EXAMINING POTENTIAL LINKAGES BETWEEN SUSTAINABILITY AND OUTREACH: PERSPECTIVES FROM THE MICROFINANCE SECTOR OF GHANA

Erasmus Mundus Joint Master Degree in International Development Studies

Master Thesis

Esther Dzifa Bansah

June 2021

Palacký University Olomouc

University Clermont Auvergne

University of Pavia

MASTER THESIS

Examining Potential Linkages Between Sustainability and Outreach: Perspectives from the Microfinance Sector of Ghana

Esther Dzifa Bansah

Supervisors:

Mgr. Martin Schlossarek, PhD (Palacký University Olomouc)

Prof. Fouzi Mourji (University of Hassan II Casablanca/LASAARE)

GLODEP 2021

Declaration

I, **Esther Dzifa Bansah**, hereby declare that my Master thesis titled "Examining Potential Linkages Between Sustainability and Outreach: Perspectives from the Microfinance Sector of Ghana" is the result of my own work and carried out for the Erasmus Mundus Joint Master's degree in International Development Studies under the guidance and supervision of Professor Fouzi Mourji, University of Hassan II Casablanca/LASAARE (Laboratoire de Statistique Appliquée à l'Analyse et la Recherché en Économie), and Mgr. Martin Schlossarek, PhD, Palacký University Olomouc. I confirm that the work contained herein is my own, except where explicitly stated otherwise in the text through reference, citation or acknowledgement.

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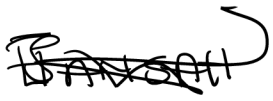

Date: June 3rd, 2021

UNIVERZITA PALACKÉHO V OLOMOUCI

Přírodovědecká fakulta

Akademický rok: 2020/2021

ZADÁNÍ DIPLOMOVÉ PRÁCE

(projektu, uměleckého díla, uměleckého výkonu)

Jméno a příjmení:	**Esther BANSAH**
Osobní číslo:	**R190778**
Studijní program:	**N1301 Geography**
Studijní obor:	**International Development Studies**
Téma práce:	**Impact Analysis of Microfinance Institutions**
Zadávající katedra:	**Katedra rozvojových a environmentálních studií**

Zásady pro vypracování

In many countries across the world, Microfinance has been employed as a means to provide financial services to the poor and in the process contribute to poverty reduction through providing entrepreneurship opportunities within the same group (Bateman,2010). While poverty entails a multidimensional concept including manifestations such as hunger and malnutrition, limited access to education and other basic services, social discrimination and exclusion, as well as the lack of participation in decision-making (United Nations, n.d), economic dimensions of poverty based on income and consumption have generally been popular in measuring poverty levels. In this research, we will explore these concepts in more detail, focusing on an understanding of the impact of microfinance institutions on the dynamics of poverty. We will investigate the role of Microfinance Institutions and explore their reach in terms of client numbers and total loan portfolio disbursements. We will also discuss their relationship with socio-economic undercurrents such as gender and income inequality amongst others.

Rozsah pracovní zprávy:	**20-25 tisíc slov**
Rozsah grafických prací:	**dle potřeby**
Forma zpracování diplomové práce:	**tištěná**
Jazyk zpracování:	**Angličtina**

Seznam doporučené literatury:

Including but not limited to:

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Vedoucí diplomové práce: **Mgr. Martin Schlossarek, Ph.D.**
Katedra rozvojových a environmentálních studií

Datum zadání diplomové práce: **29. ledna 2021**
Termín odevzdání diplomové práce: **31. května 2021**

L.S.

doc. RNDr. Martin Kubala, Ph.D.
děkan

doc. RNDr. Pavel Nováček, CSc.
vedoucí katedry

V Olomouci dne 29. ledna 2021

Acknowledgements

I would like to extend my sincerest gratitude to my co-supervisor Professor Fouzi Mourji. I am immensely grateful for your guidance and the insights you provided me with at every stage of the research. My gratitude also goes to Dr. Martin Schlossarek for the counsel and assistance he provided during my research.

To Claire Ricard and Harouna Kinda both of LASAARE without whose guidance, especially in the use of STATA, I would not have been unable to complete this research. I am eternally grateful.

Lastly, I would like to thank the GLODEP staff for the tireless effort they put into this programme and all the support provided even amid a global pandemic, and to my classmates whose support and encouragement keeps me going.

I would also like to dedicate this work to my family who have been my backbone throughout my studies without whom I would not have made it this far. But most importantly to God who has been my daily source of strength.

Abstract

Ghana's recent financial sector transformation, which resulted in the collapse of several microfinance institutions (MFIs) renewed the debate on whether microfinance institutions can achieve financial sustainability while concurrently meeting their social objective of targeting the poorest and marginalized populations. This study appraises the sector by examining its potential to support financial inclusion (breadth of outreach) and target the poor and excluded population (depth of outreach) while simultaneously pursuing profitability and self-sufficiency. To achieve this, the study employs random effects estimation using panel data of 89 MFIs in Ghana from 1999 to 2018. The findings suggest that improved efficiency while achieving financial sustainability increases an MFI's odds of achieving outreach. This remained the case for both depth and breadth of outreach. However, owing to profitability concerns, MFIs are often disincentivized to pursue outreach. The fulfilment of profitability was only favourable in improving the breadth of outreach when the proxy was the number of depositors holding voluntary deposit accounts. Outreach was enhanced when the financing structure of the MFI favoured debt over equity. Results for risk variables showed that MFIs could achieve social objectives at an optimal risk level. While the outcomes of this study may vary from global-level studies, I argue that with careful management of financial ratios and performance, an MFI can simultaneously achieve financial sustainability and outreach. Policy efforts that concentrate on gender, infrastructure development and technological advancement would also prove to be beneficial to the course.

Keywords: Microfinance; Ghana; Outreach; Sustainability; Efficiency; Profitability

Contents

List of Abbreviations

ASSFIN: Association of Financial NGOs
AcBorr: Number of Active Borrowers
ARB: Association of Rural Banks
AvLBPB: Average Loan Balance Per Borrower
BoG: Bank of Ghana
CGAP: Consultative Group to Assist the Poor
CTBR: Cost Per Borrower
CUA: Ghana Cooperative Credit Unions Association
CU: Credit Union
DTER: Debt to Equity Ratio
FNGOs: Financial NGOs
GAMC: Ghana Association of Microfinance Companies
GCSCA: Ghana Cooperative Susu Collectors Association
GHAMFIN: Ghana Microfinance Institutions Network
GHASALC: Ghana Association of Savings and Loan Companies
GHS: Ghana Cedis
GIZ: Deutsche Gesellschaft für Internationale Zusammenarbeit
GLP: Gross Loan Portfolio
IEOD: Interest Expenson Deposits
IFC: International Finance Corporation
LLR: Loan Loss Rate
MFI: Microfinance Institution
MIX: Microfinance Information Exchange
MLAG: Money Lenders Association of Ghana
NBFI: Non-bank Financial Institution
NGO: Non-Governmental Organization
NoDeV: Number of Depositors of Voluntary Time Deposits
OPEXDA: Operating Expenses/Average Total Assets
OPSS: Operational Self-Sufficiency
PAR30: Portfolio at Risk by 30 days
PERFLO: Percentage of Female Loan Officers
PoFB: Percentage of Female Borrowers
ROA: Return on Assets
ROE: Return on Equity
SEEP: Small Enterprise Employment and Promotion network
S&Ls: Savings and Loan Companies
VIF: Variance Inflation Factor

CHAPTER 1: INTRODUCTION

1.1 Introduction

This section delves into the history and evolution of the microfinance sector in Ghana and sets the tone for understanding the current policy climate within the sector. The study then progresses to understanding the concept of poverty in Ghana and the role microfinance plays in addressing it as a developmental concern. Later sections explore the importance of this study. In the final part of the chapter, the author provides an overview of the remaining chapters of this paper.

1.2 Evolution of the Microfinance Sector in Ghana

The practice of microfinance in Ghana dates back to the pre-independence era. It was commonplace to observe individuals obtain credit and save within groups for retail and farming purposes. For example, communities and societies operated rotating savings and credit schemes and provided micro insurance to community members to smoothen out income from agricultural produce which was commonly subject to variability. All these were carried out on an informal scale and were unregulated and remain predominantly so even to today (Peprah, 2019).

By the 1970s, it had become apparent that the formal financial institutions could not meet the financing needs of the rural population who are mainly into agriculture. This was especially of much importance as the rural population constituted the largest segment of the country's population at the time (Peprah, 2019). As a result of this, the Bank of Ghana (BoG) put forward the Rural Banking Act in 1976. This act led to the establishment of the first rural bank in the same year at Agona Nyakrom in the then Central Region of Ghana. Rural banks were then tasked with providing credit and spreading the financial inclusion net to small scale farmers and businesses. The role of these institutions is to support development projects and act as financial intermediaries. Rural banks do this by mobilizing funds from the rural population and making the same funds available to those in need of it in the community (Tsamenyi & Shazad, 2008).

The first ten years of the 21st century saw two major developments within the industry. The first was a boom in the spread of microfinance institutions. The second was the downscaling of operations of commercial banks to provide microfinance services. The latter being as a

result of the newly perceived profitability of the sector. This boom was also accompanied by the influx of unlicensed MFIs. Their operations contravened the then Banking Act 2004 which allowed institutions to grant loans and accept deposits. In this Act, there was the arrangement where the Ghana Police Service could issue the Money Lenders Ordinance which allowed individuals and enterprises to engage in money lending services. As many of these MFIs had not satisfied this requirement, their activities would be considered illegal. The story was not one of complete gloom though. This is because, the influx was also accompanied by investments into the microfinance industry. For instance; Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) through their financial systems development has over the years sought to strengthen the microfinance and insurance sectors through improved supervision and regulation (GIZ, 2018). The International Finance Corporation (IFC) has also been a partner supporting the microfinance sector in Ghana. The institution extended a five-year loan of 1.58 million Ghana cedis (1.1 million USD)[1] to Advans savings and loans to enable them expand branches and lending to the rural parts of Ghana and meet the financing needs of Small and Medium Size enterprises in Ghana (IFC, 2015).

These efforts in addition to promises by MFIs to provide their clients with huge interest rates on their deposits and provide loans within very short periods led to a substantial growth in client numbers (See Fig 1). Between 2001 and 2006 alone, the total number of MFI clients grew from 130, 000 to 350, 000 (Popovic & Steel, 2016). By 2010 the number of clients was almost 600, 000 (See Fig 1). Unfortunately, a lot of MFIs were not able to deliver on their overly optimistic promises. This situation, coupled with the brutal methods applied by some MFIs in the recollection of past due loans led to a Public outcry for stricter regulation of the MFI sector (Peprah, 2019).

By the beginning of the second decade of the 21st century, it was apparent that to reduce the risk to MFI clients, there was a need for increased regulation of the sector. Since the onset of microfinance, several reasons have been put forward for regulating MFIs. These propositions include the argument that effective regulation would stimulate the growth of MFIs that can continuously fund their operations. Others have put forward that regulation is key to the emergence of sustainable MFIs. The third school of thought is that, regulation is important to protect the funds of donors and ensure that the targeted beneficiaries of MFIs actually profit from them (McNew, 2009). From an economic viewpoint, regulation can bring efficiency, reduce costs, promote innovation and the development of the microfinance sector. The

[1] Based on the September 2010 prevailing exchange rate of 1 USD: 1.44 GHS when the facility was extended.

assumption that a market will independently repair after a market failure is not always valid, hence the need for government to intervene (McNew, 2009). This was exactly the case for the sector in Ghana where regulation had to be strengthened in the face of MFIs collapsing. Lastly, from the point view of development and public policy, government must undertake regulation to prevent both economic and sometimes even political instability (Peprah, 2019).

To support regulation, the Bank of Ghana adopted a tiered approach for the supervision of the MFI sector to be in line with international trends. The first tier being made up of Rural and Community Banks (RCBs), and Savings and Loan Companies (S&Ls). The institutions in the first tier are licensed by the Bank of Ghana. However, the ARB Apex Bank Limited acts as a mini central bank for the Rural and community banks whilst the Bank of Ghana directly supervises the work of Savings and Loans Companies. Savings and Loans Companies have to also be members of the Ghana Association of Savings and Loans Companies (GHASALC). Tier 2 is composed of deposit-taking institutions like Credit Unions and Microfinance Companies (MFCs). Credit Unions are supervised by the Ghana Co-Operatives Credit Union Association. Microfinance institutions on the other hand are regulated by the Central Bank. Financial Non-Governmental Organisations (FNGOs) and Money lending companies make up the third tier. These institutions in theory are non-deposit taking institutions, yet in practice, they may accept clients' deposits as collateral against loans. The last tier is made up of individuals engaged in money lending or savings (commonly called susu collectors in West Africa). Licensing and regulation of individuals in this tier is largely dependent on the size, capacity and level of risk across their operations (Popovic & Steel, 2016). Table 1 below provides the reader with a summary of the regulatory categories adopted by BoG.

Table 1: Summary of Categories of MFIs[2]

Category	Composition	Association	Licensor & Regulator
Tier 1	Rural & Community Banks (RCBS)	ARB Apex Bank Limited	Bank of Ghana (Licensed, supervised and regulated by BoG under the Banking Act)

[2] The table is based on the organization of the sector as at December 2015 and as produced in (Popovic & Steel, 2016) & (Trombetta et al., 2017)

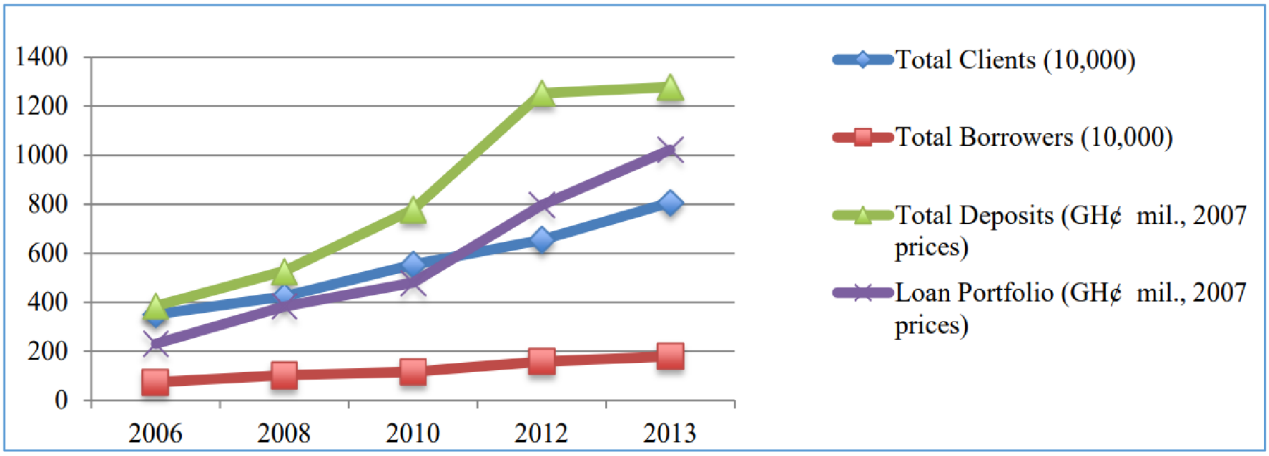
	Savings & Loans Companies (S&Ls)	GHASALC[3]	Bank of Ghana
Tier 2	Credit Unions	CUA[4]	CUA
	Microfinance Companies	GAMC[5]	Bank of Ghana (Licensed, regulated and supervised by BoG under the Non-Bank Financial Institutions Act)
Tier 3	Financial Non-Governmental Organizations (FNGOs)	ASSFIN[6]	
	Money Lending Companies	MLAG[7]	Bank of Ghana
Tier 4	Individual Money Lenders	MLAG	Require license from BoG and registration with MLAG, which monitors them
	• Individual savings Collectors (Susu collectors)	GCSCA	Registration with BoG and GCSCA Monitored by GCSCA

In 2011, the Bank of Ghana through the issue of its Notice No. BG/GOV/SEC/2011/04 sought to categorise the operations of the institutions within the different microfinance tiers. This was built upon until the year 2016, by which time the Central Bank had developed a complete regulation document for all categories of MFIs. Putting together all previously issued guidelines since 2011, the new regulation guideline – Business Rules and Sanction for Microfinance Institutions – Tiers 2, 3 and 4 was developed. The new Microfinance laws also incorporated other Banking laws such as the Non-Bank Financial Institutions Law (NBFI Law 2008) Act 774 and the Banking Act 2004. These laws have currently been replaced by the Specialised Deposit Taking Institutions Act, 2016 which encompasses microfinance institutions.

