to capital markets (this, allowing for an investor to create own leverage),

[88] For a full review of the arguments on the irrelevance theory, in addition to subsequent MM theories, see appendix 1.

hence as a result, the leverage of the firm has no effect on the market/shareholder value and performance of the firm. Two fundamental strings of thought underpins the irrelevance theory; Arbitrage and so-called 'home-made' alternatives for Investors. Much of the subsequent discussion following the propositions by MM focused on the realism of particular assumptions.

Following MM's propositions on the irrelevance of capital structure theory, various capital structure theories emerge to relax the unrealistic assumptions stipulated by the irrelevance theory, namely; Jensen (1986), introduced the trade-off theory of capital structure and argues that debt is an efficient means by which to reduce the agency costs associated with equity, whilst Kraus and Litzenberger (1973) show that as a result of the tax advantages of debt, the optimal capital structure includes debt financing. Ross (1977) Leland and Pyle (1977) argue that debt can be valuable as signalling device for firm value, while Jensen (1986) indicates that debt can be employed as a disciplining device to deter managers from empire building. Myers (1984), advocates the need to balance gains and costs of debt financing. This theory values a company as the value of the firm if unlevered, plus the present value of the tax shield minus the present value of bankruptcy and agency costs, formulating the static trade-off theory.

Myers and Majluf (1984) posits that outside investors rationally discount the firm's stock price when managers issue equity as opposed to riskless debt. Hence, to avoid this discount, managers avoid the use of equity finance wherever possible in preference to internal sources of funds, second in order of preference Is issuance of low risk debt finance, and then, equity issuance as a last resort. Thereby, formulating the pecking order theory. Finally, the market timing theory of capital structure argues that firms time their equity issues so as to maximise the issuance of equity, by issuing new stock when the stock price is perceived to be overvalued, and in addition, buy-back firm own stock when the stock price is undervalued. For a robust review of the above capital structure theories, refer to the appendix 1.

8.5.5 M&M Proposition I

Miller & Modigliani (1958) proposition I, starts on the assumption that firms have a particular set of expected cash-flows, hence when the firm chooses a certain proportion of debt and equity to finance its operation; it merely divides up the cash-flows among investors. Investors and firms are also presumed to have equal access to capital markets (this, allowing for an investor to create own leverage), hence as a result, the leverage of the firm has no effect on the market/shareholder value and performance of the firm. Two fundamental strings of thought underpin/underlies the irrelevance theory; Arbitrage and so-called 'home-made' alternatives for Investors. Much of the subsequent discussion following the propositions by MM focused on the realism of particular assumptions. For example, Durand (1959), and Brewer and Jacob (1965).

Nonetheless, the ground breaking work of MM highlights two important moments in corporate financial theory. Firstly, the implementation of the arbitrage theory. Secondly, the application of homemade leverage by individual investors, with an assumptions of equal access to capital and rates by investors and firms. However, Durand (1959), identifies two factors that renders the arbitrage position improbable; The un-peculiarity between firms (a central assumption to MMs irrelevance theory), and the unlikelihood of identical assets, yielding similar income streams (in a levered and un-levered firm). Lintner (1962) examines the viability of rationality amongst investors. He points to the purely competitive nature of markets, maximizing behaviour, absence of issue costs and taxes, and identical interest rates to personal and corporate debtors remain insufficient to make investors indifferent to substitutions between retained earnings and debt in financing fixed budgets, or to validate the entity theory, when uncertainty is admitted even under the constraints of identical subjective probability distributions and information. Brewer and Jacob (1965), and Hirshleifer (1966), highlight crucial limitations of MMs irrelevance position, both suggesting the unrealistic/contradicting nature of the assumptions employed by MM in developing an irrelevance position.

On the other hand, by employing two key assumptions, Stiglitz (1969) demonstrate that under general equilibrium conditions, the MM theorem holds its validity. Namely; individuals and firms can borrow at the same market rates and the non-existence of bankruptcy cost. However, Stiglitz falls short in failing to recognise the costs associated with bankruptcy in supporting the proposition of irrelevance originally drummed-up by MM. the unrecognition of distress costs, in addition to the difference in borrowing costs between individuals and firms call his findings to question. Other researchers highlight anomalies –like the higher probability of default in individuals compared to firms- in rates treatment amongst individuals, and firms, as well as the costs associated with financial distress as having an impact on a firm.

8.5.6 MM proposition II

The second proposition by Modigliani and Miller (1963), concerns the nature of the relationship between the cost of equity[89] and its relationship with leverage (leverage ratio, or debt-equity ratio). According to this proposition, the cost of equity is a linear function of the company's debt/equity ratio. Hence, as a firm employs more debt in its capital structure, the cost of equity increases because of the seniority of debt.

$$r_e = r_0 + (r_0 - r_d)\left(\frac{D}{E}\right) \qquad (9.2)$$

Where r_0 is the cost of equity if there is no debt financing.

[89] Cost of equity is the overall price accrued to firms in raising equity for firm financing**.

At the heart of MM argument is the relatively unaffected nature of the WACC as a result of a leverage position. The assumption of the rationality of investors implies that the expected return of equity (*Ke)* is directly proportional to the increase in gearing levels (*D/E*). The expected return of equity (*Ke*) is compensated by the benefit of cheaper debt finance. Therefore, as more of the cheaper source of capital is employed, the cost of equity increases, but the WACC remains constant and unchanged, hence firm value remains unaffected by the capital structure.

MMs proposition II come under some basic criticisms, borne from the simplistic nature of its accompanying assumptions, such as the absence of taxation, bankruptcy costs, problems associated with agency costs, the existence of transaction costs, and the inequality in the ability of corporations and individuals to obtain access to markets (debt and equity markets) at a level playing field.

In an attempt to bequeath more reality (realistic) to their proposition, MM introduce the effect of taxation to the irrelevance theory postulated by proposition two. The revised postulation by Miller and Modigliani (1963) argue that the tax benefits of the use of leverage within the capital structure lowers the cost of debt, reduces the WACC, and increases the value of the firm by the marginal tax rate multiplied by debt. The result of which implies that –as a result of the tax-shields associated with the use of debt-, firms can decrease their WACC by increasing the level of debt employed within the capital structure, the direct result of which is an increase in firm value.

This interjection by MM (introducing the tax effect), subtly accede/highlight the flaws associated with their original postulation. Despite the experimental of their original postulations, market imperfections create a situation of unpredictability especially within financial models created in exclusivity of real life realities. The adjustment to proposition II suggests that indeed an optimal capital structure level exists, and in order for firms to attain this level, firms can employ 99.99% debt (in order to fully maximise shareholder value). This fails to also reflect reality, as firms rarely employ 99% level of debt (bankruptcy costs). This anomaly further suggests that, other factors play a role in determining the optimal capital structure.

8.5.7 MM proposition III (Net Present Value)

Miller and Modigliani (1961) proposition III (often referred to as the net present value) focus on the relationship between dividend policy, firm growth and valuation of firm shares/shareholder-wealth. This proposition further postulates a relationship of irrelevance. According to the third proposition by MM, a firms total market value is unaffected by its dividend pay-out policy. MM argue that in a perfect market, the value of a firm remains unaffected by its dividend policy, but rather, a firm's value is determined by its earning power, and the risk of its underlying assets.

Attempts to bring the above theory in line with the realities and imperfections of markets and its agents have been embarked on by researchers. Some of which systematically relax the stringent assumption of MM in arriving at their capital structure irrelevance theory (see (Hirshleifer, 1966) (Hirshleifer 1966) all lend weight in support of the irrelevance proposition by MM.

Over the years, various theories of capital structure have emerged with the aim of disproving irrelevance as a matter of theory or as an empirical matter. General consensus of which argue that the MM theorem fails to provide a realistic description of how firms finance their operations (Hamada 1969, Stiglitz 1969, 1974). However, this theory influenced the early development of both the trade-off theory, and the pecking order theory.

On observation of the theoretical literature, two central lines of enquiry emerge; Does capital structure matter? Can the total market value of firm's securities be increased or decreased by changing the mix of debt and equity financing? Secondly, if capital structure does matter, what factors determine the optimal mix of debt and equity that will maximize the firm's market value and thus maximize its cost of capital? And finally, what are the key determinants of the capital structure choices of firms? Although the overriding theme (postulation) of the MM theorems, suggest that the capital structure of firms is irrelevant (in determining) to firm value, under certain conditionss of perfect capital markets. However, as often criticized, this position fails to reflect real-world position of imperfection in markets, several theories have been introduced in order to relax some of the above assumptions, so as to present a realistic view of the application of capital structure theories to modern finance.

The next section reviews the theoretical literature on the alternative capital structure theories and contributions to the MM capital structure irrelevance theory. Some of the most commonly laid out criticisms of the irrelevance position postulated by MM include; consideration of taxes, transaction costs, bankruptcy costs, agency conflicts, adverse selection, lack of separate-ability between financing and operations, time varying financial market opportunities, and investor clientele effects. Models have also sought to pare back some of the simplistic assumptions employed by MM in obtaining the irrelevance theory (see (Kraus and Litzenberger 1973, Baxter 1976, Leland and Pyle 1977, Bradley et al. 1984). These alternative models use differing elements in order to present a more realistic view on the relevance of capital structure to firm performance.

8.5.8 Trade-off Theory of Capital Structure

Financial literature often suggests that debt has a central role in financing firm's activities. Jensen (1986) argues that debt is an efficient means by which to reduce the agency costs associated with equity, whilst Kraus and Litzenberger (1973) show that as a result of the tax advantages of debt, the optimal

capital structure includes debt financing. Ross (1977) Leland and Pyle (1977) argue that debt can be valuable as signalling device for firm value, while Jensen (1986) indicates that debt can be employed as a disciplining device to deter managers from empire building (or pursuing own interests). (Hence), the trade-off theory postulates that indeed there exists an optimal capital structure for firms, and this optimal mix of debt and equity is determined by balancing the losses (accrued to debt) and gains (benefit of debt) of debt (Myers, 1977).

While debt may have advantages as well as disadvantages[90] the trade-off theory recognises the gains and the losses of burrowing. The gains of debt are primarily the tax-shelter effect, which arises when paid interest on debt is deductible on the profit and loss account (Myers 1977). On the other hand, (Frydenberg 2004) considers the costs of debt to be the direct or indirect effects of bankruptcy costs, associated with the use of leverage. Unlike the general theory of capital structure, two assumptions are broken under the trade-off theory. Which are; the no tax incentive, and the no bankruptcy assumptions.

Thus, the trade-off theory predicts a unique individual capital structure for each/every firm where the marginal benefit equals the marginal cost of debt and changes in debt should thus be dictated by the difference between current level and optimal debt level (DeAngelo and Masulis, 1980). Hence, according to this theory, the firm substitute's debt for equity, or equity for debt until the value of the firm is maximized.

Trade-off literature further suggests that debt has a central role in firm financing; this theory also builds on arguments on the advantages and disadvantages of debt. First, debt is a factor of the ownership structure that disciplines managers. Secondly; debt as a useful signalling device, third debt as used to reduce excessive consumption of perquisite. Debt disadvantages; first agency cost problem of debt (this includes risk substitution and under investment), secondly, debt increases bankruptcy possibility by increasing the financial risk of the firm. Therefore, a value-maximizing firm facing low probability of bankruptcy should employ the use of debt to its full capacity. Thus, a key prediction of the trade-off theory of capital structure is the positive correlation/association between profitability and leverage (- and a negative correlation between debt and monitoring costs (Harris and Raviv 1991). (DeAngelo and Masulis 1980), further notes that old firms with long history of credits, will have a relatively low

[90] Frydenberg (2004), highlight some advantages of debt as; a factor of the ownership structure that disciplines managers, limiting control to a few agents that control the common stock, while the rest of the capital is raised through a common sale. This can reduce the agency cost of management. Secondly, debt can be employed as a useful signaling device, to inform investors of a firm's excellence. Thirdly, debt can reduce excessive consumption of perquisites, as a result of repayment obligations. Conversely, disadvantages of debt centers around the problems of agency costs associated with the use of debt. Firstly, risk substitution and under investment, and secondly, debt increases possibility of bankruptcy costs by increasing the financial risk associated with the use of debt.

probability of default and lower agency costs using debt financing in comparison to newly established firms.

Hovakimian et al. (2004) argues that a high profitability suggests that the firm can yield higher tax savings in addition to a lower possibility of bankruptcy. Different variations of the trade-off theory of capital structure have been proposed within the literature, these have been shown to take on more factors into account. For example, Auerbach (1985) proposed an adjusted trade-off model, on testing empirically, the findings from this study posits that risky and fast growing firms should aim to borrow less. In addition, Fisher (1989) conducted a study with a variety of specifications arguing that capital structure also depends on restrictions in the debt contracts, takeover possibilities and the reputation of management. But further developments in theoretical and empirical thought have succeeded in replacing the traditional trade-off theory of capital structure.

8.5.9 Static trade-off Theory

The static trade-off theory began with work from Myers (1984), who advocates the need to balance gains and costs of debt financing. This theory values a company as the value of the firm if unlevered, plus the present value of the tax shield minus the present value of bankruptcy and agency costs (Abor, 2005).

The tax advantages of debt and the costs associated with debt leads to a trade-off between the tax benefits and the disadvantages of higher risk of financial distress. One of such consists of costs associated with agency problems. Jensen and Meckling (1976) and Jensen (1986) associate these costs to conflicts of interest between the different stakeholders of the firm and also as a result of ex-post asymmetric information. Hence, in order to incorporate agency costs into the static trade-off theory, means that firms determines its optimal capital structure by trading off the tax advantage of debt against the costs of financial distress of too much debt, and the agency cost of debt, against the agency cost of equity. Therefore an important stipulation of the static trade-off theory is the notion/assertion of a target leverage level within the capital structure of firms (i.e. if the actual leverage ratio deviates from the optimal one, the firm will adapt its financing behaviour in a way that brings the leverage ratio back to the optimal level.

8.5.10 Dynamic Trade-off Theory

This theory (an offshoot of the trade-off theory) considers the element of time, which is ignored in other single period models of capital structure. Amongst the first to establish/present this model was (Abor 2005) and Brennan and Schwartz (1984). Both models presented by the above authors incorporate the effect of uncertainty, taxes, and bankruptcy cost, but largely ignored (TCs) the effects of transaction costs.

