FACTORS AFFECTING LENDING BEHAVIOR OF MICRO-FINANCE INSTITUTIONS: EVIDENCE FROM ETHIOPIAN MFIs

A thesis Submitted to the School of Graduate Studies of Wolkite University in Partial Fulfillment of the Award of the Degree of master of science in accounting and finance

By: MURSHIDA AKMEL

WOLKITE UNIVERSITY
COLLEGE OF BUSINESS & ECONOMICS
MASTER OF SCIENCE IN ACCOUNTING AND FINANCE PROGRAM

May, 2022
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Under the Guidance of

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STUDENT'S DECLARATION

I undersigned here, declare that this work entitled ***"Factors Affecting Lending Behavior of Micro-Finance Institutions: Evidence From Ethiopian Mfis"*** is my own original work and has not been submitted to/presented for award of any other degree or diploma to any university or other institute of higher education. And all the materials used as reference in this case this study have been duly acknowledged.

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Date ----------

This research paper has been submitted for examination with our approval as a university advisors.

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WOLKITE UNIVERSITY
College of Business and Economics
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This is to certify that the Research Paper prepared by Murshida Akmel Abadima, entitled as ***"Factors Affecting Lending Behavior of Micro-Finance Institutions: Evidence From Ethiopian Mfis"*** is submitted in partial fulfillment of the requirements for the degree of Master of Science(Msc) in Accounting and Finance and it complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Approval of Board of Examiners

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Internal Examiner Signature & Date

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External Examiner Signature & Date

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Department Head or Coordinator of School of Graduate studies

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ACRONYMS

ADSCI---- Addis Savings and Credit Institution

ACSI-------Amhara Credit and Saving Institution

AEMFI----Association of Ethiopian Micro Finance Institutions

NGO -------Non Governmental Organization

MFIS------- Microfinance Institutions

MSEs------- Medium and small scale enterprises

CGAP-------Consultative Group to Assist the Poor

DECSI-------Dedebit Credit and Savings Institution

GDP----------Gross Domestic Product growth rate

OMO---------Ommo Microfinance Institution Share Company

SACCOs------Semi-formal-Savings and Credit Cooperative Societies

PASDEP------Plan for Accelerated and Sustained Development to End Poverty

GTP--------Growth and Transformation Program

Mo FED------Ministry of Finance and Economic Development

IDA----International Development Association

Abstract

The purpose of conducting the study was investigating factors affecting lending behavior of Ethiopian micro finance institutions. To do so, the researcher examined the effect of macroeconomic variables (Gross domestic product and interest rate) and firm specific variables (liquidity ratio, volume of deposits, operational efficiency and Asset size) as independent variables using total gross outstanding loan as dependent variable. The study adopted quantitative methods of research approach. There are thirty nine MFIs operating in Ethiopia. The target population comprised all of MFIs with greater than or equal to ten years financial data out of all micro finance institutions operating in Ethiopia. Out of purposively selected target population(twenty MFIs), twelve MFIs with ten years panel data (audited financial statement data of the period from 2011 to 2020) were randomly selected and used as sample size of the study. Collected panel data was organized, coded and fed into EViews(version-8) software where panel regression analysis, Pearson correlation analysis and testing of CLRM assumptions were conducted. According to Gujarati (2004), panel data estimators could be estimated using fixed effect or random effect regression models. To take either of them, the researcher conducted hausman test and the result showed that random effect is preferable model to this study. As a result, organized data of the study analyzed (using random effects regression model) and four(liquidity ratio, volume of deposit, operational efficiency and GDP) out of six variables were identified factors to have statistically significant effect on lending behavior of MFIs in Ethiopia.

Keywords: Lending behavior; macroeconomic variables; firm specific variables

CHAPTER ONE

1. Introduction

1.1.Background of the study

The relationship between economic growth and the level of development of financial system in fast growing countries is strong. Several previous studies such as Gurley and Shaw (1967), Goldsmith (1969), McKinnon (1973), Shaw (1973) and contemporary researchers like Beck et al. (2001), Levine (2002) and Rehman and Cheema (2013) indicated that the evolution of the financial system promotes the economic growth through increasing savings, improving the efficiency of distribution of funds available for borrowing, and encouraging the capital accumulation (as cited by Mwafag Rabab'ah, 2015).