Figure 1 provides the reader with a background into the rate of growth of the microfinance variables of Ghana at the turn of the 21st century (2006 to 2013).

[3] Ghana Association of Savings and Loans Companies
[4] Cooperative Credit Union Association
[5] Ghana Association of Microfinance Companies
[6] Association of financial NGOs
[7] Moneylender Association of Ghana

Figure 1: Growth in Microfinance Variables Between 2006 and 2013[8]



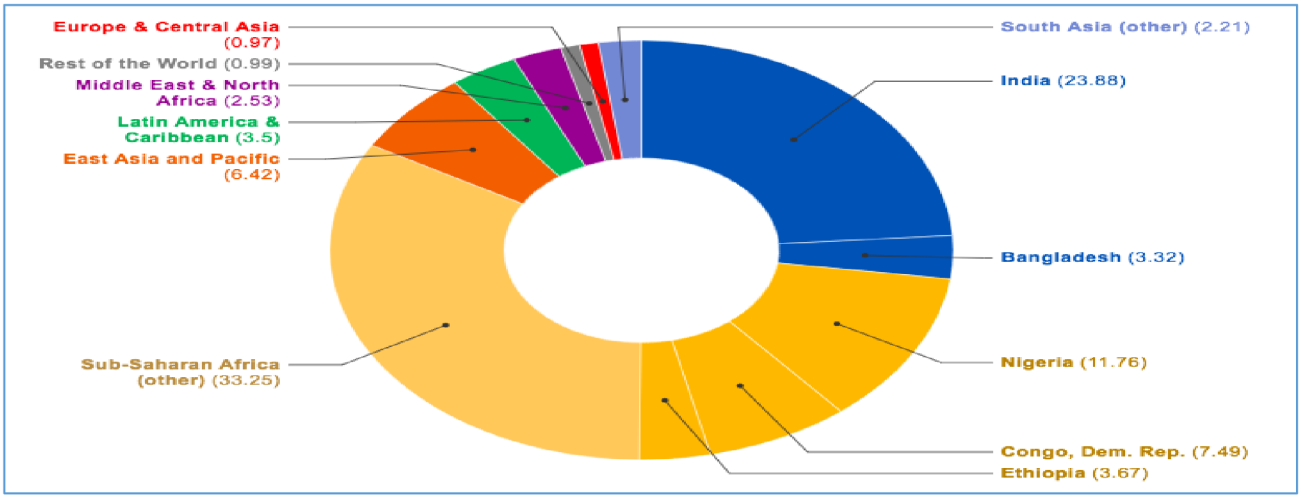
Source: GHAMFIN as cited in (Popovic & Steel, 2016)

1.3 The Concept of Poverty & Its Manifestations in Ghana

Poverty is a multifaceted concept. According to the United Nations, "*Poverty entails more than the lack of income and productive resources to ensure sustainable livelihoods. Its manifestations include hunger and malnutrition, limited access to education and other basic services, social discrimination and exclusion, as well as the lack of participation in decision-making*". This definition supports the multidimensional nature of poverty and further strengthens the notion that poverty is not restricted to merely the absence or the inadequacy of income. The inclusion of the eradication of poverty as the foremost and primary target both in the Millennium Development Goals (MDGs) and the Sustainable Development Goals (SDGs) speaks to its prominence as a developmental issue. According to the World Bank's article written by Barne & Wadhwa (2019), fifteen countries lifted 802.1 million people from poverty between 2000 and 2015. Also as compared to 1989 where about an estimated one third of the World's population lived in poverty, in 2019 only less than 10% of the world lives in poverty. While this represents great strides in the fight against poverty, in 2020 much of this progress was wiped out by the covid-19 pandemic. World Vision anticipates that the pandemic could push between 88 million to 150 million people into extreme poverty in 2020 alone. This would be the first rise in global poverty in 20 years (Peer, 2020). This goes to illustrate that there is a lot of work to be done in reaching the global goal for poverty by 2030.

[8] Y-axis represents 10,000 clients/borrowers or GHS million. The cedi was approximately equivalent to one US dollar in 2007

Figure 2: Share of Poor People in the World by Region



Source: PovcalNet as cited in (Barne & Wadhwa, 2019)

From figure 2, it is observed that while 85% of the World's poor live in South Asia and sub-Saharan Africa, the latter is home to more than a third of the World's poor. A half of the World's poor live in five countries within these two regions namely India, Bangladesh, Nigeria, Democratic Republic of Congo and Ethiopia, three of these countries are located with sub-Saharan Africa.

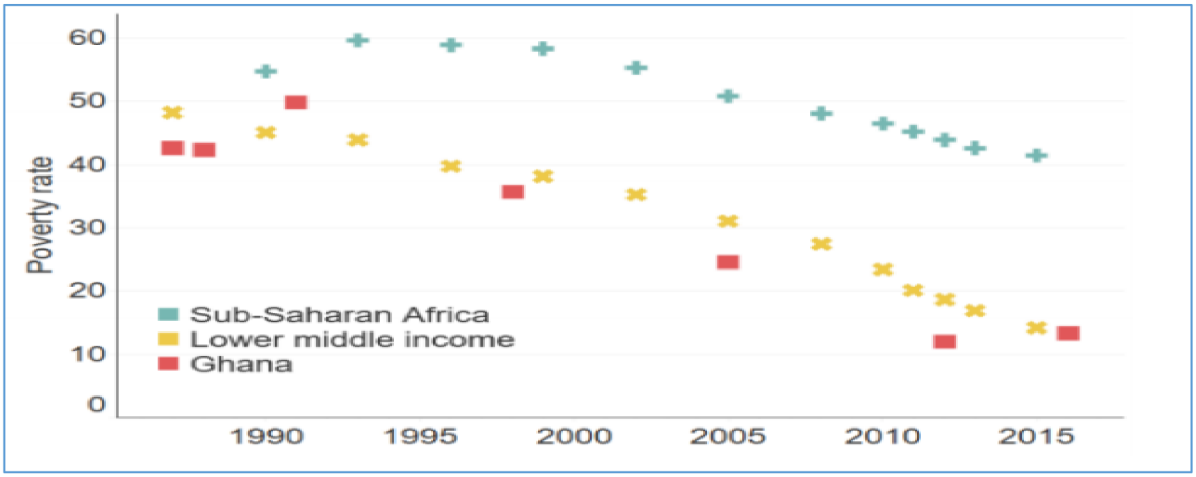
Following global efforts to eradicate extreme poverty and hunger within the Millennium Development Goals, Ghana halved the level of poverty between 1991 and 2012 (Tanaka et al., 2020). This reduction was a better performance compared to other lower-middle-income countries and other sub-Saharan countries (See Fig 3). Despite this feat, the country is still plagued with poverty as a developmental issue mainly related to the population dynamics.

Ghana's population growth rate, in spite of being comparatively low at about 2.2% in relation to the sub-Saharan average of 2.6% in 2019[9] still proves problematic. This is because, the country is characterized by a large working age population with an estimated 59% of the population being between the ages of 15 and 64 years[10]. The country however faces a major challenge of a 12% rate of youth unemployment and a 50% rate of underemployment[11] which are both above the sub-Saharan average (World Bank, 2020). An advancement of the microfinance sector is therefore touted as a means to broaden and deepen financial inclusion

[9] Based on country data from World Bank Open Data
[10] Based on country data from Statista
[11] As defined by Glyde (1977), it is the employment of persons at jobs that call for less than their highest level of skills and at wages less than those to which their skills, if fully utilized, would normally entitle them.

which would allow poor households reduce their risk and smoothen their consumption. Microfinance is also identified to provide small and medium-sized enterprises opportunities to survive and grow (Popovic & Steel, 2016).

Figure 3: Poverty Rate at US$1.90 a day (%) at 2011 Purchasing Power Parity



Source: GLSS 3 – 7 and World Bank, World Development Indicators (WDI) as cited in (Tanaka et al., 2020)

1.4 Purpose of the Study

One of the main propositions for the introduction and development of the microfinance sector in Ghana was to increase the level of financial inclusion to the backbone of the economy (agricultural sector) and in the process improve the living standards of those it reaches.

In this study, the author attempts to explore the relationship between the financial performance of a section of MFIs in Ghana and their ability to reach out to Ghana's poor and excluded populations. The author approaches the study by employing both fixed and random effects models, which considers the variations between the individual MFIs and variations that arise as a result of differences in time. For the most part, the following variables or their other permutations are used: average loan per borrower, proportion of female borrowers, number of borrowers and depositors as proxies to estimate the degree of reach of MFIs in Ghana. This is based on studies such as; Awaworyi Churchill (2020); Reda (2016) and Ek (2011). In particular, this research intends to answer the following questions:

Main Research Question: Does the financial performance of Microfinance Institutions in Ghana have an impact on their ability to reach out to the poor and excluded population?

Sub-Questions to Research: 1. What factors contribute to the financial sustainability of microfinance institutions in Ghana?

2. Are microfinance institutions in Ghana adequately financially sustainable to guarantee their continued support to reach out to the financially excluded population?

1.5 Significance of the Study

A previous study carried out by Boateng et al. (2015) studied the impact of microfinance on poverty in Ghana but mostly concentrated on variable changes at the individual or the household level. His study made use of primary data, particularly, questionnaires in assessing the relationship between MFIs and poverty. The study assessed the impact of microfinance on the households by comparing changes in consumption variables before and after the households' introduction to microfinance.

This current study will add to existing body of knowledge by evaluating the financial performance of a section of MFIs in Ghana over such an extensive period (1999 to 2018) and evaluate the effect of MFIs pursuing sustainability on their ability to reach out to excluded populations. It would also be the first study to utilize Microfinance Information Exchange (MIX database)[12] in the context of Ghana only.

Outcomes from this study are expected to be relevant for decision making and strategizing at the Microfinance level, policy making and funding of MFIs on the donor stage. The study strives to provide some policy recommendations to ensure that MFIs in Ghana can reach out to the financially excluded population, particularly women and the poor while achieving sustainability at the same time.

1.6 Scope of The Study

The study utilizes data from the MIX Market database on a sample of eighty-nine MFIs in Ghana. The data is an unbalanced panel dataset ranging from a period of 1999 to 2018. Analysis in this study is carried out at the MFI level using mainly supply side data from the MFIs. However, results from the data will be informative both for MFI and macro level decision making. Recommendations follow this format as well, bearing relevance for all

[12] World Bank Data Catalogue: (Microfinance Information Exchange (MIX), 2019)

parties involved in the microfinance industry. From management of MFIs to regulatory bodies and the Government of Ghana in general.

1.7 Organization of the Study

The author organises the study into five chapters. This first chapter deals with the introduction which outlines the Evolution of the MFI industry in Ghana. It explores the concept of poverty while focusing on its dynamics in Ghana. The Chapter also outlines the statement of the problem, the purpose and significance of the study as well as the scope of the study. The second chapter focuses on relevant existing theoretical and empirical literature to buttress both the study and the methodology the study adopts. The third chapter discusses the research methodology with which the research question is answered. The fourth chapter presents detailed data findings and discussion and analysis of the study results. The final part of chapter five presents the conclusion and highlights policy worthy recommendations.

CHAPTER 2: LITERATURE REVIEW

This chapter comprises a careful review of existing and related literature and studies that provide both a theoretical and empirical background for this study. In the initial section, the chapter addresses the concept of microfinance. In the succeeding sections, literature that covers the need for financial sustainability of microfinance institutions is reviewed. The study then progresses to an understanding of the concept of microfinance outreach and a review of welfarist versus institutionalist approaches to assessing the performance of microfinance enterprises. The final section presents a review of empirical literature including comparative analysis of methodology adopted in different empirical studies relating to MFI performance. The justification behind the use of selected methodology is also explored.

2.1 An Analysis of the Concept of Microfinance

Over the years, microfinance has been developed as an economic tool for reaching out to the lowest income section of the population and in the process reduce poverty (Ledgerwood, 1998). It has served as an alternative tool for lending when clients do not fit the ideal profile for traditional banks (Janda & Zetek, 2014). While commonly used to refer to microcredit, the term encompasses the provision of financial services to low income clients. Financial services may include savings, remittances and even insurance (Ledgerwood, 1998). Microfinance promises to be a tool that will correct market failure by more efficiently allocating capital and expanding opportunities to the poor (Cull, et al., 2009). The evolution of the microfinance industry has also seen to it that MFIs perform the role of not only financial intermediaries but also the role of social intermediation. Edgcomb & Barton (1998)[13] define social intermediation as the process through which investment is made towards the building of both human resources and institutional capacity with the objective of improving self-reliance among marginalised groups and hence prepares them to engage in formal financial intermediation. Social intermediation includes activities such as formation of support groups and networking. It could also comprise capacity building through various sets of financial training on bookkeeping and business management (Wairimu & Mwilaria, 2017). This role qualifies microfinance not simply as a tool for banking or financial inclusion but also as one of development (Ledgerwood, 1998).

[13] The authors' definition is based off Lynn Bennet's August 1996 article titled "Participation in Sustainable Financial Service Systems"

Despite the seemingly positive outlook for microfinance, there have been some scepticism among academicians on its efficacy as a tool in singlehandedly reducing poverty. For instance Kasali et al. (2015) conclude in their study of whether microfinance operations has any significant effect on poverty alleviation in Nigeria that for MFI operations to be effective in their objective of reducing poverty, the government has to complement their efforts with the provision of basic infrastructural and social facilities. According to Banerjee & Jackson (2017), microfinance led to increasing levels of indebtedness among already impoverished communities and worsened economic, social and environmental vulnerabilities. These and many more point to the fact that other factors are of the importance if the implementation of microfinance is to be successful. Furthermore, a study conducted by Daniel et al. (2016) found that loan repayment rates were considerably better amongst entrepreneurs with more than fifteen years of experience in business. This points to the element that microfinance may not be singlehandedly responsible for reduction in poverty if its beneficiaries lack the required skills or capacity. From the perspective of microfinance institutions themselves, it is found that like all other financial institutions, MFIs need stability to be able to operate and exist into the foreseeable future (Rashem & Abdullah, 2018).