8.5.11 Pecking order Theory

Unlike other capital structure theories (where there tends to be a notionally defined debt-to-value ratio), the pecking order creates a distinction between internal and external equity (thereby does not take an optimal capital structure as a starting point). Therefore, central to the pecking order theory are two assumptions. Firstly, managers act in the interest of firms, and secondly, an existence of asymmetric information between agents and shareholders. Hence, under this theory, sources of firm financing are ranked in order of preference as a result of the problems associated with asymmetrical nature of information between agents and shareholders.

When firms are faced with investment opportunities, firms show a distinct preference for using internal finance over external finance, thereby creating a hierarchical order of preference, commencing with the use of retained earnings, and if these are insufficient in financing investment opportunities, managers will choose amongst the various external finance sources in such a way as to minimise additional costs of asymmetric information, referred to by Akerlof (1970) as the "lemon premium". Myers and Majluf (1984) posits that outside investors rationally discount the firm's stock price when managers issue equity as opposed to riskless debt. Hence, to avoid this discount managers avoid the use of equity finance wherever possible in preference to internal sources of funds, second in order of preference Is issuance of low risk debt finance, and then, equity issuance as a last resort.

8.5.12 Market timing Theory

The market timing theory of capital structure argues that firms time their equity issues so as to maximise the issuance of equity, by issuing new stock when the stock price is perceived to be overvalued, and in addition, buy-back firm own stock when the stock price is undervalued. The market timing theory consists of two versions; the first is established on the assumption of rational economic agents, as companies are assumed to issue equity directly after a positive information release, which reduces the asymmetry problem between the firm's management and stockholders. The decrease in information asymmetry therefore coincides with an increase in the stock price, thereby allowing firms to create their own timing opportunities. The second theory assumes economic agents to be irrational (Baker and Wurgler, 2002). Managers issue equity when they believe its cost is irrationally low and repurchase equity when they believe its cost is irrationally high. Whilst other capital structure theories incorporate several operating assumptions, at the core of the market timing theory however, is the sole assumption that managers believe that they can time the market, issuing equity offerings where favourable, and buying back stock where favourable. Interestingly, Baker and Wurgler (2002) provide evidence that asserts that the equity market timing has a persistent effect on the capital structure of the firm. They find that leverage changes are strongly and positively related to their market timing measure, hence

conclude that the capital structure of a firm is the cumulative outcome of past attempts to time the equity market.

8.6 EMPIRICAL EVIDENCE

A review of the early empirical literature on capital structure reveals that earlier studies on capital structure focus on empirical data from developed economies. For example, Sheridan and Wessels (1998), use a sample of US firms, Rajan and Zingales (1995), perform an analysis on G-7 economies; Bevan and Danbolt (2000, 2002) employ a sample of UK non-financial firms; Chen (2004), and Huang and Song (2006) focus on Chinese firms, and Antoniou et al. (2008), concentrate on capital market-based systems (USA and UK), in addition to bank-grounded financial systems (France, Germany and Japan). The above reviewed studies reveal that firms lean towards holding fewer short-term debt, whilst preferring to employ long-term debts and equity, especially in countries with adequate/ample legal protection for shareholders and investors. However, for developing countries, capital market depth is dissimilar to that in developed economies. Hence, MFIs (and corporate firms) could employ more short-term debt than long-term. This requires a variable that captures this phenomenon for MFIs, in order to carry-out a robust analysis of the sector. Hence, it is within this vacuum that this research aims to fill.

Employing the use of debt and equity (to an optimal level advocated by MM's proposition III) within a firm's capital structure requires an adjustment process to attain the required level of optimal mix. Whilst the above studies do not take the adjustment process into consideration, Taggart (1977), Marsh (1982), Jalilvand and Harris (1984), Kremp et al (1999), employ advancement in econometric analysis to address the adjustment process in the leverage ratio to required levels. The above studies appear to be consistent with the position of the trade-off theory, which posits a negative relationship between leverage and profitability as a result of the transaction costs acting as a preventative measure for firms (willing to) adjusting their leverage ratios towards an optimal level. This adjustment process further depends on the position of the firm on the ratio (below or above), as well as other factors such as; firm size, and interest rates.

King and Levine (1993) and Zervos (1998) provide evidence observed from research carried out on a sample of firms within the financial sector. Evidence gleaned from both studies suggest that firms tend to rely on external funds for their expansion, and also grow faster in economies with a strong financial system. This study further unveils a strong relationship between the financial system and economic growth. This suggests that the economic environment plays a role in determining the capital structure of firms, whilst also impacting on their ability to perform at optimal levels. Results of this study show consistency with research conducted by Rajan and Zingales (1998a), Demirgüç-Kunt and Maksimovic (1998) and Demirgüç-Kunt and Levine (1999). On Banks, Demirguc-Kunt and Huizinga

(2000) consider the impacts of capital structure on the performance of banks in developed and developing economies from 1990-1997, focusing on bank's profitability and bank interest margins. Result of their study confirm a positive relationship between greater bank development and lower profitability and interest margins, supporting the pecking order theory of capital structure. Findings of this study further confirm a strong determining role of financial development on the performance of banks, thereby influencing banks capital structure financing. This suggest that lower profitability and lower interest margins are reflections of increased efficiency as a result of a highly competitive banking sector enabled by ample financial development levels. Furthermore, Athanasoglou et al. (2006), Ruiz-porras (2009) and Flamini et al. (2013) suggest the importance of financial development in determining the capital structure of firms, and thereby influencing performance.

Hutchison and Cox (2006), examine the causal relationship between bank capital and profitability employing data from US banks observing two different time periods: one of which was less regulated 1983-1989, and a period of substantial regulation 1996-2002. This study finds that leverage is positively related to measures of profitability such as return on equity (ROE) and return on asset (ROA), suggesting support for the trade-off theory of capital structure. Giradone et al (2006) on the other hand, investigate the cost X-efficiency levels of European banks through the differences in ownership, bank type and financial structure from the period 1998 – 2003. Results of this study appear to be mixed in compliance with established capital structure theories. Whist the hypothesis employed hold for a sub-sample of firms employed, the employed hypothesis failed to confirm capital structure theories on the majority of sample employed for the empirical study. The difference in characteristics of bank-based economies versus market-based economies suggest that various firm characteristics in addition to its operating macro-economic environment both have an important role to play in explaining the differences in cost efficiency across financial systems, bank performance, and thereby play a role in determining the capital structure of banks in developed and developing market economies.

Finally (Aburime, 2008), examines the impact of ownership structure on bank profitability using a sample of banks in Nigeria from 1989 – 2004. This study finds no significant impact on bank profitability. However this is in stark contrast 6to the findings of La-Porta et al (2002) and (Aburime 2008), who carry out an empirical investigation on state-owned banks in developing economies. Findings form this research suggest that state-owned banks operating in developing economies tend to have lower profitability than privately owned banks due to lower interest margins, higher overhead costs, and higher non-performing loans, suggesting that ownership concentration could improve performance by decreasing monitoring costs. However (Micco 2004), observe that concentrated ownership and large shareholders may use their control rights to achieve private benefits, thereby abusing control.

The above empirical evidence reveal mixed results, suggesting that capital structure theories do not always explain variations in capital structure determinants, as well as performance of firms, as expected by established capital structure theories. Furthermore, there exist a vacuum of evidence on the applicability of established capital structure theories on performance of development finance institutions; including MFIs in developing market economies, who increasingly operate like banking institutions.

Evidence for MFI remains scant. For example, a few studies attempt to examine this relationship, but fall short as a result of various limitations. (Zeitun and Tian 2007) attempt to examine the effects of asymmetric information on lending and reductions of this issue based on the assumptions of (Myers and Majluf, 1984). The key findings indicate that efficient MFI performance is strongly linked to the ability of MFIs to obtain vital investment funding. Furthermore, positive relationship between evaluation and financing reveal that evaluations lead MFIs to provide more loans to the poor, thereby positively affecting performance. The above empirical study provides clear evidence of the impacts of financing and investment in MFIs and lending.

Kyereboah (2007), observes the impact of financial structure on the performance of MFIs using a sample of MFIs from Ghana. The findings confirm that MFIs employ high leverage and finance their operations with long-term rather than short-term debt. Furthermore, this study finds that highly leveraged MFIs perform better than less leveraged MFIs by expanding their outreach to a broader client base (reach). Bogan (2012), examines the relationship between the financial structure of MFIs and its sustainability, by testing the Life-cycle theory of financing in explaining performance on a sample of MFIs. Results reveal that life-cycle stage variables are significantly related to sustainability (OSS and FSS) of MFIs. However, the above studies suffer from basic inconsistencies. For example Kyereboah (2007), employ a small sample size, comprising approximately less than 10% of MFIs in SSA, whilst Bogan (2012), employ data from earlier years. This reasons, establish the need to perform a robust analysis within the SSA region, using a broader sample, and most recent data to examine the determinants of the capital structure of MFIs, and to establish its impacts on the performance of MFIs.

8.7 REGRESSION TABLES

Table 0.3: Capital Structure all Models (Fixed Effects) with Age Breakdown.

	Leverage Model	BORWG Model	D.Equity Model	Deposit Model	Leverage Model	BORWG Model	D.Equity Model	Deposit Model	Leverage Model	BORWG Model	D.Equity Model	Deposit Model
Size	-0.295***	-0.360***	-0.0350***	0.0649***	-0.258***	-0.332***	-0.0345***	0.0732***	-0.272***	-0.341***	-0.0282***	0.0686***
	(0.045)	(0.045)	(0.008)	(0.008)	(0.043)	(0.043)	(0.008)	(0.008)	(0.044)	(0.044)	(0.008)	(0.008)
ROA	0.051	0.164	-0.154**	-0.113*	0.150	0.239	-0.159***	-0.0893	0.154	0.246	-0.144**	-0.092*
	(0.265)	(0.267)	(0.048)	(0.046)	(0.264)	(0.265)	(0.047)	(0.046)	(0.263)	(0.264)	(0.047)	(0.046)
AT	-0.105	-0.841	0.240*	0.736***	-0.010	-0.769	0.235*	0.759***	-0.009	-0.764	0.250*	0.756***
	(0.543)	(0.546)	(0.098)	(0.094)	(0.543)	(0.546)	(0.097)	(0.094)	(0.542)	(0.545)	(0.097)	(0.094)
PAR30	0.262	0.205	0.0672	0.0566	0.290	0.227	0.0675	0.0630	0.280	0.221	0.072	0.060
	(0.285)	(0.287)	(0.051)	(0.049)	(0.286)	(0.287)	(0.051)	(0.050)	(0.286)	(0.287)	(0.051)	(0.050)
SOIP	0.036*	0.026	0.009**	0.010***	0.037*	0.027	0.010**	0.010***	0.033*	0.024	0.010***	0.009**
	(0.016)	(0.016)	(0.003)	(0.003)	(0.016)	(0.016)	(0.003)	(0.003)	(0.016)	(0.017)	(0.003)	(0.003)
ENFCON	0.014	0.014	-0.0032	0.000	0.014	0.014	-0.003	0.001	0.013	0.013	-0.003	0.000
	(0.011)	(0.011)	(0.002)	(0.002)	(0.011)	(0.011)	(0.002)	(0.002)	(0.011)	(0.011)	(0.002)	(0.002)
GOVEFF	-0.012	-0.023	-0.127*	0.011	0.004	-0.010	-0.128*	0.015	0.0013	-0.012	-0.125*	0.013
	(0.284)	(0.286)	(0.051)	(0.049)	(0.285)	(0.286)	(0.051)	(0.050)	(0.285)	(0.286)	(0.051)	(0.049)
ROL	0.271	0.302	0.072	-0.031	0.251	0.287	0.075	-0.037	0.240	0.278	0.072	-0.039
	(0.267)	(0.269)	(0.048)	(0.046)	(0.268)	(0.269)	(0.048)	(0.047)	(0.267)	(0.269)	(0.048)	(0.046)
C-CTRL	-0.166	-0.149	-0.053	-0.017	-0.156	-0.142	-0.057	-0.014	-0.135	-0.126	-0.056	-0.009
	(0.209)	(0.210)	(0.038)	(0.036)	(0.210)	(0.211)	(0.038)	(0.036)	(0.210)	(0.211)	(0.038)	(0.036)
MONF	-0.007	-0.006	-0.002*	-0.001	-0.006	-0.005	-0.003**	-0.001	-0.005	-0.004	-0.003**	-0.001
	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)
TRADEF	0.010*	0.010*	-0.003**	0.000	0.011*	0.010*	-0.002**	0.0003	0.009	0.009	-0.002**	-0.000

	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)
FINF	-0.002	-0.002	0.003***	-0.000	-0.003	-0.002	0.003***	-0.000	-0.002	-0.002	0.002***	-0.000
	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)
GNIg	0.001	0.000	0.004*	0.001	0.001	0.001	0.004*	0.001	0.001	0.000	0.004*	0.001
	(0.009)	(0.009)	(0.002)	(0.001)	(0.009)	(0.009)	(0.002)	(0.001)	(0.009)	(0.009)	(0.002)	(0.001)
INF	-0.010	-0.005	-0.001	-0.004**	-0.010	-0.005	-0.001	-0.004**	-0.011	-0.006	-0.001	-0.005**
	(0.008)	(0.008)	(0.001)	(0.001)	(0.008)	(0.008)	(0.001)	(0.001)	(0.008)	(0.008)	(0.001)	(0.001)
REALINT	-0.002	0.000	0.000	-0.003*	-0.002	0.001	0.000	-0.002*	-0.002	0.001	0.000	-0.002*
	(0.006)	(0.006)	(0.001)	(0.001)	(0.006)	(0.006)	(0.001)	(0.001)	(0.006)	(0.006)	(0.001)	(0.001)
DEPINTR	0.011	0.004	-0.002	0.006**	0.011	0.004	-0.002	0.006**	0.010	0.004	-0.002	0.006**
	(0.013)	(0.013)	(0.002)	(0.002)	(0.013)	(0.013)	(0.002)	(0.002)	(0.013)	(0.013)	(0.002)	(0.002)
DCTPS	0.006	0.002	0.001	0.004***	0.007	0.002	0.002	0.005***	0.006	0.002	0.002	0.004***
	(0.006)	(0.007)	(0.001)	(0.001)	(0.006)	(0.007)	(0.001)	(0.001)	(0.006)	(0.007)	(0.001)	(0.001)
New	-0.286**	-0.224*	-0.017	-0.062***								
	(0.101)	(0.102)	(0.018)	(0.018)								
Young					0.045	0.043	0.036**	0.002				
					(0.072)	(0.072)	(0.013)	(0.012)				
Mature									0.179	0.126	-0.051**	0.053**
									(0.097)	(0.097)	(0.017)	(0.017)
_cons	4.269***	5.067***	0.848***	-0.797***	3.573***	4.522***	0.814***	-0.949***	3.790***	4.672***	0.742***	-0.882***
	(0.864)	(0.868)	(0.155)	(0.150)	(0.829)	(0.832)	(0.148)	(0.144)	(0.837)	(0.841)	(0.150)	(0.145)
N	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929
R^2	0.034	0.048	0.086	0.235	0.029	0.045	0.091	0.228	0.031	0.045	0.091	0.234
adj. R^2	-0.367	-0.348	-0.293	-0.083	-0.375	-0.352	-0.287	-0.093	-0.371	-0.351	-0.286	-0.085
F	2.693	3.791	7.145	23.22	2.259	3.530	7.572	22.33	2.431	3.606	7.606	23.05
rmse	0.938	0.942	0.169	0.163	0.940	0.944	0.168	0.163	0.939	0.943	0.168	0.163
df_r	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

D.Equity (Donated Equity), BORWG (Borrowing)

ROA (Return on Assets), AT (Asset Tangibility), PAR30 (Portfolio at Risk > 30 days), SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), C-CTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom), GNIg (Gross National Income growth), INF (Inflation), REALINT (Interest Rate), DEPINTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector).