2.2 Is There a Need for Financial Sustainability?

According to Schreiner (2000), sustainability is the ability to repeat performance over time. He adds that sustainable microfinance institutions are permanent but not constant and are able to meet their current goals without harming their ability to meet their goals in the future. If microfinance institutions are unsustainable, they may be able to help the poor now but not in the future he opines. Other studies say that an unsustainable microfinance institution may not meet their goals of reaching out to the poor even in the present (Dale W et al., 1984). An unsustainable microfinance institution may also lead to detrimental effects on its targeted client base (Krahnen et al., 1994).

The financial dimension of microfinance sustainability is easily one of the most important aspects. Kinde (2012)[14] defines financial sustainability as the microfinance institution's ability to cover all its costs from internally generated income from operations without having to depend on external support or subsidy. This definition will be adopted as the working definition for this study. What this definition does not do however is focus on the status of the

[14]The author's definition based off from Thapa et al., 1992

MFI as either for profit seeking or not-for-profit. As such, in this study there is no emphasis on the status of an MFI when an MFI is referred to as being financially sustainable or not.

2.3 Challenges for Financial Sustainability

There has been a longstanding dispute about whether MFIs' efforts at attaining financial sustainability are complementary or rather in competition with their original objectives of reaching out to the poor. On the one-hand, there is a claim that when MFIs target financial sustainability, there is mission drift. Hence the poor for which microfinance is designed for are excluded due to MFIs targeting richer and more profitable clients (Ek, 2011). This phenomenon is widely referred to in literature as "Mission Drift". There is also the potential challenge of inadequate regulation of MFIs both in developed and developing countries. This is because, while they may achieve financial sustainability, they still differ from traditional financial institutions in four major ways; the ownership structure, the characteristics of clients, the products and services offered, and the method of lending to the public (Visconti, 2016). Below, the study explores further these challenges faced by MFIs in their bid to attain financial sustainability.

1. Mission drift

As MFIs continue to strive for sustainability in safeguarding their future operations and targeting the primary customer base, there has been continuous worry that this race for financial sustainability would negatively impact the section of the population that microfinance services have been designed for (Janda & Zetek, 2014). On the average there is a consensus within academic literature that the pursuit of financial sustainability has detrimental effects on the outreach of MFIs. Mission drift is observed when MFIs have a larger average loan size or reduced proportion of female borrowers within their portfolios. This corresponds to a lower depth of outreach. The analysis is consistent with Hermes et al. (2008) which found that MFIs that have lower average loan balances and more women borrowers are less efficient.

2. Regulation of MFIs

Gallardo (2001) opined that regulation and supervision of MFIs should be a key component of the strategy to help MFIs achieve financial sustainability. This is particularly the case as the business of microfinance is not limited to credit but also includes savings, insurance and even payment and remittance services. It is important that MFIs are able to meet the demands of

regulatory bodies if they are to be able to meet their ultimate goal of providing finance to the poorest of the poor. One major reason for this is that, MFI funds are usually inadequate to keep up with their lending demands. To augment their funds therefore, MFIs have the limited options of private savings from their customer base, institutional savings from other financial institutions or in the least likely case for markets of developing countries, securities issues from the capital markets. In all three cases, MFIs must comply with laws and regulations to be able to access additional funds and reach their goals.

Another aspect of the challenge of regulating MFIs is whether or not the regulation should be specifically targeted at the MFI sub-sector or incorporated into the general banking regulations. Pouchous (2012) succinctly expresses this in asking the question "Should microfinance be subject to a specific regulatory framework or should it be integrated into standard domestic banking and consumer protection law?" [15]

The second aspect of the challenge with regards to regulation of MFIs is that, while regulation may ensure that MFIs are financially sustainable, their ability to comply with these regulations may cause MFIs to deviate from their mission of reaching out to the poor. In their study on the effects of regulation on the outreach of a section of MFIs in Ghana, Quartey & Kotey (2019) observed mixed results. With regards to the breadth of outreach which they measured by the number of active clients, a positive relationship between the two variables was observed as regulation enhanced the confidence of the public in MFIs and enhanced their access to voluntary deposits which are of critical need to MFIs to raise their own finance as indicated earlier. In their assessment of the effect of regulation on the depth of outreach, their results showed no effect of regulation on the depth of outreach measured by the average loan size. However, regulation could have a negative effect on the percentage of female clients (as the alternative measure of depth of outreach). These results are not fully in line with those found by Cull, et al. (2009)[16], where it was observed that profit oriented MFIs that have to comply with stringent supervision tend to restrict their operations to segments of the population that are costly to serve (particularly women and the poor). This is in contrast to MFIs that rely on non-commercial sources of funds that do not adjust their operations in response to regulation.

[15] As outlined within the CGAP Guide to Regulation and Supervision of Microfinance

[16] In this study, it is not prudent for the authors' results to be extended to rural and community banks as their study included very few of them in the sample data.

2.4 Social Performance: Aspects of Outreach

Outreach has been defined by Rao & Fitamo (2013) as the depth and breadth of major services of microfinance institutions such as credit provision, savings mobilization, micro insurance, money transfer and payment services. Gebrehiwot (2016) refers to outreach as the ability of microfinance institutions to provide financial services to a large portion of the society and the poorest of the poor. These definitions highlight two aspects of outreach: depth and breadth. Depth of outreach typically refers to outreach to the poorest of the poor whilst width refers to extension of MFI services to an ever-wider population (Conning, 1999). Other authors have extended the definition of outreach to include more aspects. Schreiner (2002) and Navajas et al. (2000), lengthen their definitions as follows to include: worth of outreach to clients; cost of outreach to clients; depth of outreach; breadth of outreach; length of outreach and; scope of outreach. While these aspects are very detailed and throw more light into the understanding of the concept of outreach, in this study, the author focuses on only the two aspects of breadth and depth of outreach. The reason is that MIX data does not provide data for relevant proxies for the remaining four aspects outreach.

Outreach is an important objective for microfinance institutions to pursue not only as a means to serve as large a number as possible and the poor and financially excluded but also for the growth of the MFIs themselves. By reaching out to a large number of people, MFIs increase their chances for achieving long-term sustainability and economies of scale (Rashem & Abdullah, 2018). In their study of factors affecting portfolio yield of MFIs in Central Asia, Janda & Turbat (2013) found that targeting female clients improves the financial performance of MFIs. This points to the importance of outreach for MFIs themselves.

2.5 Welfarist Versus Institutionalist Approach

There are competing schools of thought when the debate of how best to reach out to the poorest of the poor arises. This dichotomous approach to outreach is summarised in the welfarist versus institutionalist dispute. According to Woller et al. (1999), the institutionalist approach traces its origins to the 1960s and 1970s. The experience of Rural Development Institutions (RDI) led to only marginal benefits to rural poor farmers who were the targeted beneficiaries of the rural development programme. A combination of factors such as grant mentality among the RDI clients, high fixed and transaction costs and corruption led to most RDIs failing. With continuous reduction in donor funding, the RDIs were barely functional (Adams & Pischke, 1992). The bottom line of institutionalist argument therefore is; donors in the long term are

usually unable and unwilling to provide funding to support RDIs (in general MFIs). In the case of the RDIs, the lack of institutional viability led to a vicious cycle of lower repayments as borrowers had little incentive to repay loans to RDIs that had a huge shadow of doubt cast on their guaranteed survival into the foreseeable future (Gonzalez-Vega, 1993).

Welfarist can be distinguished from institutionalists by their commitment to serve the poor. They place greater weight on MFI's depth of outreach over the breadth of outreach (Woller et al., 1999). In the opinion of Woller et al. (1999), MFIs face the risk of diverting from their actual objectives to the poor. In that, if priority is given to financial sustainability or profitability, it will result in marginalization of the poor in favour of the more credit worthy or the exclusion of the rural or urban poor population in favour of the urban population. In the table below, the author summarises and makes comparisons between the key components of the welfare-institutional argument that gives rise to the most pressing differences between the two viewpoints.

Table 2: Summary Table of differences between Institutionalists and Welfarists Theory[17]

Basis for Comparison	**Institutionalists**	**Welfarists**
Objective	1. Poverty reduction 2. Emphasis on profitability	1. Poverty reduction 2. Not for profit
Approach	1. Focus on the MFI 2. Results obtained from sustainability of the MFI	1. Focus on the client 2. Results obtained from impact assessments
Potential client base	Entrepreneurial Poor[18]	Core Poor[19]
Lending Methodology	Financial systems approach[20]	Non-profit lending approach[21]

From table 2, it is observed that both the welfarist and the institutionalists aim to reduce poverty. However, the former place a greater weight on the depth of outreach which is

[17] Table created by author based on literary review of (Berguiga, 2008), (Paris, 2013) and (Berguiga & Adair, 2015)
[18] Poor people that possess entrepreneurial skills as
[19] The poor who are further down the poverty line
[20] Microfinance approach that encourages numerous large-scale, profit-seeking financial institutions that provide high quality financial services to large numbers of poor clients.
[21] Microfinance approach that focuses more on the targeting the poor and less emphasis on the institution.

generally approximated by the average loan size, percentage of female clients and percentage of rural population (Woller et al., 1999). Institutionalists on the other hand focus on scale (breadth of outreach) which requires financial resources. For them, the likelihood for a scarcity of donor aid underlies the emphasis on financial self-sufficiency (Gonzalez-Vega, 1993).

When evaluating the effectiveness of the MFI, welfarist concentrate on their microcredit programmes and their impact on the standard of living of the household. They measure the changes in income levels, improvements in access to healthcare and education, and nutrition to assess the impact of the MFIs (Bassem, 2012). In studying the effectiveness of MFIs, institutionalists on the other hand carry out "institutional studies" through the use of proxies. The focus is on market variables such as profitability, number of people reached, cost of lending among others (Bassem, 2012).

The major criticism levelled against the welfarist camp is long-term sustainability in the face of high operating costs (Berguiga & Adair, 2015). Research has shown that financial NGOs have a higher cost than commercial MFIs. This is due to larger-sized loans having lower unit costs, placing not-for-profit NGOs who typically give smaller sized loans at a disadvantage (Cull et al., 2016). There are also questions raised about the sustainability of non-profit-oriented microfinance institutions. Rajdev & Bhatt (2013) found in their study that profit-motivated MFIs have greater odds of sustainability than not-for-profit MFIs in the first phase of their study period. According to Berguiga (2008) also, welfarist have varying impact measurement methods which can be largely attributed to the multidimensional nature of poverty. On the other hand, institutionalists are faced with the criticism of not reaching out to the poorest of the poor but rather the less poor, that is, those closer to the poverty line (Reda, 2016). The author also suggests that for microfinance institutions to be financially sustainable it will mean charging interest rates that cover both their costs of lending and inflation. This may further limit the reach of microcredit.

2.6 Results from Previous Studies

Various studies have focused on the relationship between financial sustainability and outreach of MFIs Nurmakhanova et al. (2015); Awaworyi Churchill (2020) and Kidzuga (2013). Results from these studies have tended to be mixed. For instance Nurmakhanova et al. (2015) found that MFIs focusing on financial sustainability does not necessarily hurt the depth and breadth of outreach. However, these results are partially countered by Awaworyi Churchill, (2020) who through the use of data from 1,595 MFIs from 109 countries found a trade-off

between financial sustainability and depth of outreach but a complementary relationship between sustainability and breadth of outreach. Focusing on specific geographical regions; Sim & Prabhu (2014) also use a sample of 32 MFIs located in India to evaluate the relationship between financial sustainability and outreach. Using transmission mechanisms of interest rates and default rates, the authors conclude that MFIs can simultaneously attain both financial sustainability and their social mission. This is further confirmed by Kattilakoski (2018) who found in her study on the financial sustainability of MFIs in Sub Saharan Africa that despite the existence of a trade-off between efficiency and outreach, it may not be a large one. Her study showed that operationally self-sufficient MFIs actually have a larger outreach than their non-self-sufficient counterparts. In his study, Depth of outreach and financial sustainability of microfinance institutions, Quayes (2012) implies a reverse causality between financial performance of MFIs and the depth of outreach. In that, financial performance has a positive impact on the depth of outreach and the depth of outreach increases the probability of achieving financial sustainability. Quayes (2012) adds that, depth of outreach has a positive relationship with financial sustainability and that, firms that are operationally self-sufficient have a smaller average loan size compared to firms that are not operationally self-sufficient. Schäfer & Fukasawa (2011) suggest in their study of factors that determine the operational self-sufficiency of MFIs that the more borrowers an MFI has (breadth of outreach), the more the institution can take advantage of economies of scale and economies of scope and hence reducing the cost per borrower.

2.7 Fixed and Random Effects Estimations & Microfinance Studies

In using a fixed effects model, it is assumed that a study is testing the hypothesis that there is zero effect within the subject matter. In contrast, the null hypothesis being tested for the random effects model is that the mean effect is zero (Borenstein et al., 2009). Under fixed effects it is assumed that the true effect size is identical for all subjects under study. The only reason for which the effect size will vary is due to the sampling error. In contrast, under the random effects, one aims to estimate the mean of the distribution of effects. These two competing models both take into consideration unobserved effects but operate under different conditions (Wooldridge, 2015). Random effects models though used in many research disciplines are particularly desirable for research in the field of education.

According to Torres-Reyna (2007), a fixed effect model should be used when the study is only interested in analysing the impact of variables that vary over time. This is because, fixed

effects explore the relationship between the independent variable and the outcome within the MFI. In contrast, in a random effects model, the variations across entities are assumed to be random and have no correlation with the independent variables included in the model (Torres-Reyna, 2007). To buttress this point, Janda & Turbat (2013) states that fixed effects estimations removes the effect of the time-invariant characteristics so that the effect of the explanatory variable on the dependent variable can be better measured. The authors continue to say that the distinction between the fixed effects estimation and random effects estimations is that the latter includes the unobserved effects as an explanatory variable in the model.

Both fixed and random effects models represent two of the most commonly used techniques employed in analysing panel data. A number of microfinance studies have employed one or both in analysing causal relationships. Ferrity (2020) employed a random effects model in determining the extent of mission drift in the MENA region. In studying the possibility of the existence of trade-offs between financial performance and outreach, Adhikary & Papachristou (2014) used random effects estimations in addition to general methods of moments estimation. Abdulai & Tewari (2017) worked with random effects as it was relevant to performance analysis. Random effects estimation was used by Janda & Turbat (2013) in the determining of factors that influence portfolio yield of MFIs. Mersland & Strøm (2014) also employ the use of fixed effects panel regression in assessing the portfolio growth of sampled MFIs. Finally, Kar (2010) in assessing performance and mission drift of MFIs adopted the use of fixed and random effects estimations as part of his panel data methodology.

In this study, both fixed and random estimate regressions are implemented for all models for robustness. However, a Hausman test is conducted in each case to select the preferred and more suitable technique for each model.