Study Period 2004-2016

Table 0.4: MFI Capital Structure with MFI-Type Dummies.

	Leverage Model	BORWG Model	D.Equity Model	Deposit Model	Leverage Model	BORWG Model	D.Equity Model	Deposit Model	Leverage Model	BORWG Model	D.Equity Model	Deposit Model
Size	-0.256***	-0.330***	-0.033***	0.073***	-0.256***	-0.330***	-0.033***	0.073***	-0.256***	-0.330***	-0.033***	0.073***
	(0.043)	(0.043)	(0.008)	(0.007)	(0.043)	(0.043)	(0.008)	(0.007)	(0.043)	(0.043)	(0.008)	(0.007)
ROA	0.165	0.254	-0.147**	-0.089	0.165	0.254	-0.147**	-0.089	0.165	0.254	-0.147**	-0.089
	(0.263)	(0.264)	(0.047)	(0.046)	(0.263)	(0.264)	(0.047)	(0.046)	(0.263)	(0.264)	(0.047)	(0.046)
AT	0.004	-0.755	0.247*	0.759***	0.004	-0.755	0.247*	0.759***	0.004	-0.755	0.247*	0.759***
	(0.543)	(0.545)	(0.097)	(0.094)	(0.543)	(0.545)	(0.097)	(0.094)	(0.543)	(0.545)	(0.097)	(0.094)
PAR30	0.292	0.229	0.069	0.063	0.292	0.229	0.069	0.063	0.292	0.229	0.069	0.063
	(0.286)	(0.287)	(0.051)	(0.050)	(0.286)	(0.287)	(0.051)	(0.050)	(0.286)	(0.287)	(0.051)	(0.050)
SOIP	0.036*	0.026	0.009**	0.010***	0.036*	0.026	0.009**	0.010***	0.036*	0.026	0.009**	0.010***
	(0.016)	(0.016)	(0.003)	(0.003)	(0.016)	(0.016)	(0.003)	(0.003)	(0.016)	(0.016)	(0.003)	(0.003)
ENFCON	0.014	0.014	-0.003	0.001	0.014	0.014	-0.003	0.001	0.014	0.013	-0.003	0.001
	(0.011)	(0.011)	(0.002)	(0.002)	(0.011)	(0.011)	(0.002)	(0.002)	(0.011)	(0.011)	(0.002)	(0.002)
GOVEFF	0.006	-0.009	-0.126*	0.015	0.006	-0.009	-0.126*	0.015	0.006	-0.009	-0.126*	0.015
	(0.285)	(0.286)	(0.051)	(0.050)	(0.285)	(0.286)	(0.051)	(0.050)	(0.285)	(0.286)	(0.051)	(0.050)
ROL	0.245	0.282	0.070	-0.037	0.245	0.282	0.070	-0.037	0.245	0.282	0.070	-0.037
	(0.268)	(0.269)	(0.048)	(0.047)	(0.268)	(0.269)	(0.048)	(0.047)	(0.268)	(0.269)	(0.048)	(0.047)
C-CTRL	-0.150	-0.136	-0.052	-0.014	-0.150	-0.136	-0.052	-0.014	-0.150	-0.136	-0.052	-0.014
	(0.210)	(0.210)	(0.038)	(0.036)	(0.210)	(0.210)	(0.038)	(0.036)	(0.210)	(0.210)	(0.038)	(0.036)
MONF	-0.006	-0.005	-0.002*	-0.001	-0.006	-0.005	-0.002*	-0.001	-0.006	-0.005	-0.002*	-0.001
	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)
TRADEF	0.011*	0.010*	-0.003**	0.000	0.011*	0.010*	-0.003**	0.000	0.011*	0.010*	-0.003**	0.000
	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)
FINF	-0.003	-0.002	0.003***	-0.000	-0.003	-0.002	0.003***	-0.000	-0.003	-0.002	0.003***	-0.000
	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)

GNIg	0.001	0.001	0.004*	0.001	0.001	0.001	0.004*	0.001	0.001	0.001	0.004*	0.001
	(0.009)	(0.009)	(0.002)	(0.001)	(0.009)	(0.009)	(0.002)	(0.001)	(0.009)	(0.009)	(0.002)	(0.001)
INF	-0.010	-0.006	-0.001	-0.004**	-0.010	-0.006	-0.001	-0.004**	-0.010	-0.006	-0.001	-0.004**
	(0.008)	(0.008)	(0.001)	(0.001)	(0.008)	(0.008)	(0.001)	(0.001)	(0.008)	(0.008)	(0.001)	(0.001)
INT	-0.002	0.001	0.000	-0.002*	-0.002	0.001	0.000	-0.002*	-0.002	0.001	0.000	-0.002*
	(0.006)	(0.006)	(0.001)	(0.001)	(0.006)	(0.006)	(0.001)	(0.001)	(0.006)	(0.006)	(0.001)	(0.001)
D-INTR	0.011	0.0042	-0.0024	0.006**	0.011	0.004	-0.002	0.006**	0.011	0.004	-0.002	0.006**
	(0.013)	(0.013)	(0.002)	(0.002)	(0.013)	(0.013)	(0.002)	(0.002)	(0.013)	(0.013)	(0.002)	(0.002)
DCTPS	0.007	0.002	0.001	0.005***	0.007	0.002	0.001	0.005***	0.007	0.002	0.001	0.005***
	(0.006)	(0.007)	(0.001)	(0.001)	(0.006)	(0.007)	(0.001)	(0.001)	(0.006)	(0.007)	(0.001)	(0.001)
Bank	0	0	0	0								
	(.)	(.)	(.)	(.)								
CreditU					0	0	0	0				
					(.)	(.)	(.)	(.)				
MNO									0	0	0	0
									(.)	(.)	(.)	(.)
_cons	3.563***	4.513***	0.806***	-0.950***	3.563***	4.513***	0.806***	-0.950***	3.563***	4.513***	0.806***	-0.950***
	(0.829)	(0.832)	(0.149)	(0.144)	(0.829)	(0.832)	(0.149)	(0.144)	(0.829)	(0.832)	(0.149)	(0.144)
N	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929
R^2	0.029	0.044	0.086	0.228	0.029	0.044	0.086	0.228	0.029	0.044	0.086	0.228
adj. R^2	-0.374	-0.352	-0.293	-0.092	-0.374	-0.352	-0.293	-0.092	-0.374	-0.352	-0.293	-0.092
F	2.370	3.718	7.515	23.66	2.370	3.718	7.515	23.66	2.370	3.718	7.515	23.66
rmse	0.940	0.944	0.169	0.163	0.940	0.944	0.169	0.163	0.940	0.944	0.169	0.163
df r	1363	1363	1363	1363	1363	1363	1363	1363	1363	1363	1363	1363

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

D.Equity (Donated Equity), BORWG (Borrowing)

ROA (Return on Assets), AT (Asset Tangibility), PAR30 (Portfolio at Risk > 30 days), SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), C-CTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom), GNIg (Gross National Income growth), INF (Inflation), INT (Interest Rate), D-INTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector), CreditU (Credit Union), MNO (Mobile Network Operator).

Study Period 2004-2016

Continued…

	Leverage Model	BORWG Model	D.Equity Model	Deposit Model	Leverage Model	BORWG Model	D.Equity Model	Deposit Model	Leverage Model	BORWG Model	D.Equity Model	Deposit Model
Size	-0.256***	-0.330***	-0.033***	0.073***	-0.256***	-0.330***	-0.033***	0.073***	-0.256***	-0.330***	-0.033***	0.073***
	(0.043)	(0.043)	(0.008)	(0.007)	(0.043)	(0.043)	(0.008)	(0.007)	(0.043)	(0.043)	(0.008)	(0.007)
ROA	0.165	0.254	-0.147**	-0.089	0.165	0.254	-0.147**	-0.089	0.165	0.254	-0.147**	-0.089
	(0.263)	(0.264)	(0.047)	(0.046)	(0.263)	(0.264)	(0.047)	(0.046)	(0.263)	(0.264)	(0.047)	(0.046)
AT	0.004	-0.755	0.247*	0.759***	0.004	-0.755	0.247*	0.759***	0.004	-0.755	0.247*	0.759***
	(0.543)	(0.545)	(0.097)	(0.094)	(0.543)	(0.545)	(0.097)	(0.094)	(0.543)	(0.545)	(0.097)	(0.094)
PAR30	0.292	0.229	0.069	0.063	0.292	0.229	0.069	0.063	0.292	0.229	0.069	0.063
	(0.286)	(0.287)	(0.051)	(0.050)	(0.286)	(0.287)	(0.051)	(0.050)	(0.286)	(0.287)	(0.051)	(0.050)
SOIP	0.036*	0.026	0.009**	0.010***	0.036*	0.026	0.009**	0.010***	0.036*	0.026	0.009**	0.010***
	(0.016)	(0.016)	(0.003)	(0.003)	(0.016)	(0.016)	(0.003)	(0.003)	(0.016)	(0.016)	(0.003)	(0.003)
ENFCON	0.014	0.014	-0.003	0.001	0.014	0.014	-0.003	0.001	0.014	0.014	-0.003	0.001
	(0.011)	(0.011)	(0.002)	(0.002)	(0.011)	(0.011)	(0.002)	(0.002)	(0.011)	(0.011)	(0.002)	(0.002)
GOVEFF	0.060	-0.009	-0.126*	0.015	0.060	-0.009	-0.126*	0.015	0.060	-0.009	-0.126*	0.015
	(0.285)	(0.286)	(0.051)	(0.050)	(0.285)	(0.286)	(0.051)	(0.050)	(0.285)	(0.286)	(0.051)	(0.050)
ROL	0.245	0.282	0.070	-0.037	0.245	0.282	0.070	-0.037	0.245	0.282	0.070	-0.037
	(0.268)	(0.269)	(0.048)	(0.047)	(0.268)	(0.269)	(0.048)	(0.047)	(0.268)	(0.269)	(0.048)	(0.047)

C-CTRL	-0.150	-0.136	-0.052	-0.014	-0.150	-0.136	-0.052	-0.014	-0.150	-0.136	-0.052	-0.014
	(0.210)	(0.210)	(0.038)	(0.036)	(0.210)	(0.210)	(0.038)	(0.036)	(0.210)	(0.210)	(0.038)	(0.036)
MONF	-0.006	-0.005	-0.002*	-0.001	-0.006	-0.005	-0.002*	-0.001	-0.006	-0.005	-0.002*	-0.001
	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)
TRADEF	0.011*	0.010*	-0.003**	0.000	0.011*	0.010*	-0.003**	0.000	0.011*	0.010*	-0.001**	0.000
	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)
FINF	-0.001	-0.002	0.003***	-0.000	-0.003	-0.002	0.003***	-0.000	-0.003	-0.002	0.003***	-0.000
	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)
GNIg	0.001	0.001	0.004*	0.001	0.001	0.001	0.004*	0.001	0.001	0.001	0.004*	0.001
	(0.009)	(0.009)	(0.002)	(0.001)	(0.009)	(0.009)	(0.002)	(0.001)	(0.009)	(0.009)	(0.002)	(0.001)
INF	-0.010	-0.006	-0.001	-0.004**	-0.010	-0.006	-0.001	-0.004**	-0.010	-0.006	-0.001	-0.004**
	(0.008)	(0.008)	(0.001)	(0.001)	(0.008)	(0.008)	(0.001)	(0.001)	(0.008)	(0.008)	(0.001)	(0.001)
INT	-0.002	0.001	0.000	-0.002*	-0.002	0.001	0.000	-0.002*	-0.002	0.001	0.000	-0.002*
	(0.006)	(0.006)	(0.001)	(0.001)	(0.006)	(0.006)	(0.001)	(0.001)	(0.006)	(0.006)	(0.001)	(0.001)
D-INTR	0.011	0.004	-0.002	0.006**	0.011	0.004	-0.002	0.006**	0.011	0.004	-0.002	0.006**
	(0.013)	(0.013)	(0.002)	(0.002)	(0.013)	(0.013)	(0.002)	(0.002)	(0.013)	(0.013)	(0.002)	(0.002)
DCTPS	0.007	0.002	0.001	0.005***	0.007	0.002	0.001	0.005***	0.007	0.002	0.001	0.005***
	(0.006)	(0.007)	(0.001)	(0.001)	(0.006)	(0.007)	(0.001)	(0.001)	(0.006)	(0.007)	(0.001)	(0.001)
NBFI	0	0	0	0								
	(.)	(.)	(.)	(.)								
NGO					0	0	0	0				
					(.)	(.)	(.)	(.)				
RuralB									0	0	0	0
									(.)	(.)	(.)	(.)
_cons	3.563***	4.513***	0.806***	-0.950***	3.563***	4.513***	0.806***	-0.950***	3.563***	4.513***	0.806***	-0.950***
	(0.829)	(0.832)	(0.149)	(0.144)	(0.829)	(0.832)	(0.149)	(0.144)	(0.829)	(0.832)	(0.149)	(0.144)
N	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929

R^2	0.029	0.044	0.086	0.228	0.029	0.044	0.086	0.228	0.029	0.044	0.086	0.228
adj. R^2	-0.374	-0.352	-0.293	-0.092	-0.374	-0.352	-0.293	-0.092	-0.374	-0.352	-0.293	-0.092
F	2.370	3.718	7.515	23.66	2.370	3.718	7.515	23.66	2.370	3.718	7.515	23.66
rmse	0.940	0.944	0.169	0.163	0.940	0.944	0.169	0.163	0.940	0.944	0.169	0.163
df_r	1363	1363	1363	1363	1363	1363	1363	1363	1363	1363	1363	1363

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

D.Equity (Donated Equity), BORWG (Borrowing)

ROA (Return on Assets), AT (Asset Tangibility), PAR30 (Portfolio at Risk > 30 days), SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), C-CTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom), GNIg (Gross National Income growth), INF (Inflation), INT (Interest Rate), D-INTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector),), NBFI (Non Bank Financial Institution), NGO (Non Governmental Organisation), RuralB (Rural Bank).

Study Period 2004-2016

8.7.1 MFI Capital Structure with MFI Profit Status Types

Table 0.5: MFI Capital Structure with MFI Profit Status Types

	Leverage Model	BORWG Model	D.Equity Model	Deposit Model	Leverage Model	BORWG Model	D.Equity Model	Deposit Model
Size	-0.295***	-0.360***	-0.035***	0.065***	-0.258***	-0.332***	-0.035***	0.073***
	(0.045)	(0.045)	(0.008)	(0.008)	(0.043)	(0.043)	(0.008)	(0.008)
ROA	0.051	0.164	-0.154**	-0.113*	0.150	0.239	-0.159***	-0.089
	(0.265)	(0.267)	(0.048)	(0.046)	(0.264)	(0.265)	(0.047)	(0.046)
AT	-0.105	-0.841	0.240*	0.736***	-0.010	-0.769	0.235*	0.759***
	(0.543)	(0.546)	(0.098)	(0.094)	(0.543)	(0.546)	(0.097)	(0.094)
PAR30	0.262	0.205	0.067	0.057	0.290	0.227	0.068	0.063
	(0.285)	(0.287)	(0.051)	(0.049)	(0.286)	(0.287)	(0.051)	(0.050)
SOIP	0.036*	0.026	0.009**	0.010***	0.037*	0.027	0.010**	0.010***
	(0.016)	(0.016)	(0.003)	(0.003)	(0.016)	(0.016)	(0.003)	(0.003)
ENFCON	0.014	0.014	-0.003	0.000	0.014	0.014	-0.003	0.001
	(0.011)	(0.011)	(0.002)	(0.002)	(0.011)	(0.011)	(0.002)	(0.002)
GOVEFF	-0.012	-0.023	-0.127*	0.011	0.004	-0.010	-0.128*	0.011
	(0.284)	(0.286)	(0.051)	(0.049)	(0.285)	(0.286)	(0.051)	(0.050)
ROL	0.271	0.302	0.072	-0.031	0.251	0.287	0.075	-0.037
	(0.267)	(0.269)	(0.048)	(0.046)	(0.268)	(0.269)	(0.048)	(0.047)
C-CTRL	-0.166	-0.149	-0.053	-0.017	-0.156	-0.142	-0.057	-0.014
	(0.209)	(0.210)	(0.038)	(0.036)	(0.210)	(0.211)	(0.038)	(0.036)
MONF	-0.007	-0.006	-0.002*	-0.001	-0.006	-0.005	-0.001**	-0.001
	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)
TRADEF	0.010*	0.010*	-0.003**	0.000	0.011*	0.010*	-0.002**	0.000
	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)

FINF	-0.002	-0.002	0.003***	-0.000	-0.003	-0.002	0.003***	-0.000
	(0.005)	(0.005)	(0.001)	(0.001)	(0.005)	(0.005)	(0.001)	(0.001)
GNIg	0.001	0.000	0.004*	0.001	0.001	0.001	0.004*	0.001
	(0.009)	(0.009)	(0.002)	(0.001)	(0.009)	(0.009)	(0.002)	(0.001)
INF	-0.010	-0.005	-0.001	-0.004**	-0.010	-0.005	-0.001	-0.004**
	(0.008)	(0.008)	(0.001)	(0.001)	(0.008)	(0.008)	(0.001)	(0.001)
INT	-0.002	0.000	0.000	-0.003*	-0.002	0.001	0.000	-0.002*
	(0.006)	(0.006)	(0.001)	(0.001)	(0.006)	(0.006)	(0.001)	(0.001)
D-INTR	0.011	0.004	-0.002	0.006**	0.011	0.004	-0.002	0.006**
	(0.013)	(0.013)	(0.002)	(0.002)	(0.013)	(0.013)	(0.002)	(0.002)
DCTPS	0.006	0.002	0.001	0.004***	0.007	0.002	0.002	0.005***
	(0.006)	(0.007)	(0.001)	(0.001)	(0.006)	(0.007)	(0.001)	(0.001)
NonP	-0.286**	-0.224*	-0.017	-0.062***				
	(0.101)	(0.102)	(0.018)	(0.018)				
Prof					0.045	0.043	0.036**	0.002
					(0.072)	(0.072)	(0.013)	(0.012)
_cons	4.269***	5.067***	0.848***	-0.797***	3.573***	4.522***	0.814***	-0.949***
	(0.864)	(0.868)	(0.155)	(0.150)	(0.829)	(0.832)	(0.148)	(0.144)
N	1929	1929	1929	1929	1929	1929	1929	1929
R^2	0.034	0.048	0.086	0.235	0.029	0.045	0.091	0.228
adj. R^2	-0.367	-0.348	-0.293	-0.083	-0.375	-0.352	-0.287	-0.093
F	2.693	3.791	7.145	23.22	2.259	3.530	7.572	22.33
rmse	0.938	0.942	0.169	0.163	0.940	0.944	0.168	0.163
df_r	1362	1362	1362	1362	1362	1362	1362	1362

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.00$

D.Equity (Donated Equity), BORWG (Borrowing)

ROA (Return on Assets), AT (Asset Tangibility), PAR30 (Portfolio at Risk > 30 days), SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), C-CTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom), GNIg (Gross National Income growth), INF (Inflation), INT (Interest Rate), D-INTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector), NonP (Non Profit MFIs), Prof (For Profit MFIs).

Study Period 2004-2016

8.7.2 MFI Leverage Result with year Dummies

Table 0.6: MFI Leverage Result with year Dummies.

LEVERAGE MODEL RESULTS WITH YEAR DUMMIES (FIXED EFFECT)													
Size	-0.263***	-0.257***	-0.289***	-0.246***	-0.255***	-0.254***	-0.257***	-0.260***	-0.261***	-0.261***	-0.259***	-0.267***	-0.262***
	(0.043)	(0.043)	(0.045)	(0.044)	(0.043)	(0.043)	(0.043)	(0.043)	(0.043)	(0.043)	(0.043)	(0.044)	(0.043)
ROA	0.152	0.170	0.211	0.159	0.149	0.150	0.166	0.164	0.157	0.161	0.165	0.153	0.171
	(0.263)	(0.263)	(0.263)	(0.263)	(0.263)	(0.263)	(0.263)	(0.263)	(0.263)	(0.263)	(0.263)	(0.263)	(0.263)
AT	-0.027	0.003	-0.077	0.022	0.017	0.018	0.000	0.041	-0.002	-0.017	-0.013	-0.028	-0.015
	(0.544)	(0.543)	(0.543)	(0.543)	(0.543)	(0.543)	(0.543)	(0.544)	(0.543)	(0.543)	(0.543)	(0.543)	(0.543)
PAR30	0.292	0.293	0.296	0.307	0.295	0.302	0.293	0.290	0.295	0.297	0.293	0.294	0.272
	(0.286)	(0.286)	(0.285)	(0.286)	(0.286)	(0.286)	(0.286)	(0.286)	(0.286)	(0.286)	(0.286)	(0.286)	(0.287)
SOIP	0.029	0.033	0.058**	0.032	0.038*	0.038*	0.0360	0.037*	0.035*	0.035*	0.0363	0.046**	0.040*
	(0.018)	(0.019)	(0.018)	(0.017)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.018)	(0.017)
ENCON	0.014	0.014	0.015	0.015	0.015	0.014	0.014	0.015	0.014	0.015	0.013	0.013	0.014
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
GOVEFF	0.052	-0.015	-0.031	-0.006	0.041	-0.001	0.014	0.003	-0.005	-0.015	0.018	-0.004	0.026
	(0.289)	(0.291)	(0.285)	(0.285)	(0.288)	(0.285)	(0.287)	(0.285)	(0.285)	(0.286)	(0.285)	(0.285)	(0.286)
ROL	0.220	0.246	0.383	0.235	0.228	0.229	0.250	0.281	0.246	0.255	0.212	0.214	0.187
	(0.269)	(0.268)	(0.272)	(0.268)	(0.268)	(0.268)	(0.268)	(0.270)	(0.268)	(0.268)	(0.272)	(0.268)	(0.275)
C-CTRL	-0.165	-0.145	-0.196	-0.167	-0.145	-0.135	-0.156	-0.165	-0.131	-0.126	-0.128	-0.110	-0.222
	(0.210)	(0.210)	(0.210)	(0.210)	(0.210)	(0.210)	(0.211)	(0.210)	(0.211)	(0.212)	(0.212)	(0.211)	(0.223)
MONF	-0.005	-0.006	-0.003	-0.005	-0.006	-0.006	-0.006	-0.005	-0.006	-0.006	-0.006	-0.005	-0.006
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
TRADEF	0.010*	0.011*	0.007	0.010*	0.010*	0.011*	0.010*	0.010*	0.011*	0.011*	0.010*	0.010*	0.010*
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)

FINF	-0.002 (0.005)	-0.003 (0.005)	-0.003 (0.005)	-0.003 (0.005)	-0.002 (0.005)	-0.003 (0.005)	-0.003 (0.005)	-0.003 (0.005)	-0.003 (0.005)	-0.002 (0.005)	-0.002 (0.005)	-0.003 (0.005)	-0.002 (0.005)
GNIg	0.001 (0.009)	0.001 (0.009)	0.000 (0.009)	0.001 (0.009)	0.002 (0.009)	0.000 (0.009)	0.001 (0.009)	0.002 (0.009)	0.001 (0.009)	0.001 (0.009)	0.001 (0.009)	0.001 (0.009)	0.002 (0.009)
INF	-0.011 (0.008)	-0.010 (0.008)	-0.011 (0.008)	-0.009 (0.008)	-0.007 (0.009)	-0.010 (0.008)	-0.010 (0.008)	-0.011 (0.008)	-0.011 (0.008)	-0.010 (0.008)	-0.009 (0.008)	-0.009 (0.008)	-0.010 (0.008)
INT	-0.001 (0.006)	-0.002 (0.006)	-0.002 (0.006)	-0.003 (0.006)	-0.002 (0.006)	-0.002 (0.006)	-0.002 (0.006)	-0.002 (0.006)	-0.001 (0.006)	-0.002 (0.006)	-0.002 (0.006)	-0.001 (0.006)	-0.002 (0.006)
D-INTR	0.008 (0.014)	0.011 (0.013)	0.011 (0.013)	0.009 (0.013)	0.011 (0.013)	0.011 (0.013)	0.011 (0.013)	0.012 (0.013)	0.010 (0.013)	0.011 (0.013)	0.011 (0.013)	0.008 (0.013)	0.009 (0.013)
DCTPS	0.007 (0.006)	0.007 (0.006)	0.004 (0.007)	0.007 (0.007)	0.007 (0.006)	0.007 (0.006)	0.007 (0.006)	0.006 (0.007)	0.007 (0.006)	0.007 (0.006)	0.006 (0.007)	0.006 (0.007)	0.007 (0.006)
Y2004	-0.118 (0.115)												
Y2005		-0.036 (0.105)											
Y2006			-0.235** (0.089)										
Y2007				0.109 (0.077)									
Y2008					-0.077 (0.085)								
Y2009						-0.073 (0.083)							
Y2010							0.021 (0.088)						

Y2011								0.095					
								(0.099)					
Y2012									0.092				
									(0.102)				
Y2013										0.090			
										(0.104)			
Y2014											0.084		
											(0.116)		
Y2015												0.331	
												(0.227)	
Y2016													0.374
													(0.398)
_cons	3.691***	3.607***	4.134***	3.367***	3.487***	3.519***	3.567***	3.616***	3.676***	3.621***	3.633***	3.735***	3.553***
	(0.838)	(0.839)	(0.855)	(0.840)	(0.833)	(0.830)	(0.829)	(0.830)	(0.838)	(0.831)	(0.834)	(0.837)	(0.829)
N	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929
R^2	0.029	0.029	0.034	0.030	0.029	0.029	0.029	0.029	0.029	0.029	0.029	0.030	0.029
adj. R^2	-0.374	-0.375	-0.368	-0.373	-0.374	-0.374	-0.375	-0.374	-0.374	-0.374	-0.374	-0.373	-0.374
F	2.297	2.243	2.637	2.351	2.283	2.280	2.240	2.290	2.283	2.279	2.266	2.358	2.287
rmse	0.940	0.940	0.938	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940
df_r	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

ROA (Return on Assets), AT (Asset Tangibility), PAR30 (Portfolio at Risk > 30 days), SOIP (Strength of Investor Protection), ENCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), C-CTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom), GNIg (Gross National Income growth), INF (Inflation), INT (Interest Rate), D-INTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector), Y2004-Y2016 (Year Dummies).

Study Period 2004-2016

8.7.3 Borrowing Model with Year Dummies

Table 0.7: Borrowing Model with Year Dummies.