CHAPTER 3: RESEARCH METHODOLOGY

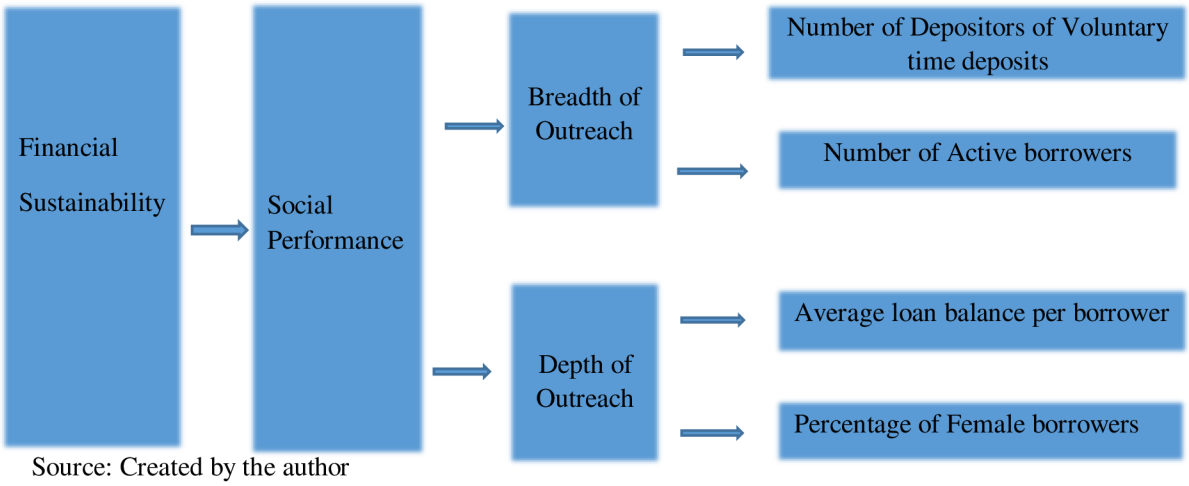
This chapter provides a description of the data and method used in implementing the study. The first section concentrates on the analytical framework adopted in the study. The second section focuses on the data used and presents the variables used as well as the motivation for the selection of these variables. In the process, answers the question of the factors that contribute to MFI financial sustainability in Ghana. Finally, in the last section, the quantitative framework used in the analysis of the study is presented.

3.1 Analytical Framework

There is continuous emphasis on the need for MFIs to have a good financial performance and track record. This is important if they are to continue to have the positive impact they have had on the poor since the inception of the concept of microcredit (Kinde, 2012). Regardless, this position has sparked much controversy as industry players are of the opinion that this would lead to mission drift. As indicated in the literature chapter, mission drift is often used to refer to the phenomenon where the average loan size of an MFI increases due to the shift in the composition of clients it targets (Engels, 2009).

The study explores the relationship by establishing whether the pursuit of profit by an MFI studied by financial sustainability ratios has an effect on its ability to reach out to the poor and excluded population in Ghana (social performance). The outreach is decomposed into its two aspects and studied by variables that act as proxies. The figure below underlines the conceptual formulation for the study.

Figure 4 Conceptual Approach to the Study



Source: Created by the author

The conceptual framework encapsulates the objective of this study. In the study, the social performance of an MFI is measured by the degree of outreach, that is, breadth and depth of outreach. Two proxies are selected for both measurements. The study is therefore interested in exploring the influence of an MFI's pursuit of financial sustainability on outreach.

3.2 Data and Sample Design[22]

Throughout this study, the author makes use of the Microfinance Information Exchange (MIX) Market database. Previously a non-profit organization but now freely available via the World Bank Open Data Catalog. MIX dataset compares and analyses the performance of financial service providers and microfinance institutions[23]. The MIX dataset is used as it represents the most complete and vigorous compilation of financial performance of MFIs not only in Ghana but in the world (Bassem, 2012). The data obtained from MIX market data, although self-reported can be considered reliable (with the exception of inherent bias from varied accounting practices) as the data was audited by MIX before it is released to the public (Awaworyi & Marr, 2014).

The sample is an unbalanced panel dataset consisting of 89 microfinance institutions in Ghana. Data ranges over a period of twenty years from 1999 to 2018. In certain years no data is observed for some microfinance institutions accounting for the unbalanced nature of the panel data. This is mainly due to the reason that MIX relies on the MFIs to provide the data for the calculation of relevant variables. While analysis is mainly based on research and literature review, the author leverages on previous experience working within the microfinance industry in Ghana as a complement to work done within the study.

3.3 Selection of Dependent Variables

In this study, outreach is dissected into two aspects of depth and breadth. The two proxies often used for measuring the depth of outreach of MFIs are the; average value of loans and the average value of loans as a percentage of GNP per capita Piza et al. (2008); Awaworyi Churchill (2020); Hoepner et al. (2011) and Gebrehiwot (2016). In this study, the author

[22] Another process that was initially proposed by the author was the deflation of currency denominated variables. The intention of this was to obscure effects that may be due to general inflationary pressure (Date, 2019). The deflation was to be carried out using an equal weighting between the CPI and PPI as loans of MFIs are used for both consumption and production. However, this idea was discarded upon consultation as these indices are based on 2005/2010 base prices which are middle point within the data.

[23] Description of MIX data as provided by the world bank: https://blogs.worldbank.org/opendata/big-win-data-users-world-bank-unveils-mix-market-database-open-data

employs the former; average value of loans which corresponds to the variable "Average Loan Balance Per Borrower" (AvLBPB). The author favours the variable Average Loan Balance per Borrower as opposed to Average Loan Balance per Borrower/GNI per capita (AvLBPBGNI) as analysis in this study involves MFIs within the same country. Counter arguments have however been put forward as to why Average Loan Balance per Borrower/GNI per capita (AvLBPBGNI) may be used even at the MFI level. Piza et al. (2008, 3) succinctly puts it as such, "*Institutions that intend to reduce poverty through microfinance should give preference to customers that demand values not over 25% of the GNP/capita*"[24]. In essence, MFIs must target the poorest of the poor. The motivation behind the use of the variable AvLBPB is backed up by the understanding that; the smaller the loan size, the greater the depth of outreach (Hossain et al., 2020). The use of average loan size as a measure of depth of outreach has however been criticized by Paxton (2002) to only reflect the lending methodology rather than the exclusion of certain sections of the population.

Percentage of female borrowers (PoFB) is selected as the second measure of depth of outreach. This indicator is employed because of the vulnerability of females to poverty globally (Bhatt & Tang, 2005). In other instances, women of developing countries do not have access to land or property which may be vital as collaterals in their ability to access loans. This is a fact that acts as a disadvantage to females having access to credit. Furthermore, in areas where laws are even implemented to safeguard the rights of women, what happens in practice is a far cry from the positioning of the law (Bailey & Hartarska, 2017). The use of the percentage of female borrowers therefore aptly captures the depth of outreach to a section of the underprivileged population (Nwachukwu et al., 2018). This proxy is especially pertinent for a study involving Ghana. As Gbedemah et al. (2010) concisely puts it in their publication on Gendered risks, poverty and vulnerability in Ghana, although women's roles are important in agriculture, their productivity is constrained by their limited access to and ownership of land, inputs or credit.

One of the best measures for the breadth of outreach is the number of active clients or accounts that an MFI has (Rosenberg & CGAP, 2009). This is because this number best represents the number of clients that have access to the MFI's financial services. It makes more sense to use this indicator compared to the cumulative number of loans or clients[25], as by issuing short terms loans more than long term loans an MFI would apparently have a better performance

[24] Ledgerwood (1998) as cited by Piza et al. (2008)

[25] Cumulative numbers may however be useful if the variable to be assessed payment services or money transfer services.

(Rosenberg & CGAP, 2009). To avoid bias to results, MFIs should rather report active clients as there may be a section of clients that may remain dormant for a long time. The use of active clients would also help contain the problem where one client may have more than one account. The variable, Number of active borrowers (AcBorr) from the data is therefore selected as the proxy for breadth of outreach in this study. This decision is based on the ready availability of this variable within the MIX dataset, previous literature, as well as experience of the author with the MFI industry in Ghana. Also, the proliferation of many MFIs in Ghana is primarily to fill the lending gap. In that, the higher the presence of MFIs, the more likely individuals and small and medium scale enterprises (SMEs) are likely to access loans for sustainable operations (Ebenezer M, 2017). The variable represents the number of individuals who currently have an outstanding loan balance with the MFI or are primarily responsible for repaying any portion of the gross loan portfolio. Individuals who have multiple loans with a financial institution are counted as a single borrower.

The second measure of breadth of outreach selected is the Number of Depositors of Voluntary time deposits (NoDeV). Like the number of borrowers, this variable indicates the number of clients that have access to an MFI's other non-credit services. Voluntary time deposit accounts are used because it gives a better picture of clients that would actually have a deposit account with the MFI even if this is not linked with their need for credit, that is, compulsory savings to support a credit application. The choice of the Number of Depositors of Voluntary Time Deposits (NoDeV) is also apt as it is consistent with the practice where MFIs are able to grow their loan portfolios from savings and deposits mobilized from their client base (Fiebig et al., 1999).

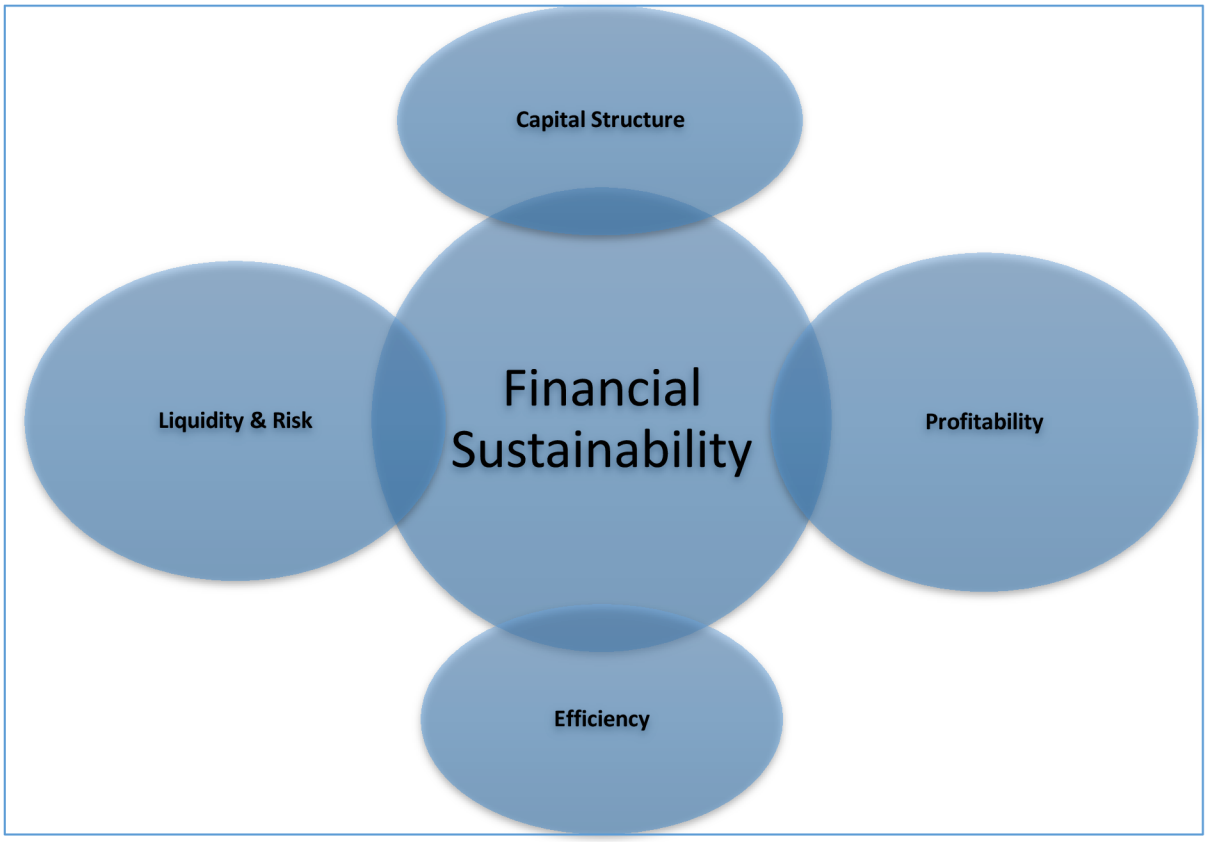
Other proxies have been suggested in literature for the measurement of outreach. These include; the average amounts saved, the value of loan portfolio, the number of village posts that the MFI has, the annual growth in MFI assets, the percentage of rural clients, women's participation, the variety of financial services offered and lending methodology (Abdulai & Tewari, 2017). The author settles on the four variables previously explained as they available within the MIX data for Ghana.

3.4 Selection of Independent Variables

In selecting the explanatory variables for assessing the financial performance and sustainability of MFIs, the author adopts the approach used by Ferrity (2020). The selection

of the variables will be classified based on; Liquidity and Risk facing the MFI, the Capital structure of the MFI, The MFI's degree of efficiency and its profitability. The segmentation is used based on the four main categories of financial ratios as per company valuation studies. Independent variables selected fall within one of the categories and the careful regulation of these variables greatly influence the financial sustainability of an institution. The motivation is illustrated in the figure below (See Fig 5). Underneath, a description of the variables is provided in addition to the literary justification for their selection. They are categorised by the factors affecting the financial sustainability of MFIs.

Figure 5 Framework For Variable Selection



Source: Created by the author

1. Liquidity and Risk: The Portfolio at Risk by 30 days (PAR30) is chosen as one of the liquidity and risk variables that would have an effect on the financial sustainability of an MFI. It measures how effective an MFI is in making collections on its repayments (Tehulu, 2013). From a practical point of view, portfolio at risk can be seen as the value of any loans that have an instalment or more outstanding past the due date by a

certain number of days. In this case, the author makes use of 30 days past due. This "pessimistic" measure is employed because the longer the loan remains unpaid, the higher the risk that there will be default on the loan (Nyamsogoro, 2010). The use of 30 days is therefore a sufficiently conservative standard. An additional conservative proxy for the liquidity and risk that an MFI is likely to face is the loan loss rate (LLR). In its standard form, the loan loss reserve ratio represents the amount set aside by an MFI to cover the estimated loss that it may incur due to defaults in loans (Accounting Guide, 2020). It is however not a real cash adjustment but an accounting treatment used to anticipate the potential loan loss in the books of an MFI.

2. Capital Structure: Debt to Equity ratio (DTER) is selected to be used as an independent variable in the analysis of this study as it gives the relative ratio of debt to equity in the capital structure of an MFI. Debt to Equity ratio formula is given by Total Liability/Total Equity [26]. This ratio is used because it gives the reader a sense of the degree to which an MFI is financing its operations from debt as opposed to funds which it owns (equity) (Fernando, 2021). According to Abrar & Javaid (2016) in their study of MFIs in 70 countries across the globe, they found that the capital structure, precisely the debt to equity ratio, had a significantly positive impact on the Return on Assets of an MFI and hence profitability.
3. Efficiency: In this study, the author selects Cost Per Borrower (CTBR) as the efficiency ratio. This represents a measurement for cost efficiency. The ratio refers to the average cost incurred for a client to access credit funds, that is, Operating Expense / Average Number of Active Borrowers. The assumption is, the higher the CTBR of an MFI, the lower the financial sustainability of the same (Awaworyi & Marr, 2014). This is because MFIs would be facing higher costs in the extension of credit. However it is expected that CTBR has a positive relationship with the outreach of the MFI (Kar, 2010). Also included in the list of variables focusing on efficiency in costs is the interest expenses on deposits (IEOD). It is presumed that an MFI that is focusing on sustainability will attempt to attain efficiency in costs related to deposit accounts. Another variable that could be employed in gauging efficiency is the Borrowers per staff member (BPS). This variable serves as a proxy for staff productivity (Nawaz, 2010). The variable Depositors per staff member (DPSM) would also be used by author as the alternative measure of staff productivity. It is also ideal as the business

[26] From the MIX Market Financial Fields Definitions

of microfinance is not limited to micro lending. The use of this variable is also consistent with the approach adopted by Shu & Oney (2014). The gross loan portfolio (GLP) consists of current outstanding loans and delinquent and renegotiated loans. An efficient MFI would be expected to keep the delinquent component at the minimum in growing their portfolios. Finally, the variable Percent of female loan officers is considered, while not a typical ratio of efficiency, an MFI that seeks to target female borrowers in certain cultural settings would place an emphasis on employing female loan officers (International Labour Office (ILO), 2007).

4. Profitability: Profit margin as defined by the MIX market database is given by Net Operating Income / Financial Revenue. Though Berguiga et al. (2018) suggest that MFIs face a trade-off between financial performance versus social performance, i.e. the reaching out to the poorest of the poor. Roy & Pati (2018) also opined that profitability measure, profit margin, is likely to positively affect the average loan size. Return on Equity (ROE)[27] and Return on Assets (ROA) represent the most common measures of profitability for any financial institution (Rosenberg & CGAP, 2009). The ROA refers to the ability of the institution to make returns on its assets as opposed to the ROE which is the institution's ability to make returns on the owner's investment in the business. While these ratios are more appropriate for institutions that do not typically receive subsidies or donations, these ratios are still relevant as the goal is to assess whether MFIs can maintain themselves and even grow when these subsidies, loans or grants are no longer available to them (Rosenberg & CGAP, 2009). In this study the author uses both ratios in the models, however to minimize the risk of multicollinearity, the use of both ratios in the same model is limited. This would however be subject to the results of the calculation of correlation coefficient between the variables and variance inflation factors (VIF). The MIX market financial performance field definitions define ROA as (Net Operating Income - Taxes) / Average Total Assets. The final profitability variable being adopted is the Operational Self Sufficiency (OPSS). Defined by the MIX market financial performance field definition by Financial Revenue / (Financial Expense + Net Impairment Loss + Operating Expense), represents the ability of an MFI to cover its costs given with the revenue it generates. An MFI is considered profitable if its OPSS is greater than 100%.

[27] Calculations of ROE typically make use of starting equity unless substantial new equity has been injected into the MFI in the reporting period.

Table 3 Definition of Variables [28]

VARIABLE	ABBREVIATION	DEFINITION	UNIT
Operational Self Sufficiency	*OPSS*	Financial Revenue / (Financial Expense + Net Impairment Loss + Operating Expense)	Percentage
Operating Expenses divided by total assets	*OPEXDA*	Operating Expense / Average Total Assets	Percentage
Return on Equity	*ROE*	(Net Operating Income - Taxes) / Average Total Equity	Percentage
Return on Assets	*ROA*	(Net Operating Income - Taxes) / Average Total Assets	Percentage
Portfolio at risk for 30 days	*PAR30*	Outstanding loan portfolio overdue by 30 Days + renegotiated portfolio / Gross Loan Portfolio	Percentage
Loan Loss Rate	*LLR*	(Write-offs - Value of Loans Recovered) / Average Gross Loan Portfolio	Percentage
Cost per borrower	*CTBR*	Operating Expense / Average Number of Active Borrowers	USD
Borrowers Per Staff Member	*BPS*	Number of Active Borrowers/ Number of Personnel	Ratio
Depositors per staff member	*DPSM*	Number of Depositors / Number of Personnel	Ratio
Gross Loan Portfolio	*GLP*	Outstanding principals due for all outstanding client loans including current, delinquent, and renegotiated loans. Does not include write-offs	USD
Interest Expense on Deposits	*IEOD*	Interest expense incurred on all deposits.	USD
Percent of Female Loan Officers	*PERFLO*	Number of females employed by the MFI as loan officers	Percentage
Debt to equity ratio	*DTER*	Total Liabilities / Total Equity	Ratio
Profit Margin	*PROMA*	Net Operating Income / Financial Revenue	Percentage

[28] Table created by the author based on definitions from the MIX market financial data field definitions

Average Loan Balance Per Borrower	*AvLBPB*	Gross Loan Portfolio / Number of Active Borrowers	USD
Percentage of Females Borrowers	*PoFB*	Gross Loan Portfolio / Number of Active Borrowers	USD
Number of active borrowers	*AcBorr*	Number of active female borrowers / Number of Active Borrowers	Percentage
Number of depositors holding a voluntary time deposit account	*NoDeV*	The number of individuals who currently have funds on deposit with the financial institution. The number should be based on the number of individuals rather than the number of groups. A single deposit account may represent multiple depositors. This includes accounts such as transactional accounts, term accounts, interest bearing accounts, and e-money accounts held by the MFI that are not required as a condition for existing or future loans to its clients and liable to be repaid with a fixed maturity date.	Numbers

3.5 Econometric Modelling

Based on the above, the author specifies the econometric model as below:

Model 1 Depth of outreach: $AvLBPB_{it} = \beta_0 + \beta_1 OPEXDA_{it} + \beta_2 ROE_{it} + \beta_3 PAR30_{it} + \beta_4 CTBR_{it} + \beta_5 DTER_{it} + \beta_6 LLR_{it} + u_{it} + v_{it}$

Model 2 Depth of outreach: $PoFB_{it} = \beta_0 + \beta_1 OPEXDA_{it} + \beta_2 PERFLO_{it} + \beta_3 CTBR_{it} + \beta_4 LLR_{it} + u_{it} + v_{it}$

Model 3 Breadth of outreach: $AcBorr_{it} = \beta_0 + \beta_1 OPSS_{it} + \beta_2 ROA_{it} + \beta_3 PAR30_{it} + \beta_4 CTBR_{it} + \beta_5 GLP_{it} + \beta_6 LLR_{it} + u_{it} + v_{it}$

Model 4 Breadth of outreach: $NoDeV_{it} = \beta_0 + \beta_1 IEOD_{it} + \beta_2 OPEXDA_{it} + \beta_3 ROA_{it} + u_{it} + v_{it}$

Where

u_{it} = Between MFI error

v_{it} = Within MFI error

The variables as indicated in the models are as defined in the variable definition table in the previous sub-section.

3.6 Assumptions of the Study

In line with fixed effects estimation, it is assumed within the study that, there are time-invariant unobserved variables which influence the selected explanatory variables (Janda & Turbat, 2013). There is also the assumption that the time-invariant characteristics are unique to each MFI and should not be correlated with other MFI characteristics (Torres-Reyna, 2007).

With a random effects model, the study assumes that the variation across microfinance institutions is random and hence uncorrelated with the independent variables comprised in the model (Torres-Reyna, 2007). Another assumption is that the error term is not correlated with the predictors and hence allow time-invariant variables to play a role as explanatory variables. (Torres-Reyna, 2007). The random effects model allows us to make inferences from results beyond the sample employed in the data.

3.7 Limitations of the Study

1. Like many others, this study adopts the Average Loan Balance Per Borrower (AvLBPB) as the proxy for depth of outreach. The variable has not only been made use of in microfinance literature but by even prominent development actors such as the USAID. However, it has recently come under much criticism due to concerns with reliability. According to Hoepner et al. (2011), in attempting to assess whether average loan size is related to client poverty, he only observed a weak relationship between average loan size or one of its variants and measures of poverty. Hoepner et al. (2011) therefore concluded that in aiming to understand the relationship between the depth of outreach and MFI financial performance, researchers may want to substitute average loan size as a proxy with an actual depth of outreach measure. However due to unavailability of data on actual client poverty measures within the MIX market database, the study still proceeds with the average loan size variable as a proxy for depth of outreach. The average loan size is also criticised by Paxton (2002) as only

reflecting lending methodology adopted by the MFI and not a measure of outreach. These points outline a potential limitation for this study.

2. Due to data limitations, the study is not able to address other crucial aspects of outreach of MFIs in Ghana such the dichotomy between concentration of the institutions in either rural or urban locations. It also does not address issues relating to the legal status of the MFIs or the lending methodology adopted. More information on these characteristics may act as control variables within the model. An analysis of the management style and its impact on outreach would have been very informative. But once again, data limitations made this impossible to carry out.
3. The study is predominantly based on MIX data which is self-reported. The non-random nature of the sample implies that the data may be skewed in relation to a particular characteristic of an MFI. For instance, MFIs may only report to MIX when they have reached a certain age or record certain results.
4. The self-reported nature of the MIX data may lead to inherent bias in some reported figures due to differences in accounting practices and policies.
5. The research is further subject to challenges of data unavailability and low level of quality for that which is available, a phenomenon which is quite widespread in the country. As a result, throughout the research, the topic and methodology is continually refined and adjusted to make the most out of the available data.

CHAPTER 4: RESULTS AND ANALYSIS

In this chapter, the author begins analysis with summary statistics and descriptive statistics of the variables of interest in this study. The remaining part of the chapter focuses on the econometric model selected for the study.

4.1 Descriptive Statistics

The table below presents the descriptive statistics of both the explanatory and dependent variables from the MIX market data set from 1999 to 2018. Some interesting results are observed especially with regards to the operational self-sufficiency of the MFIs sampled. On average, the MFIs are unable to sufficiently cover their operational costs as a very low average performance (1.14%) is observed. The figures indicate that typically, MFIs in Ghana are only able to cover 1.14% of their operating costs and hence making abysmal losses within the period under study. This may point to the dependence of MFIs in Ghana on external help such as donor support to cover operational costs. Similarly, the profit margin appears to buttress the concerns raised by the small operational self-sufficiency. In fact, a negative average profit margin is recorded for the sampled MFIs which is consistent with their inability to cover operational costs under the operational self-sufficiency. The observation suggests a generally suffering MFI sector where a relatively small net operating income is the norm.

The return on equity of the sampled MFIs is spread over a very large range (-1651% to 2727%) which results in a very low average return on equity (.1583%). This may be an indicator that the MFIs are not being very efficient in generating profits (Lau 2014). This is because they are not generating much returns to the owners of their institutions. However, in MFI studies, researchers tend to lean towards the return on assets rather than the return on equity as it is a more useful measure irrespective of the legal status and mission of the MFI (Muriu, 2016). The ROA of the MFIs averages 0.0070%, which is far below the average African MFI performance of 3.1% (Microfinance Barometer, 2018). A general unprofitability is exhibited here, as the average return MFIs reap on their assets is very low.

The observed average portfolio at risk of 0.09% illustrates the MFIs' prudence in managing the risk associated with their loan portfolios. This is because, portfolio at risk as a ratio is generally accepted as a measure of the quality of a loan portfolio and represents the part of the loan that has been contaminated by late repayments (Stauffenberg et al., 2014). In the 2002 study of Latin American MFIs, the leading MFIs showed portfolios at risk of between 1- 6 % and just a few MFIs exceeding 10% (Stauffenberg et al., 2003). With these results one can

conclude on an optimistic outlook for the sampled MFIs in Ghana in terms of managing risk and repayment within their portfolios as the mean PAR30 is below the industry average.

By providing a measure of the cost of maintaining an active borrower, the cost per borrower seeks to measure the efficiency of the MFIs (Stauffenberg et al., 2003). The data from Ghana shows a relatively large range in the cost incurred on each borrower. The industry average based on the sampled MFIs is 225 USD. While this measure does not give readers an idea of what the average loan of an MFI may be, according to Stauffenberg et al. (2003), MFIs specializing in small loans must maintain their cost per borrower below 100 USD if they would want to avoid an excessively high operating expense. It can therefore be inferred that MFIs in Ghana are not averagely focusing on small loans.

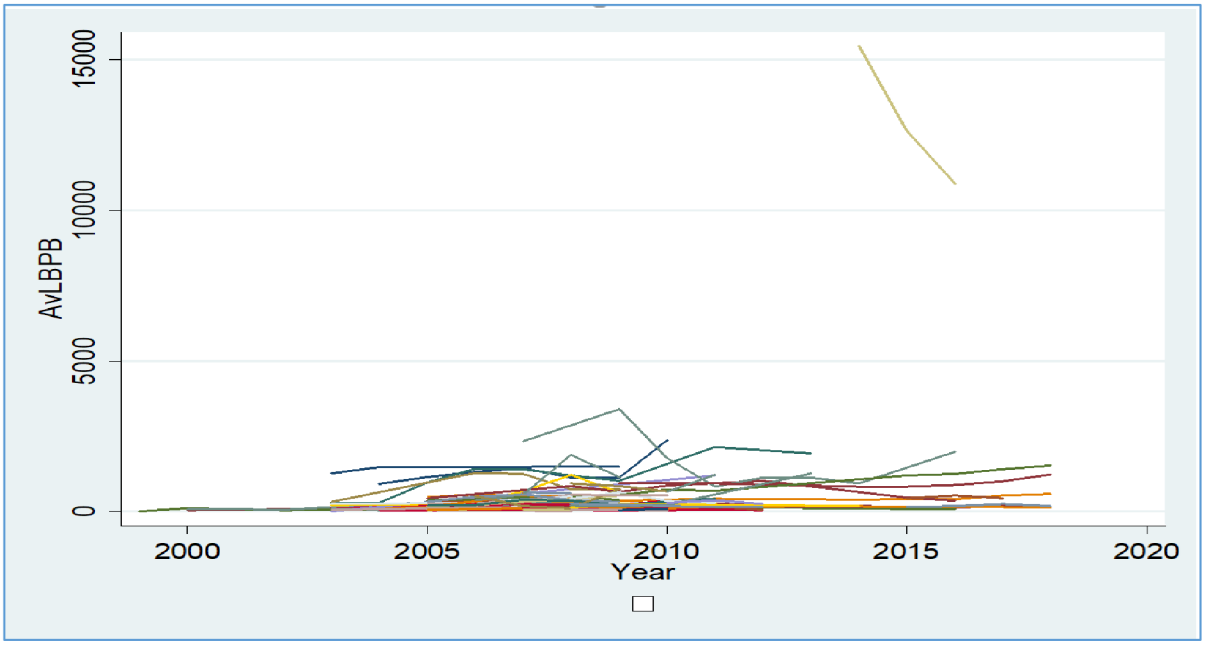
Table 4: Descriptive Statistics for Independent and Dependent Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
OPSS	297	1.144	.43	.085	4.49
OPEXDA	209	.244	.153	.018	.908
ROE	209	.158	232.891	-1651	2726.667
ROA	209	.007	.113	-.594	.48
PAR30	232	.1	.107	0	.744
LLR	191	.384	3.295	-.024	40.268
CTBR	174	224.54	391.112	5	2697
IEOD	242	1.901e+08	2.943e+09	0	4.578e+10
BPS	290	149.448	172.977	2	1115
GLP	349	9764383.1	44667507	0	5.010e+08
PERFLO	64	.345	.278	0	1
DPSM	263	331.814	302.709	0	1850
DTER	298	5.634	45.216	-354.28	558.62
PROMA	291	-.006	.732	-10.778	.777
AvLBPB	298	604.309	1430.688	1	15471
PoFB	236	.708	.314	.058	4
AcBorr	307	13653.42	25435.798	20	148020
NoDeV	41	1621.854	3265.912	0	16087

From the 236 MFIs observed for the variable percentage of female borrowers, the mean number of female borrowers is only a small 0.708%. This generally points to a lack of MFIs that focus on lending to women. The average loan balance per borrower also presents a conservative 604 USD average. The mean number of active borrowers exceeds 13,000 which may be a satisfactory figure depending on the population within which the MFI operates. In comparison, the average number of depositors just exceeds 1,600 people which may be

explained by the status of the MFI as to whether it is allowed to accept voluntary deposits or not as can be inferred from the minimum of zero clients for deposits.