	BORROWING MODEL WITH YEAR DUMMY RESULTS (FIXED EFFECTS)												
Size	-0.334***	-0.330***	-0.361***	-0.318***	-0.328***	-0.327***	-0.331***	-0.333***	-0.334***	-0.334***	-0.332***	-0.336***	-0.334***
	(0.044)	(0.043)	(0.045)	(0.044)	(0.043)	(0.043)	(0.043)	(0.043)	(0.044)	(0.044)	(0.043)	(0.044)	(0.044)
ROA	0.245	0.255	0.299	0.247	0.235	0.235	0.256	0.253	0.246	0.250	0.253	0.246	0.259
	(0.264)	(0.264)	(0.264)	(0.264)	(0.264)	(0.264)	(0.264)	(0.264)	(0.264)	(0.264)	(0.264)	(0.264)	(0.264)
AT	-0.776	-0.755	-0.834	-0.735	-0.740	-0.738	-0.764	-0.728	-0.761	-0.774	-0.772	-0.775	-0.770
	(0.546)	(0.545)	(0.545)	(0.545)	(0.545)	(0.545)	(0.545)	(0.546)	(0.545)	(0.546)	(0.546)	(0.545)	(0.545)
PAR30	0.229	0.229	0.233	0.246	0.232	0.242	0.231	0.227	0.231	0.234	0.230	0.230	0.213
	(0.287)	(0.287)	(0.286)	(0.287)	(0.287)	(0.287)	(0.287)	(0.287)	(0.287)	(0.287)	(0.287)	(0.287)	(0.288)
SOIP	0.022	0.026	0.047*	0.022	0.028	0.028	0.026	0.026	0.026	0.025	0.026	0.032	0.029
	(0.018)	(0.019)	(0.018)	(0.017)	(0.017)	(0.017)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.018)	(0.017)
ENFCON	0.013	0.014	0.014	0.014	0.015	0.014	0.014	0.014	0.014	0.014	0.013	0.013	0.013
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
GOVEFF	0.022	-0.012	-0.045	-0.022	0.033	-0.018	0.008	-0.011	-0.019	-0.028	0.0032	-0.015	0.007
	(0.290)	(0.292)	(0.286)	(0.286)	(0.289)	(0.286)	(0.288)	(0.286)	(0.286)	(0.287)	(0.287)	(0.286)	(0.287)
ROL	0.266	0.282	0.416	0.270	0.261	0.262	0.292	0.309	0.282	0.291	0.248	0.263	0.237
	(0.270)	(0.269)	(0.273)	(0.269)	(0.269)	(0.269)	(0.269)	(0.271)	(0.269)	(0.269)	(0.273)	(0.270)	(0.276)
C-CTRL	-0.146	-0.136	-0.181	-0.155	-0.131	-0.117	-0.148	-0.147	-0.119	-0.115	-0.113	-0.111	-0.193
	(0.211)	(0.211)	(0.211)	(0.211)	(0.211)	(0.211)	(0.212)	(0.211)	(0.212)	(0.212)	(0.213)	(0.212)	(0.224)
MONF	-0.005	-0.005	-0.002	-0.004	-0.005	-0.005	-0.005	-0.005	-0.006	-0.005	-0.005	-0.005	-0.005
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
TRADEF	0.010*	0.010*	0.007	0.009*	0.010*	0.010*	0.010*	0.010*	0.010*	0.010*	0.010*	0.010*	0.010*
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)

FINF	-0.002 (0.005)	-0.002 (0.005)	-0.003 (0.005)	-0.003 (0.005)	-0.002 (0.005)	-0.002 (0.005)	-0.002 (0.005)	-0.002 (0.005)	-0.002 (0.005)	-0.002 (0.005)	-0.002 (0.005)	-0.003 (0.005)	-0.002 (0.005)
GNIg	0.000 (0.009)	0.001 (0.009)	-0.000 (0.009)	0.000 (0.009)	0.001 (0.009)	-0.001 (0.009)	0.000 (0.009)	0.001 (0.009)	0.000 (0.009)	0.000 (0.009)	0.000 (0.009)	0.000 (0.009)	0.001 (0.009)
INF	-0.006 (0.008)	-0.006 (0.008)	-0.007 (0.008)	-0.005 (0.008)	-0.003 (0.009)	-0.006 (0.008)	-0.005 (0.008)	-0.006 (0.008)	-0.006 (0.008)	-0.005 (0.008)	-0.005 (0.008)	-0.005 (0.008)	-0.005 (0.008)
REALINT	0.001 (0.006)	0.001 (0.006)	0.001 (0.006)	-0.000 (0.006)	0.000 (0.006)	0.001 (0.006)	0.001 (0.006)	0.001 (0.006)	0.001 (0.006)	0.000 (0.006)	0.000 (0.006)	0.001 (0.006)	0.001 (0.006)
DEPINTR	0.003 (0.014)	0.004 (0.013)	0.005 (0.013)	0.003 (0.013)	0.004 (0.013)	0.005 (0.013)	0.004 (0.013)	0.005 (0.013)	0.004 (0.013)	0.004 (0.013)	0.005 (0.013)	0.002 (0.013)	0.003 (0.013)
DCTPS	0.002 (0.007)	0.002 (0.007)	-0.001 (0.007)	0.003 (0.007)	0.003 (0.007)	0.002 (0.007)	0.002 (0.007)	0.002 (0.007)	0.002 (0.007)	0.002 (0.007)	0.002 (0.007)	0.002 (0.007)	0.002 (0.007)
Y2004	-0.078 (0.115)												
Y2005		-0.0062 (0.105)											
Y2006			-0.228* (0.089)										
Y2007				0.123 (0.077)									
Y2008					-0.091 (0.085)								
Y2009						-0.094 (0.083)							
Y2010							0.045 (0.088)						

Y2011								0.071					
								(0.099)					
Y2012									0.083				
									(0.103)				
Y2013										0.081			
										(0.104)			
Y2014											0.085		
											(0.116)		
Y2015												0.208	
												(0.228)	
Y2016													0.296
													(0.400)
_cons	4.597***	4.520***	5.067***	4.292***	4.422***	4.455***	4.520***	4.552***	4.614***	4.565***	4.584***	4.621***	4.505***
	(0.841)	(0.842)	(0.858)	(0.843)	(0.836)	(0.833)	(0.832)	(0.834)	(0.841)	(0.835)	(0.838)	(0.840)	(0.832)
N	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929
R^2	0.045	0.044	0.049	0.046	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045
adj. R^2	-0.352	-0.353	-0.346	-0.350	-0.352	-0.352	-0.353	-0.352	-0.352	-0.352	-0.352	-0.352	-0.352
F	3.536	3.509	3.890	3.655	3.575	3.582	3.524	3.539	3.547	3.543	3.540	3.557	3.541
rmse	0.944	0.944	0.942	0.943	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944	0.944
df_r	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

ROA (Return on Assets), AT (Asset Tangibility), PAR30 (Portfolio at Risk > 30 days), SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), C-CTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom), GNIg (Gross National Income growth), INF (Inflation), INT (Interest Rate), D-INTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector), Y2004-Y2016 (Year Dummies).

Study Period 2004-2016

8.7.4 MFI Capital Structure: Deposit Model

Table 0.8: MFI Capital Structure: Deposit Model.

	DEPOSIT MODEL WITH YEAR DUMMIES (FIXED EFFECT)												
Size	0.071***	0.072***	0.072***	0.072***	0.073***	0.073***	0.074***	0.072***	0.0723**	0.073***	0.073***	0.069***	0.072***
	(0.008)	(0.007)	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)	(0.007)	(0.008)	(0.008)
ROA	-0.093*	-0.085	-0.087	-0.088	-0.086	-0.085	-0.090*	-0.089	-0.090	-0.089	-0.089	-0.093*	-0.087
	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)
AT	0.749***	0.758***	0.757***	0.757***	0.757***	0.755***	0.764***	0.769***	0.759***	0.757***	0.760***	0.747***	0.755***
	(0.094)	(0.094)	(0.094)	(0.094)	(0.094)	(0.094)	(0.094)	(0.095)	(0.094)	(0.094)	(0.094)	(0.094)	(0.094)
PAR30	0.063	0.064	0.063	0.061	0.063	0.060	0.062	0.063	0.063	0.064	0.063	0.064	0.060
	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)
SOIP	0.008*	0.007*	0.011***	0.011***	0.010***	0.010***	0.010***	0.010***	0.010***	0.010***	0.010***	0.014***	0.011***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
ENFCON	0.000	0.000	0.001	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
GOVEFF	0.030	-0.002	0.013	0.016	0.008	0.017	0.006	0.014	0.014	0.012	0.014	0.011	0.019
	(0.050)	(0.051)	(0.050)	(0.050)	(0.050)	(0.050)	(0.050)	(0.049)	(0.050)	(0.050)	(0.050)	(0.049)	(0.050)
ROL	-0.045	-0.036	-0.033	-0.036	-0.034	-0.032	-0.042	-0.028	-0.037	-0.036	-0.036	-0.049	-0.049
	(0.047)	(0.046)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.048)
C-CTRL	-0.019	-0.009	-0.015	-0.012	-0.015	-0.018	-0.007	-0.018	-0.012	-0.011	-0.014	0.0013	-0.029
	(0.036)	(0.037)	(0.037)	(0.036)	(0.036)	(0.037)	(0.037)	(0.037)	(0.037)	(0.037)	(0.037)	(0.037)	(0.039)
MONF	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
TRADEF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
FINF	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
GNIg	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
INF	-0.005***	-0.004**	-0.004**	-0.004**	-0.005**	-0.004**	-0.005***	-0.004**	-0.004**	-0.004**	-0.004**	-0.004**	-0.004**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)

INT	-0.002*	-0.003*	-0.002*	-0.002*	-0.002*	-0.002*	-0.003*	-0.002*	-0.002*	-0.002*	-0.002*	-0.002*	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
D-INTR	0.006*	0.006**	0.006**	0.007**	0.006**	0.006**	0.006**	0.007**	0.006**	0.006**	0.006**	0.005*	0.006**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
DCTPS	0.005***	0.005***	0.004***	0.004***	0.004***	0.005***	0.004***	0.004***	0.005***	0.005***	0.005***	0.004***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Y2004	-0.040*												
	(0.020)												
Y2005		-0.030											
		(0.018)											
Y2006			-0.007										
			(0.015)										
Y2007				-0.014									
				(0.013)									
Y2008					0.014								
					(0.015)								
Y2009						0.021							
						(0.014)							
Y2010							-0.024						
							(0.015)						
Y2011								0.024					
								(0.017)					
Y2012									0.090				
									(0.018)				
Y2013										0.009			
										(0.018)			
Y2014											-0.001		
											(0.020)		
Y2015												0.123**	
												(0.039)	
Y2016													0.08
													(0.069)

_cons	-0.907***	-0.913***	-0.933***	-0.925***	-0.936***	-0.937***	-0.954***	-0.936***	-0.939***	-0.944***	-0.951***	-0.886***	-0.952***
	(0.145)	(0.146)	(0.149)	(0.146)	(0.145)	(0.144)	(0.144)	(0.144)	(0.146)	(0.144)	(0.145)	(0.145)	(0.144)
N	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929
R^2	0.230	0.229	0.228	0.228	0.228	0.229	0.229	0.229	0.228	0.228	0.228	0.233	0.229
adj. R^2	-0.090	-0.091	-0.093	-0.092	-0.092	-0.091	-0.091	-0.091	-0.093	-0.093	-0.093	-0.085	-0.092
F	22.61	22.53	22.34	22.40	22.40	22.48	22.51	22.48	22.35	22.35	22.33	23.03	22.42
rmse	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163	0.163
df_r	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

ROA (Return on Assets), AT (Asset Tangibility), PAR30 (Portfolio at Risk > 30 days), SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), C-CTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom), GNIg (Gross National Income growth), INF (Inflation), INT (Interest Rate), D-INTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector), Y2004-Y2016 (Year Dummies).

Study Period 2004-2016

8.7.5 MFI Capital structure: Donated Equity Model with Year Dummies

Table 0.9: Donated Equity Model with Year Dummies.

	DONATED EQUITY MODEL WITH YEAR DUMMIES FIXED EFFECT												
Size	-0.034***	-0.033***	-0.025**	-0.032***	-0.033***	-0.032***	-0.032***	-0.033***	-0.032***	-0.031***	-0.032***	-0.034***	-0.036***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
ROA	-0.149**	-0.146**	-0.158***	-0.147**	-0.143**	-0.152**	-0.148**	-0.147**	-0.146**	-0.146**	-0.147**	-0.148**	-0.143**
	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)	(0.047)
AT	0.242*	0.246*	0.266**	0.247*	0.243*	0.251*	0.252**	0.251*	0.247*	0.253**	0.250*	0.243*	0.234*
	(0.098)	(0.097)	(0.097)	(0.097)	(0.097)	(0.097)	(0.097)	(0.098)	(0.097)	(0.097)	(0.097)	(0.097)	(0.097)
PAR30	0.069	0.069	0.068	0.070	0.068	0.072	0.068	0.069	0.069	0.068	0.069	0.069	0.057
	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)
SOIP	0.008*	0.008*	0.004	0.009**	0.009**	0.009**	0.009**	0.009**	0.009**	0.009**	0.009**	0.010**	0.012***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
ENCON	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
GOVEFF	-0.119*	-0.130*	-0.117*	-0.127*	-0.135**	-0.129*	-0.137**	-0.127*	-0.125*	-0.120*	-0.128*	-0.127*	-0.113*
	(0.052)	(0.052)	(0.051)	(0.051)	(0.052)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)	(0.051)
ROL	0.067	0.071	0.037	0.070	0.075	0.065	0.064	0.074	0.070	0.068	0.076	0.067	0.033
	(0.048)	(0.048)	(0.049)	(0.048)	(0.048)	(0.048)	(0.048)	(0.048)	(0.048)	(0.048)	(0.049)	(0.048)	(0.049)
C-CTRL	-0.054	-0.051	-0.041	-0.053	-0.053	-0.047	-0.044	-0.054	-0.054	-0.059	-0.056	-0.048	-0.099*
	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)	(0.038)	(0.040)
MONF	-0.002*	-0.002*	-0.003**	-0.002*	-0.002*	-0.002*	-0.003**	-0.002*	-0.002*	-0.002*	-0.002*	-0.002*	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
TRADEF	-0.003**	-0.003**	-0.002*	-0.003**	-0.003**	-0.003**	-0.003**	-0.003**	-0.003**	-0.003**	-0.003**	-0.003**	-0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)