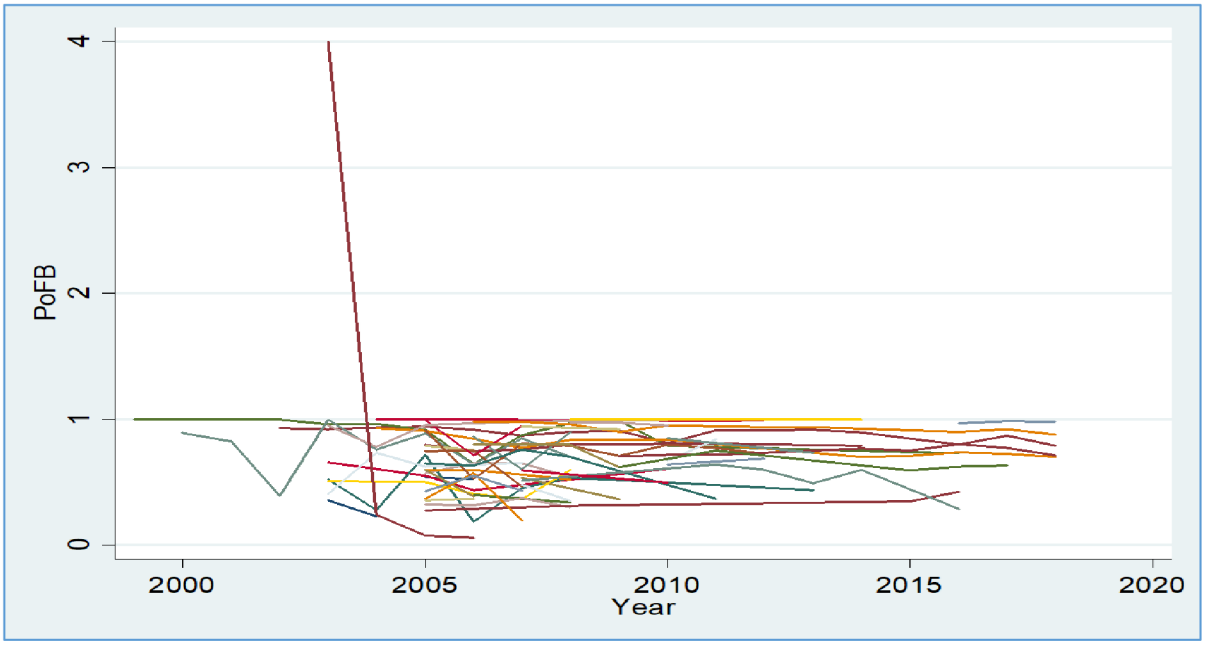
Figure 6: Distribution of Dependent Variable Average Loan Balance per Borrower



Source: Created by the author as output from STATA

In the figure above, based on the sampled MFIs, one can infer that MFIs in Ghana seem to generally conform to the objective of reaching out to the poor. This is assumed by the average trend of the average loan balance per borrower staying around 2,500 USD. This is with the exception of one MFI that stands out. This trend continues over the period from 1999 to 2018. The abrupt start and end of some of the coloured lines reflects the unbalanced nature of the panel data with new entrants and exits throughout the panel.

Figure 7: Distribution of Dependent Variable Percentage of Female Borrowers



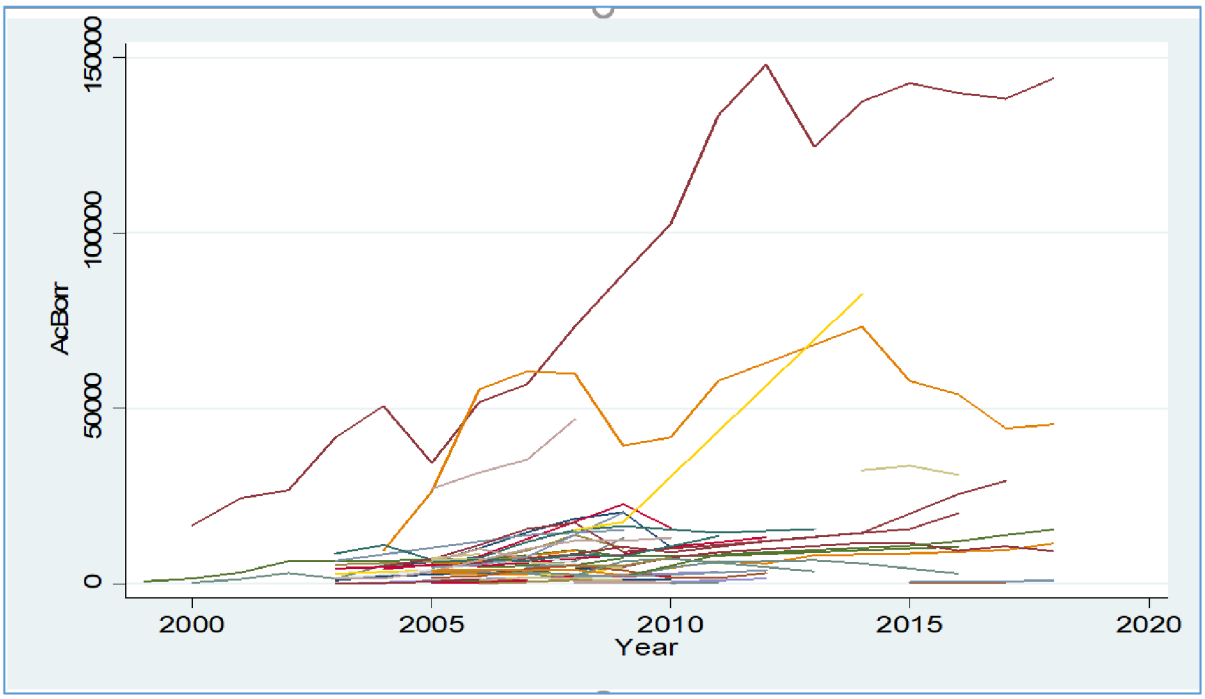
Source: Created by the author as output from STATA

Just like the Average loan balance per borrower variable, the other proxy of depth of outreach, percent of female borrowers shows very little variability among the sampled MFIs. However, the general performance of the MFIs is quite abysmal as the percentage of female borrowers hovers around one percent with the exception of one MFI. The exception of four percent occurs only for one year for this MFI. This is quite a disturbing observation as can be assumed from the trend that there is low targeting for females.

For the breadth of outreach, the Number of active borrowers shows steady growth over the twenty-year period. Only a few MFIs experience this growth nevertheless. The majority do not experience much growth or even variability in the number of active borrowers. This trend may point towards greater efforts by MFIs in Ghana to increase the degree of reach, making sure a greater number of people have access to financial services. In the worst case scenario, the MFIs strive to maintain consistent numbers in their number of active borrowers.

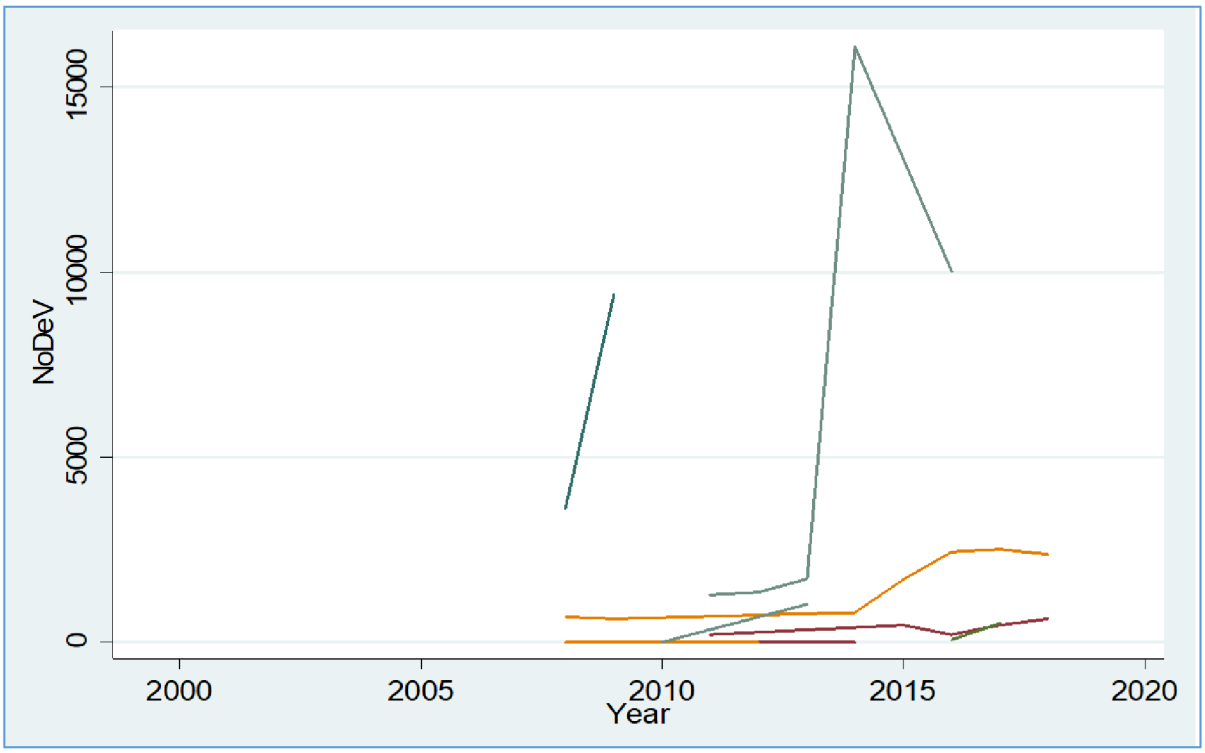
The Number of depositors holding a voluntary time deposit account despite having a small sample shows very large variability. It is difficult to interpret the trend. Nonetheless, the phenomenon may be explained by the fact that not all MFIs are allowed by regulation to hold deposit accounts except when it is acting as collateral for microcredit. The variable may still give us a sense of how much reach MFIs have in providing secondary services beyond their original functions of providing microcredit.

Figure 8: Distribution of Dependent Variable Number of Active Borrowers



Source: Created by the author as output from STATA

Figure 9: Distribution of Dependent Variable Number of Depositors Holding A Voluntary Time Deposit Account



Source: Created by the author as output from STATA

Correlations between the explanatory variables are presented in table 5. A study may include in one model two variables that have significant correlations between them so far as it is less than 0.8, as this may not give rise to any problem of multicollinearity (Kennedy, 2008). In the results presented in the table however, some independent variables have correlation coefficients greater than 0.8 between them. These variables are not included in the same model to avoid the problem of multicollinearity. Additionally, a variance inflation factor (VIF) is computed for all the independent variables selected into models. Those with VIF values of more than 10 are omitted from the each model as a means to prevent the problem of multicollinearity (UCLA, 2021).

Table 5: Correlation Matrix of Independent Variables

Variables	OPSS	OPEXDA	ROE	ROA	PAR30	LLR	CTBR	IEOD	BPS	GLP	PERFLO	DPSM	DTER	PROMA
OPSS	1.000													
OPEXDA	-0.468	1.000												
ROE	0.339	-0.628	1.000											
ROA	0.869	-0.659	0.719	1.000										
PAR30	-0.124	0.096	0.047	-0.136	1.000									
LLR	-0.113	-0.024	0.074	-0.129	0.421	1.000								
CTBR	-0.207	0.351	0.089	-0.151	0.798	0.421	1.000							
IEOD	-0.183	0.064	0.121	-0.120	0.223	0.018	0.231	1.000						
BPS	0.083	-0.428	0.042	0.060	-0.217	-0.180	-0.562	-0.174	1.000					
GLP	-0.199	0.241	0.151	-0.127	0.091	-0.025	0.226	0.774	-0.177	1.000				
PERFLO	0.008	-0.469	0.250	0.132	0.133	0.139	-0.122	0.145	0.194	0.010	1.000			
DPSM	-0.059	-0.017	0.136	-0.077	0.368	0.053	0.251	0.637	0.158	0.653	0.106	1.000		
DTER	-0.340	0.640	-0.997	-0.717	-0.072	-0.102	-0.109	-0.111	-0.037	-0.136	-0.272	-0.129	1.000	
PROMA	0.870	-0.413	0.540	0.841	0.008	-0.081	-0.040	-0.051	0.038	-0.032	0.058	0.117	-0.539	1.000

4.2 Econometric results

The author carries out both fixed and random effects estimations for all four models. The choice between the two estimations is based on results from the Hausman test (See Appendices 3, 6, 9 & 12). In this section, analysis is split into four sub-sections. Each sub-section is dedicated to each model, providing an understanding of the choice of model estimation and an interpretation of results.

4.2.1 Average Loan Balance Per Borrower (Model 1: Depth of Outreach) – Random Effects Estimation

Preliminary modelling involved both random and fixed effects models for estimating effects of selected explanatory variables on the dependent variable, Average Loan Balance Per Borrower (AvLBPB). The choice of the selected estimation method was based on the results of the Hausman test (See Appendix 3). Based on the results of a p-value of 0.099, the null hypothesis is not rejected. The conclusion of this test therefore is that the preferred model is the random effects model (Torres-Reyna, 2007). This is because the Prob >chi2 of 0.099 is greater than the significant level of 0.05.

Appendix 2 presents the results from the random effects estimation. The ratio of the Operating Expenses (OPEXDA) to the assets is very much significant at a p-value of 0.003. The variable also has a negative relation with the AvLBPB. This can be loosely interpreted as, when the Average loan balance per borrower reduces the operating expenses increases. Operating expenses are generally used to refer to personnel and administrative costs (Rosenberg et al., 2013). These results imply that MFIs may tend to offer larger loan sizes as the higher the average loan size the higher the chance for them to reduce their operating expenses. An MFI that focuses on profitability and in effect on lowering its costs would offer larger loan sizes and hence defeat the purpose of reaching out to the poorest of the poor as reaching out to the poor would be costlier for them.

The Return on equity (ROE) has a negative association with the Average Loan Balance Per Borrower (AvLBPB). This is in line with previous literature that employed this ratio and related ratio Return on Assets (ROA) in the analysis of outreach. As has been seen in studies by Singh & Padhi (2019) and Bassem (2012). However, just like the study by Singh & Padhi (2019), return on equity was found to be insignificant.

Cost per borrower (CTBR) as an explanatory variable, is also highly significant and positively related with the Average loan balance per borrower (AvLBPB). This linkage is unsurprising

as it is in line with results found from previous literature such as that carried out by Nawaz (2010) & Ferrity (2020). The result is also theoretically sound as one will expect that higher costs are associated with larger loans. According to Nawaz (2010), increase in loan sizes raises the cost per borrower. This is the case because borrowers that take out larger loans require better level of services which translates into higher costs. Therefore, one can conclude from these results that MFIs in Ghana that are efficient at managing their costs of lending stand a better chance of targeting the poor. Emphasis is also then placed on the need for the MFIs to be cost efficient.