FINF	0.003***	0.003**	0.003***	0.003***	0.003***	0.003***	0.003***	0.003***	0.003***	0.003***	0.003**	0.003**	0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
GNIg	0.004*	0.004*	0.004**	0.004*	0.004*	0.003*	0.004*	0.004*	0.004*	0.004*	0.004*	0.004*	0.004*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
INF	-0.001	-0.0001	-0.001	-0.001	-0.002	-0.001	-0.002	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
INT	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
D-INT	-0.003	-0.002	-0.003	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.003	-0.004
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
DCTPS	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Y2004	-0.018												
	(0.021)												
Y2005		-0.007											
		(0.019)											
Y2006			0.057***										
			(0.016)										
Y2007				0.004									
				(0.014)									
Y2008					0.020								
					(0.015)								
Y2009						-0.023							
						(0.015)							
Y2010							-0.031						
							(0.016)						

Y2011								0.011					
								(0.018)					
Y2012									-0.010				
									(0.018)				
Y2013										-0.026			
										(0.019)			
Y2014											-0.015		
											(0.021)		
Y2015												0.032	
												(0.041)	
Y2016													0.241***
													(0.071)
_cons	0.825***	0.814***	0.668***	0.799***	0.825***	0.792***	0.801***	0.812***	0.793***	0.789***	0.793***	0.823***	0.800***
	(0.150)	(0.150)	(0.153)	(0.151)	(0.149)	(0.149)	(0.149)	(0.149)	(0.150)	(0.149)	(0.150)	(0.150)	(0.148)
N	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929	1929
R^2	0.086	0.086	0.094	0.086	0.087	0.087	0.088	0.086	0.086	0.087	0.086	0.086	0.093
adj. R^2	-0.294	-0.294	-0.282	-0.294	-0.293	-0.292	-0.291	-0.294	-0.294	-0.292	-0.294	-0.294	-0.283
F	7.138	7.100	7.869	7.097	7.194	7.242	7.326	7.116	7.111	7.208	7.123	7.130	7.788
rmse	0.169	0.169	0.168	0.169	0.169	0.169	0.168	0.169	0.169	0.169	0.169	0.169	0.168
df_r	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362	1362

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

ROA (Return on Assets), AT (Asset Tangibility), PAR30 (Portfolio at Risk > 30 days), SOIP (Strength of Investor Protection), ENCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), C-CTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom), GNIg (Gross National Income growth), INF (Inflation), INT (Interest Rate), D-INTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector), Y2004-Y2016 (Year Dummies).

Study Period 2004-2016

8.8 SUMMARY STATISTICS

8.8.1 MFI Summary of Donated Equity (SSA).

Table 0.10: SSA MFI Summary of Donated Equity.

Summary of *DONEQ							
Country	Mean	Std.Dev.	Freq.	Country	Mean	Std.Dev.	Freq.
Angola	0.001	0.005	15				
Benin	0.050	0.083	145	Madagascar	0.056	0.099	108
Burkina Faso	0.051	0.125	114	Malawi	0.174	0.411	59
Burundi	0.071	0.135	98	Mali	0.055	0.122	119
Cameroon	0.021	0.076	132	Mozambique	0.245	0.715	71
CAR	0.031	0.031	8	Namibia	0.140	0.099	8
Chad	0.044	0.058	14	Niger	0.034	0.106	93
Comoros	0.057	0.021	4	Nigeria	0.011	0.069	232
Congo Democratic	0.130	0.396	98	Rwanda	0.073	0.160	100
Congo Republic	0.132	0.240	26	Senegal	0.043	0.085	169
Cote d'Ivoire	0.028	0.174	68	Sierra Leone	0.175	0.280	52
Ethiopia	0.199	0.283	135	South Africa	0.072	0.224	37
Gabon	0.093	0.064	2	Sudan	0.368	0.416	13
The Gambia	0.049	0.097	15	Swaziland	0.000	0.000	9
Ghana	0.064	0.197	269	Tanzania	0.082	0.174	117
Guinea	0.085	0.194	34	Togo	0.059	0.184	114
Guinea-Bissau	0.000	0.000	11	Uganda	0.109	0.244	128
Kenya	0.027	0.106	207	Zambia	0.113	0.355	49
Liberia	0.148	0.177	17	Zimbabwe	0.037	0.135	13
				Total	0.073	0.222	2,903

*DONEQ (Donated Equity). Period: 2004-2016

8.8.2 MFI Summary of Leverage

Table 0.11: MFI Summary of Leverage SSA.

Summary of LEVERAGE

Country	Mean	Std.Dev.	Freq.	Country	Mean	Std.Dev.	Freq.
Angola	0.585	0.220	15				
Benin	0.713	0.310	145	Madagascar	0.653	0.230	108
Burkina Faso	0.684	0.501	114	Malawi	0.559	0.456	59
Burundi	0.659	0.351	98	Mali	0.723	0.213	119
Cameroon	0.749	0.270	132	Mozambique	0.494	0.222	71
CAR	0.958	0.050	8	Namibia	0.713	0.153	8
Chad	0.665	0.117	14	Niger	0.568	0.258	93
Comoros	0.790	0.047	4	Nigeria	0.500	0.413	232
Congo Democratic	0.601	0.330	98	Rwanda	1.034	3.982	100
Congo Republic	0.780	0.235	26	Senegal	0.807	1.208	169
Cote d'Ivoire	1.097	0.912	68	Sierra Leone	0.417	0.275	52
Ethiopia	0.563	0.189	135	South Africa	0.546	0.296	37
Gabon	0.265	0.268	2	Sudan	0.250	0.236	13
The Gambia	0.622	0.312	15	Swaziland	0.602	0.112	9
Ghana	0.684	0.308	269	Tanzania	0.615	0.324	117
Guinea	0.707	0.350	34	Togo	0.833	0.315	114
Guinea-Bissau	0.910	0.124	11	Uganda	0.670	0.254	128
Kenya	0.645	0.289	207	Zambia	0.476	0.289	49
Liberia	0.463	0.239	17	Zimbabwe	0.641	0.301	13
				Total	0.671	0.866	2,903

Study Period: 2004-2016

8.8.3 MFI Summary of Borrowings to Total Asset

Table 0.12: MFI Summary of Borrowings to Book Value of Total Asset.

Summary of *BRWNGTBVA

Country	Mean	Std.Dev.	Freq.	Country	Mean	Std.Dev.	Freq.
Angola	0.444	0.229	15				
Benin	0.362	0.354	145	Madagascar	0.332	0.271	108
Burkina Faso	0.223	0.511	114	Malawi	0.371	0.385	59
Burundi	0.235	0.240	98	Mali	0.447	0.296	119
Cameroon	0.307	0.345	132	Mozambique	0.264	0.182	71
CAR	0.278	0.429	8	Namibia	0.550	0.119	8
Chad	0.411	0.342	14	Niger	0.281	0.271	93
Comoros	0.075	0.053	4	Nigeria	-0.056	0.736	232
Congo Democratic	0.321	0.361	98	Rwanda	0.653	4.023	100
Congo Republic	0.242	0.285	26	Senegal	0.419	1.209	169
Cote d'Ivoire	0.325	0.540	68	Sierra Leone	0.338	0.270	52
Ethiopia	0.327	0.173	135	South Africa	0.460	0.315	37
Gabon	0.039	0.033	2	Sudan	0.188	0.208	13
The Gambia	0.243	0.215	15	Swaziland	0.546	0.198	9
Ghana	0.239	0.315	269	Tanzania	0.248	0.387	117
Guinea	0.477	0.448	34	Togo	0.281	0.406	114
Guinea-Bissau	0.910	0.124	11	Uganda	0.405	0.271	128
Kenya	0.313	0.302	207	Zambia	0.408	0.277	49
Liberia	0.308	0.204	17	Zimbabwe	0.641	0.301	13
				Total	0.307	0.889	2,903

*BRWNGTBVA (Borrowing to Book Value of Asset). Study Period 2004-2016.

8.9 EMPIRICAL CHAPTER 2 APPENDICES

8.9.1 Figures and Results Tables

Table 0.13: MFI Yearly Statistics - SSA.

	Overall		Between		Within
Fiscal Year	Freq	Percent	Freq	Percent	Percent
2004	201	6.23	201	27.84	21.08
2005	253	7.84	253	35.04	20.06
2006	265	8.21	265	36.7	19.71
2007	269	8.33	269	37.26	19.21
2008	288	8.92	288	39.89	19.5
2009	342	10.59	342	47.37	21.91
2010	324	10.04	324	44.88	21.4
2011	312	9.67	312	43.21	26.52
2012	307	9.51	307	42.52	32.94
2013	204	6.32	204	28.25	22.32
2014	171	5.3	171	23.68	22.32
2015	174	5.39	174	24.1	20.91
2016	118	3.66	118	16.34	17.47
Total	3228	100	3228	447.09	22.37

(n=722)

Table 0.14: MFI by Country Statistics.

Country	Freq.	Percent	Cum.
Angola	16	0.5	0.5
Benin	166	5.14	5.64
Burkina Faso	123	3.81	9.45
Burundi	113	3.5	12.95
Cameroon	148	4.58	17.53
CAR	8	0.25	17.78
Chad	14	0.43	18.22
Comoros	4	0.12	18.34
Congo, Democratic Republic of the	106	3.28	21.62
Congo, Republic of the	28	0.87	22.49
Cote d'Ivoire (Ivory Coast)	78	2.42	24.91
Ethiopia	144	4.46	29.37
Gabon	4	0.12	29.49
Gambia, The	16	0.5	29.99
Ghana	301	9.32	39.31
Guinea	38	1.18	40.49
Guinea-Bissau	12	0.37	40.86
Kenya	224	6.94	47.8
Liberia	18	0.56	48.36
Madagascar	111	3.44	51.8
Malawi	62	1.92	53.72
Mali	123	3.81	57.53
Mozambique	77	2.39	59.91
Namibia	8	0.25	60.16
Niger	99	3.07	63.23
Nigeria	271	8.4	71.62
Rwanda	156	4.83	76.46
Senegal	176	5.45	81.91
Sierra Leone	52	1.61	83.52
South Africa	37	1.15	84.67
South Sudan	17	0.53	85.19
Sudan	13	0.4	85.59
Swaziland	9	0.28	85.87
Tanzania	133	4.12	89.99
Togo	120	3.72	93.71
Uganda	138	4.28	97.99
Zambia	51	1.58	99.57
Zimbabwe	14	0.43	100
Total	3,228	100	

Table 0.15: Variable Summary and Description.

Variable	Description	Measure	Source
Operational self-sufficiency	MFIs ability to cover its cost through operating revenues	Measured as the ratio of operating revenue to expenses (CGAP, 2003)	*The MIX
Profitability	Measures MFI ability to utilise shareholder resources and obtain a return on these resources	Return on Asset (ROA)	The MIX
Efficiency	Indicates MFI ability to efficiently utilise resources in its core mission	Cost Per Borrower (CPB)	The MIX
Portfolio Quality	Indicates the health of an MFIs loan books	PAR>30 days	The MIX
Social	Measures the Social performance of MFIs. In particular, MFIs ability to lend to female borrowers	Percentage of Female Borrowers (PFB)	The MIX
Depth	Measures the depth of MFI borrowing. Specifically, their reach down the poverty ladder (down the pyramid)	Average Loan Balance Per Borrower (ALPB)	The MIX
Breadth	Measures MFIs breadth of reach. Specifically, how far along the poverty spectrum can the MFIs reach	Number of Active Borrowers (NAB)	The MIX
FIRM SPECIFIC MEASURES			
Asset Tangibility	Measures the total tangible assets of MFIs as relates to MFI Total Asset	Ratio of Net Total Fixed Asset to TA	The MIX
Size	Measures the Size of MFI	Natural Log of TA	The MIX
Age	Captures MFI Age	MFI Age	The MIX
Capital Structure Variables			
STLEV	Short-term Leverage	STLEV/TLEV	The MIX
LTLEV	Long-term Leverage	LTLEV/TLEV	The MIX
TLEV	Total Leverage	TLEV	The MIX
INSTITUTIONAL VARIABLES			
Strength of Investor Protection (SOIP)	Measures the strength of investor protection by existing governance frameworks	Index score between 1 and 10	WB Creditor Rights Index
WORLD GOVERNANCE INDEX			
Enforcing Contracts (ENFCON)	Measures the strength of contract enforcement by countries in the sample	Percentile rank 1 to 100	WB WGI Index
Government Effectiveness (GOVEFF)	Captures perceptions of the quality of public services, the quality of civil service and the degree of its independence from political pressures	Percentile rank 1 to 100	WB WGI Index

	The quality of policy formulation and implementation and the credibility of governments commitment to such policies		
Rule of Law (ROL)	Rule of law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular	Percentile rank 1 to 100	WB WGI Index
	particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.		
Corruption Control (CRRPTNCTRL)	Control of corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand	Percentile rank 1 to 100	WB WGI Index
	forms of corruption, as well as "capture" of the state by elites and private interests.		
ECONOMIC FREEDOMS INDEX			
Monetary Freedom (MONF)	Captures price stability and the intervention of the micro-economy.	Percentile rank 1 to 100	Heritage Freedoms Index
Trade Freedom (TRADEF)	Quantifies the extent to which tariff and nontariff barriers affect imports and exports of goods and services into and out of the country	Percentile rank 1 to 100	Heritage Freedoms Index
Financial Freedom (FINF)	Indicates banking efficiency as well as how independent from the government is the financial sector	Percentile rank 1 to 100	Heritage Freedoms Index
FINANCIAL DEVELOPMENT INDICATORS			
Deposit Interest Rate	Measures Deposit rate for sample countries	Deposit Interest rate annualised	WB WGI Index
Domestic Credit to Private Sector	Captures Credit to Private Sector by other financial institutions including banks	Credit to Private Sector including other financial institutions	WB WGI Index
MACRO INDICATORS			
Real Interest rate (nominal)	Normalized (duration and rolling over method) rate of interest without adjusting for inflation, opportunity and transaction costs	Real interest rate (annualised)	WB WGI Index
Inflation	Captures annualised inflation in sample countries	Inflation rate	WB WGI Index
Income Indicators			
Gross National income growth (GNIg)	Measures National Income growth for sample countries	GNI growth	WB WGI Index

*The MIX (Mix Market), WB (World Bank), WGI (World Governance Indicators)

Source: Authors Own

Table 0.16: Correlation Table: MFI Performance.