The portfolio at risk at 30 days (PAR30) is statistically insignificant at p-value (P>|t| 0.347). This is the same outcome across both the fixed estimates model and random estimates models. Loan Loss Ratio (LLR) as an independent variable is also greatly significant within the model. LLR is inversely correlated with the Average loan balance per borrower. The ratio represents the reserve that MFIs set aside to cover any estimated losses that they may have suffered. It is usually not a cash reserve but an accounting adjustment (Inter-American Development Bank, 2002). This relationship may therefore imply that Ghanaian MFIs may estimate lower recoverability on loans with smaller average sizes and vice versa. This could act as a discouragement to MFIs lending smaller sizes of loans, defeating the purpose of depth of outreach.

The final explanatory variable to be considered in this model is the Debt to Equity Ratio (DTER). DTER is statistically significant and also inversely correlated with the Average loan balance per borrower. As described in the section focusing on the selection of independent variables, the debt to equity ratio gives analysts a picture of the financing structure of an MFI. How much relative measures of debt and equity is used to fund the MFIs assets. The loans of an MFI and financial institutions in general represent assets on their balance sheets. As defined by the MIX market data financial performance field definitions, the ratio equals total liabilities/total equity. This definition would imply that if more debt (a liability) is used in financing the MFI, the institution would likely favour lending that is targeted at the poorest of poor with smaller average loan sizes typically. The reverse would be true based on the results of the MFIs in Ghana. An MFI funded more on equity would favour lending with larger average loan sizes typically. While there may not be an established scientific reason for this from previous literature, it may be deduced that equity holders may generally invest in MFIs for the sake of profits. Profit seeking MFIs have generally been associated with higher average loan sizes.

4.2.2 Percentage of Female Borrowers (Model 2: Depth of Outreach) – Random Effects Estimation

The second model proposed by the author as an indicator for depth of outreach makes use of the variable Percent of female borrowers (PoFB) as the dependent variable. Employing the same approach as before, a Hausman test was conducted to determine the suitability between the fixed and random effects estimations. The results favoured the use of the random effects model (See Appendix 6). The regression results that will be analysed is based on Appendix 5.

In extrapolating the effect on the percentage of female borrowers, the cost per borrower (CTBR) is found to be significant and negatively related to the percentage of female borrowers MFIs may reach. However, its effect may be considered almost negligible as it is closer to zero. This output therefore implies that as Ghanaian MFIs focus on more female borrowers they stand the chance of reducing the costs of lending incurred. Conversely, observing from the descriptive statistics the low average level of focus that MFIs in Ghana place on female borrowers, (.7080%), this result could indicate that as cost of lending increases, the MFIs shift their focus from female borrowers to other sections of borrowers. An MFI that would want to make a conscious effort to target female borrowers in Ghana should take deliberate steps to improve its cost efficiencies. This is because in doing this the MFI not only reduces its costs but ensures the continued focus on female borrowers as a means of depth of outreach and reaching out to the excluded population.

From Appendix 5, readers will notice that the percentage of female borrowers is directly related to the operating expense divided by total assets (OPEXDA) explanatory variable. This is quite the unexpected result as one will expect increases in operational expenses to deter MFIs from focusing on female borrowers. The result nevertheless suggests that increases in the operational expenses of a Ghanaian MFI or the reduction in its total assets is not in any way detrimental to its performance of reaching out to women. However, the paradox is that MFIs that seek more profitability by cutting down costs and or increasing their total assets would undercut their focus on female borrowers. The result therefore supports the arguments of proponents of a welfarist approach to microfinance that when MFIs focus on profitability or sustainability, this is done at the disadvantage of the poor and marginalised. A group who were the initial target for microfinance. The result holds true for the section of MFIs sampled in Ghana.

The third explanatory variable explored for its effect on an MFI's percentage of female borrowers is the percentage of female loan officers (PERFLO). According to the International

Labour Office (ILO) (2007), a key component to targeting of female clients for proactive women's empowerment is through internal MFI gender mainstreaming. This is composed of steps taken by the MFI including employment and deployment of female loan officers and provision of equal employment and management opportunities for women. This theoretical view in addition to the fact that in a lot of cultures in developing countries it is much easier for female loan officers (quite especially for roving staff) to approach female clients than otherwise led to the inclusion of this variable in the model. The result however indicates that in the socio-economic environment of the microfinance sector in Ghana, this factor does not play an important role in the permeation of microfinance to women and hence the statistically insignificant outcome of the variable percentage of female loan officers.

Finally, the Loan Loss Reserve (LLR) as an explanatory variable for the percentage of female borrowers is explored. The outcome of this variable in the random effects estimations model is highly statistically significant. LLR has a positive correlation with the percentage of female borrowers. The LLR as defined in chapter 3 is made up of the MFIs write-offs (positive), values of loans recovered (negative) and average gross loan portfolio (negative). Hence, as an MFI writes off more loans, the loan loss reserve increases and this may also lead to increases in the focus on percentage of female borrowers. According to D'Espallier et al. (2011), in their global study of 350 MFIs across 70 countries, found that higher percentage of female clients are associated with lower portfolio risks, fewer write-offs and fewer provisioning for loan losses. The positive association between LLR and percentage of female borrowers may therefore just go to point to the fact that as a reactionary measure, MFIs in Ghana that have previously suffered from an unhealthy loan book and seek to correct this would make a conscious shift towards female borrowers. Yet, this outcome is upsetting as it points to obvious biases against female borrowers by MFIs who already have better performing loan portfolios and profitability. With fewer write-offs and lower loan loss reserves, an accounting treatment that reduces the MFI's profitability, profitable MFIs may not make any deliberate efforts to increase their coverage to female borrowers as there are no internal incentives to do so. External incentives may be the only solutions to remedy these market distortions.

4.2.3 Number of Active Borrowers (Model 3) – Random Effects Estimation

As indicated previously, the number of active borrowers (AcBorr) is the third measure of outreach and employed as a proxy for breadth of outreach. To ensure consistency in approach, the regression with selected explanatory variables was run both with fixed and random

estimations with the selected model based on the results from the Hausman test. Appendix 7 presents the results of the fixed estimates model; Analysis would nonetheless focus on Appendix 8 as the Hausman test selects the random effects model as the preferable model.

From appendix 8, it is observed that the operational self-sufficiency (OPSS) is significant and negatively related to the number of active borrowers (AcBorr). This reveals that as the commercial viability of MFIs increase (depicted by an increase in OPSS), there is a reduction in the number of active borrowers. This result is significant at a 5% level of significance. The cost per borrower (CTBR) variable which is also highly significant follows the same pattern. Increases in the cost per borrower incurred leads to reductions in the number of active borrowers. This result is intuitive as a profit seeking MFI would reduce its breadth of reach and maintain a limited number of "trusted borrowers" in an attempt to limit is cost of lending to borrowers. However, an efficient MFI that is able to optimally reduce its cost of lending is placed in a better position to improve its breadth of outreach. These results illustrate that while profitability may serve as a detriment to outreach, efficiency rather encourages outreach.

The Gross Loan portfolio (GLP) is positively associated with the number of active borrowers. As a measure of efficiency, an increase in gross loan portfolio leads to an increase in the number of active borrowers. Therefore, the author concludes that an MFI that seeks efficiency does not undermine its own efforts at increasing its breadth of outreach. Care should however be taken with an MFI's efforts in this regard. This is because, the definition for the gross loan portfolio as included in the MIX market financial data field definitions includes figures for current, as well as renegotiated and delinquent loans. A profit-seeking MFI, however, would seek to minimize the renegotiated and delinquent portions of the gross loan portfolio so as not to undercut its profits through write-offs. Consequently, it is apt to conclude that credit efficiency drives breadth of outreach.

Loan loss reserve ratio (LLR) was employed in the model as a measure of liquidity and risk. Though exhibiting a positive association with the dependent variable AcBorr, it is statistically insignificant. Portfolio at risk (PAR30) is applied as the second measure of liquidity and risk and significant in the model. It also displays a positive association with the number of active borrowers. This is a surprising result as according to Abdulai & Tewari (2017), a negative relationship is expected between PAR and MFI outreach. This result may however imply that for MFIs in Ghana, a pursuit of lower credit risk may weaken its ability to pursue outreach. The final variable that is analysed is the return on assets (ROA) as a profitability measure

included in the model. Despite having a positive association with the number of active borrowers, it is found that this variable is insignificant.

4.2.4 Number of Depositors Holding a Voluntary Deposit Account (Model 4) – Random Effects Estimation

The interpretation of the results of this sub-section will be based on Appendix 11. This was based on the Hausman test favouring the random effects estimation over the fixed effects estimates. The regression model for the number of depositors holding voluntary deposits accounts (NoDeV) required several remodelling as to ensure that the model did not suffer from multicollinearity due to the addition of certain explanatory variables. The fixed effects estimation model resulted in none of the variables being significant (See Appendix 10), however the selection of the random effects model by the Hausman test helped to solves this challenge (See Appendix 12).

Interest expense on deposits (IEOD) represents the amounts that a deposit taking MFI would incur on interest bearing deposits. This would typically be viewed as a cost to the MFI. IEOD is statistically significant at a 5% level of significance and positively correlated with the number of depositors holding a voluntary deposit account. This result is intuitively pleasing when one understands the context of the deposit market within Ghana. Boadi et al. (2015) stated that interest rates has made it attractive for people with idle funds to save with financial institutions particularly banks. A high interest expense on deposits is an indication to the market of the benefits that a depositor will enjoy in the form of interest to be derived from running a deposit account with the MFI. However, this positive effect on the number of depositors holding a voluntary is almost negligible for Ghanaian MFIs, that is, 0.02% (See Appendix 11). This may be due to the fact that though interest incentivises the opening of voluntary deposit accounts, the inducement may not be as great as that enjoyed by mainstream banks. This may be attributed to a number of reasons with a major one being limited trust in MFIs in Ghana given past history and less strict regulation of MFIs in comparison to mainstream banks.

Operating expenses divided by total assets (OPEXDA) is also significant but unlike IEOD, this variable is negatively related to the number of depositors holding voluntary deposit accounts. An MFI's operating expenses typically consists of the costs of day to day running of the institution such as rent, payroll and equipment costs. Once operating costs increase for the MFI the OPEXDA ratio increases and this would have an adverse effect on the number of

depositors who would hold a voluntary deposit account with the MFI. This effect may be due to the transmission effect of interest on costs. An MFI faced with increasing operating costs may attempt to cut down the costs from a variety of sources. A likely candidate for the reduction in costs in the short term would be the interest expenses paid especially on deposit accounts. This may lead to wrong signalling to the market and hence reductions in deposits as one of the main motivation of holding deposit accounts in Ghana is for interest gain (Boadi et al., 2015). The denominator of the OPEXDA ratio is total assets whose increase may signal a growth in the MFI. An increase in the total assets of an MFI will result in a reduction of the OPEXDA ratio and subsequent increase in the NoDeV. These two interactions explained above between the two variables is an indication that an MFI that values sustainability or profitability is likely to have more depositors, based on the contextual environment of the banking sector in Ghana. Using this variable, profitability breeds increased breadth of outreach.

Appendix 11 provides evidence of the relationship between Return on Assets (ROA) and the outreach variable number of depositors holding voluntary deposit accounts (NoDeV). ROA turned out negative indicating that profitable MFIs tend to have fewer voluntary deposit account holders. The coefficient of ROA however is statistically insignificant and hence ROA may not have any effect on the breadth of outreach using the variable NoDeV as a proxy in the context of Ghana.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

This chapter provides the closing comments to this study. It recaps keys highlights of the study. The first section focuses on the summary of the most important findings of the study while the second centres on recommendations for industry players within the microfinance sector in Ghana on balancing the pursuit of sustainability and outreach.

5.1 Conclusions

Since the introduction of the Structural Adjustment programme to the Ghanaian economy in 1983, there has been a general emphasis on a market economy and the reduction of state intervention in the economy (Odutayo, 2015). The microfinance sector has not been left out in this call. Microfinance institutions are consistently being asked to be sustainable in their operations quite especially in the face of the collapse of a number of them in Ghana (Asare, 2018). This call for microfinance sustainability has created a rift between proponents of poverty-lending approach and proponents of sustainability approach as the former believe an emphasis on sustainability causes MFIs to reduce their outreach to the poor and excluded population (Kar, 2010). The author explores the merits of this argument in Ghana using a number of selected variables that represent various dimensions for achieving financial sustainability. Using fixed and random effects estimations, the study quantifies the effect of sustainability variables on the selected proxies of microfinance outreach. A recap of the results of the study are summarised subsequently.

This study found that an MFI that seeks to reduce its operating expenses to improve its profitability faces the risk of not targeting the poorest of the poor. This is because higher operating costs are associated with lower average loans per borrower. Hence by striving for financial self-sufficiency, MFIs in Ghana may be unwittingly excluding the poorest of the poor. It is unclear whether this effect is valid through the lifetime of the MFI or only limited to the short-term. As Khan et al. (2016) puts it, relatively newly established MFIs have larger loan sizes to decrease their costs. Again, the cost per borrower seems to reinforce this conclusion. As the cost per borrower increases, MFIs in Ghana are likely to increase the average loan size per borrower in response which is to the detriment of the depth of outreach. According to Khan et al. (2016), the smaller the loan size the deeper the outreach or the more the lending is to the poorest in the society. However, an MFI that is efficient enough to keep the cost of lending at reasonably low levels puts itself in a position to issue out smaller loan sizes hence deepening its outreach. Smaller average loans per borrower, from the results,

appears to be associated with higher default risk. An MFI seeking sustainability is therefore likely to lean towards reducing its depth of outreach in hopes of reducing the risk of loan loss through non-repayment. From the debt to equity ratio results, it is observed that MFIs in Ghana that are mainly funded by debt tend to focus more on smaller loan sizes compared to those funded mainly by equity. This appears to be a disturbing pattern as the more MFIs strive for sustainability (equity and financial accountability to equity holders), the more they concentrate on larger loan sizes.

The percentage of female borrowers is often used as a measure of the depth of outreach as a series of phenomena identified within poverty specifically affects women. Also, poor women outnumbered poor men and women suffer more severe poverty than men (Godoy, 2004). Higher costs of borrowing are associated with lower levels of lending to female borrowers, this is a disincentive to profit-seeking MFIs to pursue outreach. An MFI that achieves cost efficiencies by reducing its lending cost would be placed in an advantageous position to lend to female clients. In terms of the OPEXDA ratio, the welfarist argument is strengthened, MFIs that do not seek profitability by reducing operating costs are not disadvantaged by targeting female clients. On the other hand, rigorous efforts by MFIs to reduce operating costs may mean deliberate exclusion of female clients since deliberate targeting of female clients may be too expensive for these institutions. However, this interpretation is not definitive as there are other aspects of costs that can be reduced and not costs specifically related to targeting female clients to ensure sustainability. This is for that reason not adequate to conclude that the pursuit of sustainability reduces MFIs efforts at outreach in Ghana.