	LnA	Age	AT	STLEV	LTLEV	TLEV	SOIP	ENFCON	GOVEFF	ROL	CORRPT	MONF	TRADEF	FINF	GNIg	INF	REALIN	DEPINT	DCTPS	OSS	ROA	PAR30	CPB	PFB	ALPB	NAB
LnA	1																									
Age	0.34	1.00																								
AT	0.06	0.05	1.00																							
STLEV	0.01	0.01	0.17	1.00																						
LTLEV	0.06	0.01	0.14	0.30	1.00																					
TLEV	0.02	0.06	-0.02	0.04	0.03	1.00																				
SOIP	0.11	0.00	0.16	0.10	0.17	0.01	1.00																			
ENFCON	0.05	0.05	-0.04	0.03	0.04	0.04	0.15	1.00																		
GOVEFF	0.06	-0.01	0.10	0.03	0.05	0.02	0.22	0.57	1.00																	
ROL	0.05	0.04	0.12	0.05	0.09	0.00	0.19	0.46	0.82	1.00																
CORRPTNCTR	-0.02	-0.02	0.10	-0.01	0.07	0.03	0.22	0.44	0.77	0.82	1.00															
MONF	0.12	0.00	0.02	-0.04	-0.05	0.03	0.00	0.11	0.24	0.30	0.20	1.00														
TRADEF	0.21	0.03	0.14	0.05	0.06	0.03	0.30	0.30	0.37	0.45	0.37	0.66	1.00													
FINF	0.10	0.00	0.13	0.04	0.08	0.02	0.27	0.28	0.50	0.40	0.29	0.46	0.49	1.00												
GNIg	-0.02	-0.02	0.05	0.02	0.02	0.02	0.20	-0.08	0.06	0.05	0.03	-0.02	0.04	0.18	1.00											
INF	-0.11	-0.02	0.02	0.06	0.08	-0.04	0.09	0.21	0.07	-0.05	-0.01	-0.45	-0.15	-0.12	0.02	1.00										
REALINT	0.03	-0.04	0.07	0.12	0.10	-0.02	0.09	-0.27	-0.24	-0.18	-0.23	-0.20	-0.04	0.03	0.23	-0.07	1.00									
DEPINTR	-0.04	-0.01	0.14	0.08	0.09	0.00	0.24	0.05	0.07	0.17	0.04	0.02	0.14	0.21	0.15	0.12	0.32	1.00								
DCTPS	0.17	-0.04	0.06	0.09	-0.04	-0.01	0.16	0.22	0.35	0.23	0.23	0.17	0.22	0.13	-0.08	-0.10	-0.08	0.02	1.00							
OSS	0.07	0.02	-0.09	0.03	-0.05	-0.01	0.01	0.01	0.00	-0.05	-0.03	0.02	-0.02	-0.02	-0.01	0.04	-0.04	-0.05	0.01	1.00						
ROA	0.22	0.19	-0.10	0.04	-0.17	0.01	0.01	0.03	0.04	-0.02	-0.01	0.02	0.01	-0.02	0.01	0.04	-0.06	0.01	0.01	0.49	1.00					
PAR30	-0.08	0.06	0.01	0.00	0.02	0.03	0.03	-0.04	-0.06	-0.10	-0.06	-0.03	-0.07	-0.04	-0.03	0.00	-0.04	-0.03	0.04	-0.11	-0.15	1.00				
CPB	0.11	-0.12	0.10	0.01	0.25	0.04	0.07	0.01	-0.04	-0.03	-0.01	0.00	0.07	0.06	-0.02	-0.08	0.05	0.03	0.04	-0.07	-0.19	0.03	1.00			
PFB	-0.17	-0.06	-0.02	0.03	0.08	-0.06	0.05	0.05	0.07	0.11	0.07	-0.05	-0.02	0.04	0.10	0.08	0.05	0.14	-0.01	0.03	-0.04	-0.11	-0.12	1.00		
ALPB	0.35	0.01	-0.01	0.00	0.01	0.06	0.04	-0.02	-0.01	0.01	0.04	0.06	0.07	0.04	-0.01	-0.17	0.01	-0.02	0.06	0.03	0.08	0.01	0.43	-0.25	1.00	
NAB	0.50	0.18	-0.06	0.01	0.04	0.01	0.02	0.12	0.07	-0.03	-0.06	0.02	0.06	-0.03	-0.06	0.08	-0.02	-0.04	0.21	0.14	0.15	-0.08	-0.06	0.00	-0.02	1.00

LnA (Log of Assets), AT (Asset Tangibility), STLEV (Short-Term Leverage), LTLEV (Long-Term Leverage), TLEV (Total Leverage), SOIP (Strength of Investor Protection), ENFCON (Enforcing Contracts), GOVEFF (Government Effectiveness), ROL (Rule of Law), CORRPTNCTRL (Corruption Control), MONF (Monetary Freedom), TRADEF (Trade Freedom), FINF (Financial Freedom). GNIg (Gross National Income growth), INF (Inflation), REALINT (Interest Rate), DEPINTR (Deposit Interest Rate), DCTPS (Domestic Credit to Private Sector). OSS (Operational Self-Sufficiency), ROA (Return on Assets), PAR30 (Portfolio at Risk > 30 days), CPB (Cost Per Borrower), PFB (Percent of Female Borrowers), ALPB (Average Loan Balance Per Borrower), NAB (Number of Active Borrowers).

Table 0.17: Summary of Total Leverage by Country.

Summary of Total Leverage by Country

Summary of Total Leverage (2004-2016)

Country	Mean	Std.Dev.	Freq.	Country	Mean	Std.Dev.	Freq.
Angola	0.585	0.220	15				
Benin	0.714	0.310	145	Madagascar	0.653	0.230	108
Burkina Faso	0.684	0.501	114	Malawi	0.559	0.456	59
Burundi	0.659	0.351	98	Mali	0.723	0.214	119
Cameroon	0.749	0.270	132	Mozambique	0.494	0.222	71
CAR	0.959	0.050	8	Namibia	0.714	0.154	8
Chad	0.665	0.117	14	Niger	0.568	0.258	93
Comoros	0.790	0.047	4	Nigeria	0.500	0.413	232
Congo Democratic	0.602	0.330	98	Rwanda	1.034	3.982	100
Congo Republic	0.780	0.235	26	Senegal	0.807	1.208	169
Cote d'Ivoire (Ivory Coast)	1.097	0.912	68	Sierra Leone	0.417	0.275	52
Ethiopia	0.563	0.189	135	South Africa	0.547	0.297	37
Gabon	0.265	0.268	2	Sudan	0.250	0.236	13
The Gambia	0.622	0.312	15	Swaziland	0.602	0.112	9
Ghana	0.684	0.308	269	Tanzania	0.615	0.324	117
Guinea	0.707	0.350	34	Togo	0.833	0.315	114
Guinea-Bissau	0.910	0.124	11	Uganda	0.670	0.254	128
Kenya	0.645	0.289	207	Zambia	0.476	0.289	49
Liberia	0.463	0.239	17	Zimbabwe	0.641	0.301	13
				Total	0.671	0.866	2,903

Table 0.18: Summary of Long-term Leverage by Country.

Summary of Long-Term Leverage (2004-2016)

Country	Mean	Std.Dev.	Freq.	Country	Mean	Std.Dev.	Freq.
Angola	0.038	0.041	15				
Benin	0.043	0.085	145	Madagascar	0.062	0.096	108
Burkina Faso	0.048	0.098	114	Malawi	0.119	0.201	59
Burundi	0.058	0.089	98	Mali	0.028	0.045	119
Cameroon	0.046	0.064	132	Mozambique	0.094	0.103	71
CAR	0.021	0.023	8	Namibia	0.018	0.016	8
Chad	0.017	0.024	14	Niger	0.021	0.036	93
Comoros	0.010	0.013	4	Nigeria	0.042	0.083	232
Congo Democratic	0.036	0.078	98	Rwanda	0.040	0.057	100

Congo Republic	0.040	0.071	26	Senegal	0.028	0.093	169
Cote d'Ivoire	0.076	0.145	68	Sierra Leone	0.063	0.122	52
Ethiopia	0.033	0.060	135	South Africa	0.043	0.062	37
Gabon	0.039	0.032	2	Sudan	0.013	0.018	13
The Gambia	0.046	0.079	15	Swaziland	0.073	0.032	9
Ghana	0.071	0.084	269	Tanzania	0.046	0.074	117
Guinea	0.046	0.094	34	Togo	0.025	0.036	114
Guinea-Bissau	0.000	0.000	11	Uganda	0.061	0.074	128
Kenya	0.037	0.119	207	Zambia	0.105	0.150	49
Liberia	0.160	0.151	17	Zimbabwe	0.063	0.110	13
				Total	0.049	0.092	2,903

Table 0.19: Summary of MFI Short-term Leverage.

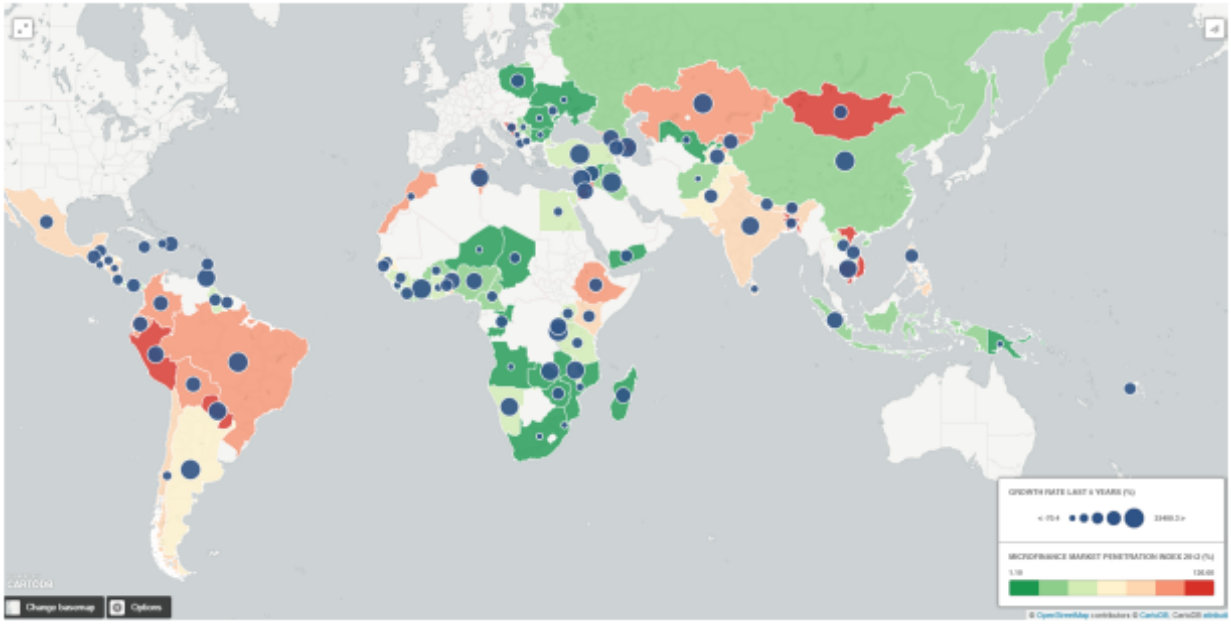
Summary of Short-Term Leverage (2004-2016)

Country	Mean	Std.Dev.	Freq.	Country	Mean	Std.Dev.	Freq.
Angola	0.016	0.025	15				
Benin	0.005	0.027	145	Madagascar	0.011	0.043	108
Burkina Faso	0.003	0.021	114	Malawi	0.028	0.131	59
Burundi	0.003	0.021	98	Mali	0.002	0.007	119
Cameroon	0.007	0.018	132	Mozambique	0.008	0.026	71
CAR	0.000	0.000	8	Namibia	0.059	0.127	8
Chad	0.045	0.141	14	Niger	0.002	0.010	93
Comoros	0.000	0.000	4	Nigeria	0.008	0.035	232
Congo Democratic	0.014	0.055	98	Rwanda	0.007	0.034	100
Congo Republic	0.003	0.006	26	Senegal	0.002	0.007	169
Cote d'Ivoire	0.002	0.010	68	Sierra Leone	0.002	0.006	52
Ethiopia	0.004	0.022	135	South Africa	0.062	0.104	37
Gabon	0.000	0.000	2	Sudan	0.016	0.031	13
The Gambia	0.011	0.031	15	Swaziland	0.005	0.015	9
Ghana	0.009	0.039	269	Tanzania	0.007	0.034	117
Guinea	0.005	0.027	34	Togo	0.000	0.002	114
Guinea-Bissau	0.000	0.000	11	Uganda	0.013	0.045	128
Kenya	0.009	0.030	207	Zambia	0.015	0.054	49
Liberia	0.018	0.044	17	Zimbabwe	0.015	0.033	13
				Total	0.008	0.039	2,903

8.10 EMPIRICAL CHAPTER 3 APPENDICES

8.10.1 Figures and Results Tables

Figure 19: MFI Penetration rate and growth from 2007-2012.



Source (Krauss and Martinez 2015); Centre for MicroFinance studies Zurich.

8.11 SELECTED SUMMARY TABLES

Summary statistics for MF Penetration rate, and FINDEX, for LAC countries.

Figure 20: Summary of MFI Penetration Rates and Financial Inclusion Index for LAC.

Variable	Obs	Mean	Std. Dev.	Min	Max
Financial Index	240	0.083	0.0376	0.022	0.155
Microfinance Penetration Rate	379	6.192	10.814	0.000	74.476

Table 0.20: Detailed Summary Statistics of MFI Penetration Rates and Financial Inclusion Index for LAC.

Variable	obs	Mean	Std. Dev.	Quantiles Min	0.25	Median	0.75	Max
FINDEX	240	0.08	0.04	0.02	0.05	0.08	0.12	0.16
MFPENRATE	379	6.19	10.81	0.00	0.00	0.67	8.90	74.48

LAC (Latin America & Caribbean) countries).

Table 0.21: Summary of MFI Penetration Rates and Financial Inclusion Index for LAC.

Year	Mean FINDEX	Mean MFPENRATE	Median FINDEX	Median MFPENRATE
2003	.	2.295	.	0
2004	0.732	3.029	0.065	0.792
2005	0.071	4.129	0.064	0.200
2006	0.075	4.994	0.068	0.254
2007	0.081	5.972	0.076	0.337
2008	0.088	6.423	0.082	0.958
2009	0.089	6.977	0.083	0.443
2010	0.091	8.177	0.088	3.872
2011	0.097	9.396	0.097	4.092
2012	.	10.427	.	3.436

FINDEX (Financial Index), MFPENRATE (Microfinance Penetration Rate).

Country Summary of MFI Penetration Rates and Financial Inclusion Index for LAC.

Table 0.22: Mean and Median table (categorized by year) for MF Penetration rate, and FINDEX, for LAC countries.

	Mean		Median			Mean		Median	
Country	FINDEX	MFPR	FINDEX	MFPR	Country	FINDEX	MFPR	FINDEX	MFPR
Antigua	0.108	0.000	0.109	0.000	Guyana	0.088	1.413	0.090	0.000
Argentina	0.054	4.023	0.055	2.570	Haiti	0.024	2.581	0.024	2.666
Aruba	0.123	0.000	0.123	0.000	Honduras	0.066	6.225	0.067	6.458
Bahamas	0.136	0.000	0.139	0.000	Jamaica	0.084	3.004	0.085	0.000
Barbados	0.142	0.000	0.145	0.000	Mexico	0.047	10.038	0.048	11.978
Belize	0.098	4.040	0.099	0.000	Nicaragua	0.000	23.812	0.000	24.048
Bolivia	0.049	23.994	0.048	23.989	Panama	0.135	2.186	0.134	1.899
Brazil	0.096	6.534	0.100	4.471	Paraguay	0.035	27.479	0.035	21.337
Cayman Islands	0.000	0.000	0.000	0.000	Peru	0.032	38.219	0.032	36.411
Chile	0.115	13.925	0.119	14.167	Puerto Rico	0.000	0.000	0.000	0.000
Colombia	0.067	13.546	0.070	15.195	St. Kitts and Nevis	0.146	0.000	0.148	0.000
Costa Rica	0.071	2.272	0.071	2.205	St Lucia	0.123	0.437	0.124	0.000
Cuba	0.000	0.000	0.000	0.000	Sent Vincent and Grenadines	0.091	0.000	0.094	0.000
Dominica	0.093	0.000	0.096	0.000	Suriname	0.060	1.860	0.062	0.000
Dominican Republic	0.045	7.972	0.045	6.929	Trinidad and Tobago	0.000	1.803	0.000	1.719
Ecuador	0.000	19.897	0.000	19.731	Turks and Caicos		0.000	0.000	0.000
El Salvador	0.070	11.264	0.073	11.932	Uruguay	0.070	1.561	0.070	0.706
Grenada	0.138	0.000	0.139	0.000	Venezuela	0.039	0.473	0.040	0.559
Guatemala	0.048	6.120	0.047	6.602	Virgin Islands US	0.000	0.000	0.000	0.000

FINDEX (Financial Index), MFPR (Microfinance Penetration Rate).

Mean and Median table for MF Penetration rate, and FINDEX, for SSA countries.

Table 0.23: Summary of MFI Penetration Rates and Financial Inclusion Index for SSA.

Variable	Obs	Mean	Std. Dev.	Min	Max
FINDEX	344	0.307	0.327	0.0002	0.19
MFPENRATE	376	2.133	3.132	0	17.38

SSA (Sub-Saharan Africa), FINDEX (Financial Index), MFPENRATE (Microfinance Penetration Rate).

Table 0.24: Detailed Summary of MFI Penetration Rates and Financial Inclusion Index for SSA.

				----------Quantiles ----------				
Variable	obs	Mean	S. Dev.	Min	0.25	Median	0.75	Max
FINDEX	344	0.03	0.03	0	0.01	0.02	0.04	0.19
MFPENRATE	376	2.13	3.13	0	0.00	0.59	3.14	17.38

SSA (Sub-Saharan Africa), FINDEX (Financial Index), MFPENRATE (Microfinance Penetration Rate).

Mean and Median table (categorized by year) for MF Penetration rate, and FINDEX, for SSA countries.

Table 0.25: MFI Penetration Rates and Financial Inclusion Index for SSA: Mean & Median values.

Year	Mean FINDEX	Mean MFPENRATE	Median FINDEX	Median MFPENRATE
2004	0.269	1.394	0.017	0.239
2005	0.026	1.825	0.016	0.402
2006	0.027	2.130	0.017	0.554
2007	0.029	2.155	0.019	0.378
2008	0.032	2.519	0.020	0.759
2009	0.033	2.768	0.020	0.817
2010	0.034	2.041	0.021	0.600
2011	0.038	2.267	0.024	0.705
2012				

SSA (Sub-Saharan Africa), FINDEX (Financial Index), MFPENRATE (Microfinance Penetration Rate).

Table 0.26: Country-level MFI Penetration Rates and Financial Inclusion Index for SSA.

	Mean		Median			Mean		Median	
Country	FINDEX	MFPR	FINDEX	MFPR	Country	FINDEX	MFPR	FINDEX	MFPR
Angola	0.010	0.273	0.009	0.307	Liberia	0.042	0.899	0.042	0.475
Benin	0.015	9.605	0.014	9.313	Madagascar	0.005	0.825	0.005	0.780
Botswana	0.046	0.000	0.046	0.000	Malawi	0.017	4.348	0.017	4.465
Burkina Faso	0.016	3.816	0.016	3.864	Mali	0.018	6.499	0.018	5.800
Burundi	0.020	0.749	0.021	0.401	Mauritania	0.102	0.000	0.101	0.000
Cameroon	0.018	3.562	0.019	3.263	Mauritius	0.094	0.000	0.098	0.000
Cape Verde	0.078	0.000	0.083	0.000	Mozambique	0.301	0.931	0.030	1.011
Central African Republic	0.011	0.151	0.010	0.170	Namibia	0.097	0.372	0.102	0.352
Chad	0.006	0.580	0.006	0.573	Niger	0.013	1.502	0.013	1.411
Comoros	0.009	0.000	0.008	0.000	Nigeria	0.023	1.072	0.025	0.999
Congo. Dem. Rep.	0.004	0.306	0.004	0.294	Rwanda	0.007	1.757	0.007	1.654
Congo Republic	0.007	0.295	0.007	0.350	Sao Tome and Principe	0.038	0.000	0.037	0.000
Cote d'Ivoire	0.000	0.621	0.000	0.595	Senegal	0.000	7.460	0.000	7.389
Djibouti	0.047	0.000	0.047	0.000	Seychelles	0.000	0.000	0.000	0.000
Equatorial Guinea	0.019	0.000	0.019	0.000	Sierra Leone	0.151	1.933	0.155	1.941
Eritrea	0.000	0.000	0.000	0.000	Somalia	0.000	0.000	0.000	0.000
Ethiopia	0.026	10.423	0.026	10.692	South Africa	0.169	5.466	0.168	4.505
Gabon	0.019	0.062	0.019	0.000	South Sudan	0.007	0.000	0.007	0.000
Gambia	0.022	2.709	0.022	2.495	Sudan	0.021	0.134	0.022	0.047
Ghana	0.032	6.872	0.032	7.546	Swaziland	0.033	1.525	0.034	1.460
Guinea	0.018	4.116	0.018	3.403	Tanzania	0.010	3.995	0.009	3.982

Guinea-Bissau	0.000	0.166	0.000	0.070	Togo	0.019	4.259	0.020	4.618
Kenya	0.036	9.238	0.037	10.272	Uganda	0.011	6.771	0.010	6.107
Lesotho	0.015	0.000	0.014	0.000	Zambia	0.027	0.645	0.027	0.744
					Zimbabwe	0.047	0.138	0.046	0.796

SSA (Sub-Saharan Africa), FINDEX (Financial Index), MFPENRATE (Microfinance Penetration Rate).

Table 0.27: Correlation Output Financial Inclusion and MFI Study.

	FINDEX	MFPR	MOBSUB100	POPDENS	PUBCREDREG	CORRCTRL	LENDr	INF	DEPINTR	GNIk	DCTPS
FINDEX	1.000										
MFPR	-0.086	1.000									
MOBSUB100	0.658	-0.002	1.000								
POPDENS	0.102	-0.096	0.095	1.000							
PUBCREDREG	0.386	-0.180	0.342	0.488	1.000						
CORRCTRL	0.585	-0.224	0.510	0.219	0.334	1.000					
LENDr	-0.222	-0.154	-0.206	0.034	-0.183	-0.294	1.000				
INF	-0.061	0.008	-0.106	-0.058	-0.140	-0.131	0.479	1.000			
DEPINTR	-0.096	0.134	-0.038	0.030	-0.044	-0.101	0.482	0.279	1.000		
GNIk	-0.029	-0.103	-0.098	-0.020	0.008	-0.136	0.059	0.065	-0.057	1.000	
DCTPS	0.936	0.016	0.628	0.238	0.427	0.522	-0.254	-0.083	-0.034	-0.069	1.000

FINDEX (Financial Inclusion Index), MFPR (Microfinance Penetration Rate), MOBSUB100 (Mobile Subscription per 100,00 adults), POPDENS (Population density), PUBCRREDREG (Public Credit Registry), CORRCTRL (Corruption Control), LENDr (Lending Rate), INF (Inflation), DEPINTR (Deposit Interest Rate), GNIk (Gross National Income per Capita), DCTPS (Domestic Credit to Private Sector).

Source: Authors Own.

Variable	Description	Measure	Source
Capital Structure Variables			
Leverage	MFI Leverage (Leverage is indicated by the MIX as comprising deposits as well as borrowings)	Proportion of TL to TA	The MIX
BORROWING	MFI Leverage excluding deposits Total MFI non-deposit liabilities	ratio of non-deposit liabilities, to BV of assets	The MIX
DEPOSIT	MFI timed deposit liabilities (excluding grants)	ratio of dep's to BV of A	The MIX
Donated Equity			
-Proportion	Measures MFI total grants	Proportion of Donated equity (grants) to TA	The MIX
-Subsidy intensity	or Donations (Donated Equity)	ratio of donated equity by TE	The MIX
STLEV	Short-term Leverage	STLEV/TLEV	The MIX
LTLEV	Long-term Leverage	LTLEV/TLEV	The MIX
TLEV	Total Leverage	TLEV	The MIX
FIRM SPECIFIC MEASURES			
Profitability	Measures MFI ability to utilise shareholder resources and obtain a return on these resources	Return on Asset (ROA)	The MIX
Efficiency	Indicates MFI ability to efficiently utilise resources in its core mission	Cost Per Borrower (CPB)	The MIX
Portfolio Quality	Indicates the health of an MFIs loan books	PAR>30 days	The MIX
Social	Measures the Social performance of MFIs. In particular, MFIs ability to lend to female borrowers	Percentage of Female Borrowers (PFB)	The MIX
Depth	Measures the depth of MFI borrowing. Specifically, their reach down the poverty ladder (down the pyramid)	Average Loan Balance Per Borrower (ALPB)	The MIX
Breadth	Measures MFIs breadth of reach. Specifically, how far along the poverty spectrum can the MFIs reach	Number of Active Borrowers (NAB)	The MIX
Asset Tangibility	Measures the total tangible assets of MFIs as relates to MFI Total Asset	Ratio of Net Total Fixed Asset to TA	The MIX
Size	Measures the Size of MFI	Natural Log of TA	The MIX
Age	Captures MFI Age	MFI Age	The MIX
INSTITUTIONAL VARIABLES			
Strength of Investor Protection (SOIP)	Measures the strength of investor protection by existing governance frameworks	Index score between 1 and 10	WB Creditor Rights Index
Enforcing Contracts (ENFCON)	Measures the strength of contract enforcement by countries in the sample	Percentile rank 1 to 100	WB WGI Index
Political Stability (POLSTAB)	Political Stability and absence of violence measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism.	Percentile rank 1 to 100	WB WGI Index

Government Effectiveness (GOVEFF)	Captures perceptions of the quality of public services, the quality of civil service and the degree of its independence from political pressures The quality of policy formulation and implementation and the credibility of governments commitment to such policies	Percentile rank 1 to 100	WB WGI Index
Rule of Law (ROL)	Rule of law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	Percentile rank 1 to 100	WB WGI Index
Corruption Control (CRRPTNCTRL)	Control of corruption captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.	Percentile rank 1 to 100	WB WGI Index
ECONOMIC FREEDOMS INDEX			
Monetary Freedom (MONF)	Captures price stability and the intervention of the micro-economy.	Percentile rank 1 to 100	Heritage Freedoms Index
Trade Freedom (TRADEF)	Quantifies the extent to which tariff and nontariff barriers affect imports and exports of goods and services into and out of the country	Percentile rank 1 to 100	Heritage Freedoms Index
Investment Freedom (INVF)	Analyses how free or constrained is the flow of investment capital of individuals and firms.	Percentile rank 1 to 100	Heritage Freedoms Index
FINANCIAL DEVELOPMENT INDICATORS			
Deposit Interest Rate	Measures Deposit rate for sample countries	Deposit Interest rate annualised	WB WGI Index
Domestic Credit to Private Sector	Captures Credit to Private Sector by other financial institutions including banks	Credit to Private Sector including other financial institutions	WB WGI Index
MACRO INDICATORS			
Real Interest rate (nominal)	Normalized (duration and rolling over method) rate of interest without adjusting for inflation, opportunity and transaction costs	Real interest rate (annualised)	WB WGI Index
Inflation	Captures annualised inflation in sample countries	Inflation rate	WB WGI Index
Income Indicators			
Gross National income growth (GNIg)	Measures National Income growth for sample countries	GNI growth	WB WGI Index

THE MIX (Mix Market Database), WB (World Bank), WGI (World Governance Indicators).