The choice of dependent variables for the breadth of outreach were the number of active borrowers and the number of depositors with voluntary deposit accounts. From the results, it is observed that the pursuit of sustainability by MFIs has mixed effects on the breadth of outreach. In general, profitability indices like operating self-sufficiency have a negative effect on this scope of outreach. This outcome is crucial because operational self-sufficiency is key to the ability of MFIs to meet their dual purpose of reaching many poor borrowers (in the short term) and covering their costs to ensure continued existence into the long term (Remer & Kattilakoski, 2021). Cost efficiency ratios also like the cost per borrower also negatively relates to the depth of outreach proxy, and number of active borrowers. This is a good indication because an MFI that seeks sustainability through costs efficiencies places itself in a strategic position to enlarge its outreach base. The second efficiency ratio of gross loan portfolio strengthens this assertion by also having a positive association with the breadth of

outreach. Broader outreach by MFIs may come hand in hand with increased risks to the institution. This is observed from the positive association of the portfolio at risk variable with outreach. Finally, expense variables also gave rise to mixed results. Interest expenses on deposits was observed to be positively correlated to the breadth of outreach. This situation is quite peculiar to the economic environment in Ghana where interest on deposits is a major driver of deposit mobilization, especially in the microfinance space. In contrast, the operating expense as a ratio to the total assets is negatively associated with outreach. Depending on which aspect of the ratio is targeted while an MFI strives towards self-sufficiency, the effect on outreach may be either positive or negative. Careful planning and management of the operating expense ratio may positively affect an MFI's outreach.

In considering the implications of this study, it is imperative that industry players and observers do not discount the effects or potential effects of the evolving Covid-19 pandemic. Since the occurrence of the pandemic in March 2020, there have been major concerns of its effects on the poor. Quite especially as the microfinance sector is identified as being one of the transmission mechanisms through which the pandemic will increase the poverty gap. Despite these concerns, according to CGAP (2020), MFIs have seen a consistent rebound since May 2020. Nonetheless, while their portfolios are recovering across almost all regions in the world, MFIs are increasingly taking a more laid back approach that curtails access for some clients. These conservative approach includes focus on larger loan sizes which decreases the depth of outreach. It would be interesting to observe how this unfolds within the economic context of Ghana seeing as economies have to prepare for these setbacks into the foreseeable future. The pandemic has also refuelled the need for MFIs to be sustainable in times when economies are at record low.

While the results are very revealing and provide some guidance on sustainability measures that the management of MFIs in Ghana have to scrutinize closely if they have to continually support the poor and excluded population, the study does not definitively answer the question of the direction of impact that the financial performance of an MFI has on its outreach. The financial performance of microfinance institutions in Ghana does indeed influence the ability of MFIs to reach out to the poor and excluded population. Whether or not this influence is positive depends on management practices and institutional strategy.

The study is purely based on only supply side data from MIX market and hence some demand side data using questionnaires from microfinance clients would have provided more comprehensive results. Future studies would also benefit from inclusion of control variables

such as the age of the MFI as theoretically older MFIs perform better than younger ones in the achievement of their financial goals (Wijesiri et al., 2017). A qualitative analysis of the effects of regulation on MFIs efforts at efficiency and outreach would also help for a holistic analysis. Considering the segmented nature of the microfinance sector in Ghana, an examination of the study at this level would also prove very informative. Regrettably, MIX data does not provide the leeway for this analysis. Again it is to be noted that the results cannot be specifically extrapolated to rural and community banks as the sample contained a few of them. This is unfortunate as the structure of rural and community banks make them more likely to reach the poorest. Further studies into these aspects would be very interesting for research.

5.2 Recommendations

The author provides in this sub-section some recommendations that may provide some pointers to the management of microfinance on the achievement of sustainability that is not to the detriment of their primary work of facilitating outreach. Some recommendations may also be extended to the Bank of Ghana and other regulatory bodies of the various categories of MFIs.

1. **Development of A Comprehensive Identification Database to Enable On Boarding of Prospective Clients**

The National financial inclusion and development strategy placed the level of adults in Ghana who had access to formal financial services at 58% which was a good improvement from the 2010 level of 41%. The strategy aims to raise this number to 85% by 2023 (Ministry of Finance, 2016). The improvements in numbers is largely attributed to the spread of mobile money services. This progress has however been a slow one in comparison to the mobile phone penetration rate due to challenges in the identification of individuals opening accounts for the first time. Without a unified identification system that is accessible to every Ghanaian, the ability of MFIs to identify all potential clients and widen the outreach coverage will be undermined. There is the need for MFIs to correctly identify new customers as this is particularly important in combating crime in the financial sector. Boateng (2015), indicates that one of the key constraints facing MFIs in Ghana is fraud and forgeries. It is undeniable that an increase in financial inclusion would have to be supported by a robust database to enable Know Your Customer (KYC)[29] efforts of MFIs. Without an integrated database for

[29] KYC refers to the verification of clients' identity by financial institutions. The process fits within Anti-money laundering efforts and combating the financing of terrorism

identification, MFIs will be constrained in their efforts towards account opening and lending as there cannot be trade-offs between regulatory requirements and the spread of the breadth of outreach. From an operating expense perspective too, this will help MFIs reduce the costs incurred in securing separate IT systems to identify potential clients as one system will be adequate for the process. In the short term the associated costs with procuring the software may prove prohibitive but will be beneficial to the profitability of MFIs in the long run as an increase in breadth of outreach drives profitability. Government's role in this recommendation is therefore to move to implement necessary provisions for an integrated identification database as soon as possible.

2. Enhancing Microfinance Capacity Through Reliable Credit Exchange

Loan defaults is still one of the biggest issues confronting the financial sector in Ghana (Baidoo et al., 2020). The MFI sub-sector is not insulated from this challenge with the lack of credit information sharing identified as one of the key constraints enabling loan defaults (The SEEP Network, 2015). To better place MFIs in the position to enhance their outreach and maintain sustainability at the same time, it is important that GHAMFIN expedite action in integrating the microfinance sector into the credit information market system. Management of MFI institutions must also take part in ensuring that their institutions are actively sharing information in the credit exchange once it takes off. This recommendation is important if MFIs are to be able to reduce their risk associated with lending as has been learnt from the empirical results that an optimal level of risk improves an MFI's efforts at outreach.

3. Development of Social Infrastructure

The Government of Ghana should move towards the improvement of social infrastructure within Ghana. The lack of infrastructure in mostly rural areas serves as a major source of disconnection of the populace from access to financial services. This is because a lot of places within the country remain inaccessible either due to rough terrains or inadequate infrastructure to connect the rural population to MFIs. An investment in physical and technological infrastructures will go a long way to bridge the outreach gap and connect the excluded populace to the financial services industry through physical branches or through the internet and mobile financial services. Of course, this cannot be done by the government of Ghana in isolation, through the National Communications Authority (NCA), mobile service providers need to be brought on board to improve the quality of telecommunications services in these areas. Taking this burden of connecting with potential clients in rural areas away from MFIs

leads to cost savings on their part. This is principally important because from the results, cost efficiencies mean better enablement for MFIs to pursue outreach.

4. Establishment of Deposit Insurance System

Despite moves towards rigorous regulation of the microfinance sector, there is still little confidence in the sector particularly following the collapse of many MFIs between 2016 and 2019. The establishment of a national deposit insurance body as pertains in countries such as Nigeria, Canada and USA would go a long way to restore trust in the sub-sector (Boateng, 2015). A body such as this with a mandate to provide deposit insurance will offer an added layer to the confidence that clients need to increase their deposits with MFIs. This will in turn provide the deposit mobilization that MFIs need to offer other intermediary services to their target clients base. This move in addition to prudential supervisory oversight by regulators of the microfinance sub-sector will provide the financial stability that MFIs also need to concentrate on their core mandate of targeting the poor and excluded populace.

5. Highlighting Microfinance as Part Of The National Gender Policy

In the results from modelling the effect of sustainability on the percentage on female borrowers, it is seen that MFIs are not internally incentivised to deliberately pursue female borrowers while their risk is low. They may only turn their attention towards female borrowers as a last resort to salvage increasing levels of risk. While achieving sustainability and maintaining low levels of risk they would have to be externally motivated to target female borrowers. This is where a national gender policy comes into play. Ghana's current policy through the microfinance and small loans centre ensures women's inclusion by extending credit facilities to them (Ministry of Gender, Children and Social Protection, 2015). This establishment is however run by government. Additional provision within the gender policy could be made by government for privately owned MFIs to target females. This could include tax breaks that would act as an external incentive to encourage MFIs to target more female clients and achieve outreach.

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APPENDICES

Appendix 1: Fixed Effects Estimation Model 1 (Average Loan Balance Per Borrower)

AvLBPB	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
OPEXDA	-396.365	174.063	-2.28	.025	-742.119	-50.61	**
ROE	-.432	.339	-1.27	.206	-1.105	.242	
CTBR	2.401	.224	10.71	0	1.956	2.846	***
PAR30	-94.697	269.139	-0.35	.726	-629.31	439.915	
LLR	-1035.811	327.626	-3.16	.002	-1686.599	-385.022	***
DTER	-.865	.508	-1.70	.092	-1.874	.144	*
Constant	127.562	54.748	2.33	.022	18.813	236.312	**

Mean dependent var	414.514	SD dependent var	455.729
R-squared	0.569	Number of obs	140.000
F-test	20.058	Prob > F	0.000
Akaike crit. (AIC)	1712.902	Bayesian crit. (BIC)	1733.493

*** p<.01, ** p<.05, * p<.1

Appendix 2: Random Effects Estimation Model 1 (Average Loan Balance Per Borrower)

AvLBPB	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
OPEXDA	-432.724	147.16	-2.94	.003	-721.152	-144.295	***
ROE	-.523	.318	-1.64	.1	-1.147	.1	
CTBR	2.377	.13	18.27	0	2.122	2.632	***
PAR30	-176.032	187.09	-0.94	.347	-542.721	190.657	
LLR	-1118.762	317.259	-3.53	0	-1740.579	-496.946	***
DTER	-1.014	.484	-2.09	.036	-1.963	-.064	**
Constant	155.45	45.317	3.43	.001	66.63	244.269	***

Mean dependent var	414.514	SD dependent var	455.729
Overall r-squared	0.847	Number of obs	140.000
Chi-square	335.020	Prob > chi2	0.000
R-squared within	0.568	R-squared between	0.824

*** p<.01, ** p<.05, * p<.1

Appendix 3: Hausman test for Model 1 (Average Loan Balance Per Borrower)

Hausman (1978) specification test

	Coef.
Chi-square test value	9.26
P-value	.099

Appendix 4: Fixed Effects Estimation Model 2 (Percentage of Female Borrowers)

PoFB	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
CTBR	-.00017	0	-0.92	.367	-.001	0	
OPEXDA	.133	.085	1.57	.131	-.043	.31	
PERFLO	-.095	.076	-1.25	.225	-.254	.063	
LLR	.287	.126	2.28	.033	.025	.55	**
Constant	.824	.046	18.02	0	.729	.92	***

Mean dependent var	0.797	SD dependent var	0.153
R-squared	0.346	Number of obs	40.000
F-test	2.646	Prob > F	0.018
Akaike crit. (AIC)	-161.047	Bayesian crit. (BIC)	-152.602

*** p<.01, ** p<.05, * p<.1

Appendix 5: Random Effects Estimation Model 2 (Percentage of Female Borrowers)

PoFB	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
CTBR	-.0004	0	-3.60	0	-.001	0	***
OPEXDA	.181	.076	2.38	.017	.032	.33	**
PERFLO	-.065	.066	-0.99	.325	-.193	.064	
LLR	.366	.115	3.18	.001	.141	.592	***
Constant	.822	.053	15.65	0	.719	.925	***

Mean dependent var	0.797	SD dependent var	0.153
Overall r-squared	0.506	Number of obs	40.000
Chi-square	21.010	Prob > chi2	0.000
R-squared within	0.301	R-squared between	0.538

*** p<.01, ** p<.05, * p<.1

Appendix 6: Hausman Test for Model 2 (Percentage of Female Borrowers)

Hausman (1978) specification test

	Coef.
Chi-square test value	3.106
P-value	.54

Appendix 7: Fixed Effects Estimation Model 3 (Number of Active Borrowers)

AcBorr	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
OPSS	-12427.047	6953.855	-1.79	.077	-26238.003	1383.909	*
CTBR	-90.039	14.896	-6.04	0	-119.623	-60.456	***
GLP	.003	0	14.45	0	.002	.003	***
LLR	24946.726	18092.752	1.38	.171	-10987.04	60880.493	
PAR30	-203.395	14932.942	-0.01	.989	-29861.506	29454.715	
ROA	19180.658	17376.738	1.10	.273	-15331.044	53692.36	
Constant	29778.488	8230.247	3.62	0	13432.507	46124.468	***

Mean dependent var	16497.028	SD dependent var	25486.245
R-squared	0.701	Number of obs	141.000
F-test	35.943	Prob > F	0.000
Akaike crit. (AIC)	2867.535	Bayesian crit. (BIC)	2888.176

*** p<.01, ** p<.05, * p<.1

Appendix 8: Random Effects Estimation Model 3 (Number of Active Borrowers)

AcBorr	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
OPSS	-11515.462	5843.544	-1.97	.049	-22968.598	-62.327	**
CTBR	-72.557	8.316	-8.72	0	-88.856	-56.257	***
GLP	.003	0	16.88	0	.002	.003	***
LLR	29141.521	17759.209	1.64	.101	-5665.888	63948.93	
PAR30	20747.673	10492.198	1.98	.048	183.343	41312.004	**
ROA	23410.792	16319.978	1.43	.151	-8575.778	55397.361	
Constant	22321.071	6928.887	3.22	.001	8740.701	35901.441	***

Mean dependent var	16497.028	SD dependent var	25486.245
Overall r-squared	0.748	Number of obs	141.000
Chi-square	292.356	Prob > chi2	0.000
R-squared within	0.688	R-squared between	0.656

*** p<.01, ** p<.05, * p<.1

Appendix 9: Hausman for Model 3 (Number of Active Borrowers)

Hausman (1978) specification test

	Coef.
Chi-square test value	7.712
P-value	.173

Appendix 10: Fixed Effects Estimation Model 4 (Number of Depositors of Voluntary time deposits)

NoDeV	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
IEOD	.001	.001	0.80	.435	-.002	.004	
OPEXDA	-3639.68	10788.983	-0.34	.741	-26635.853	19356.494	
ROA	-686.653	9225.356	-0.07	.942	-20350.034	18976.729	
Constant	2483.542	3628.55	0.68	.504	-5250.53	10217.615	

Mean dependent var	1909.788	SD dependent var	3582.109
R-squared	0.067	Number of obs	33.000
F-test	0.358	Prob > F	0.978
Akaike crit. (AIC)	610.067	Bayesian crit. (BIC)	616.053

*** p<.01, ** p<.05, * p<.1

Appendix 11: Random Effects Estimation Model 4 (Number of Depositors of Voluntary time deposits)

NoDeV	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
IEOD	.002	.001	2.27	.023	0	.003	**
OPEXDA	-9531.055	4616.263	-2.06	.039	-18578.763	-483.346	**
ROA	-6773.764	6381.51	-1.06	.288	-19281.295	5733.767	
Constant	3736.551	1617.038	2.31	.021	567.215	6905.887	**

Mean dependent var	1909.788	SD dependent var	3582.109
Overall r-squared	0.303	Number of obs	33.000
Chi-square	12.590	Prob > chi2	0.006
R-squared within	0.061	R-squared between	0.432

*** p<.01, ** p<.05, * p<.1

Appendix 12: Hausman test for Model 4 (Number of Depositors of Voluntary time deposits)

Hausman (1978) specification test

	Coef.
Chi-square test value	.835
P-value	.659

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