Ethiopia, as one of the least developed countries in Africa, more than 83.2% of the country's population live in the rural areas and agriculture is the mainstay of the economy especially to those who live in these rural areas (Robinson, 2003). Thus, productivity of agricultural sector should be improved in order that food security of the poor could be ensured which in turn results in increased standard of living of the poor. To do so, the role of MFIs in these rural areas is inevitable. It is because MFIs are commonly known to energize productivity acting as a development tool which is mostly used by donors (Vinither MAIRURA and Beatrice OKATCH, 2015). As the authors assured, the history of formal MFIs started before three decades as Mohammed Yunus was believed to be founder of formal microfinance in 1976; founded Grameen-Bangladesh. Grameen-Bangladesh began assessing micro finance service to poor women in South Asian Villages. According to Hulme (2000), microfinance programs and institutions have become an increasingly important components of strategies to reduce poverty through promotion of micro and small enterprise development. MFIs enable enterprise owners develop their micro and small enterprises, which enhance their income earning capacity, and hence enjoy an improved living standard (Mosley, 2001; Hermes, C., & Hudon, M., 2018).

Eventhough MFIs are globally recognized as true financial needs as prospective component of strategies for development organizations, governments, and societies to promote enterprises, majority of the poor in the developing countries are still financially un-served. It is because MFIs basically relate to all financial intermediation services such as savings, credit, funds transfers,

insurance, pension and remittances among others by financial institutions in both rural and urban areas to low income earners (Robinson, 2003). MFIs are viewed as key role players to establish an accessible, efficient and competitive financial system within the five years Ethiopian GTP period to increase Gross Domestic Saving from 6% of GDP in 2010, to 15% by 2015 (MoFED, 2010). MFIs are also expected to play an important role in facilitating access to finance for Ethiopians, targeted to reach 67% by the end of the plan period in 2010 (MoFED, 2010).

Lending or loan portfolio is the largest asset and source of revenue for MFIs. MFIs with well conceptualized lending and credit administration policies and procedures can survive the newly emerging competition among these financial institutions. In view of the significant contribution of loans to the financial health of MFIs through interest income earnings, these assets are considered as the most valuable assets of banks. Thus, lending is undoubtedly the heart of banking business. Unlike the mainstream banks, MFIs have social objectives of helping the poor who do not have any means to access any form of formal loans(Felicia Omowunmi Olokoyo, 2011). Therefore, no matter what economic policies of a country be and the supervisory rules and regulations, MFIs would be interested in giving out loans and advances to their numerous customers controlling liquidity and solvency as other financial institutions like banks and other business also achieve maximum profitability in their lending activities and additionally MFIs should normalize paradox of poverty eradication and self-sufficiency. The lack of financial sustainability that leads to insolvency, therefore, requires the injection of fresh capital is considered a failed experience in any industry, but it is even more critical in financial institutions, especially those that manage public savings (OMFI, 2017) annual report.

Moreover, the existence of institutions that fail to grow can also be considered as failures since they do not reach sufficient scale to be profitable and self-sustaining. MFI, or a micro-credit program within institution, suffers serious deterioration in its capital (equity) that jeopardizes its solvency, forcing managers, shareholders or creditors to recapitalize, merge, restructure or close the institution. When loan portfolio quality suffers substantially, MFIs face far greater loan losses relative to the amounts outstanding than intermediaries that operate other types of portfolios secured with collateral. If loans are not properly analyzed and approved to clients, there might be a significant adverse impact on the loan repayment rate (Crabb and Keller, 2004).

Following the credit agreement signed between the Ethiopian government and the International Development Association (IDA), the credit or lending program was started as an urban micro-financing scheme that aimed at financing the Market Towns Development Project (MTDP), whose actual operation begun in 1994. Even though poverty is the main challenge and there is a fundamental issue of economic development in Ethiopia, many argue that an inadequate supply of credit can affect production and productivity of the poor households negatively. Alleviation of poverty and promotion of economic development can, therefore, be facilitated if and only if provision of adequate credit to the poor is available (Samuel Setarge, 2011).Though there is inconsistency of results, there are numerous related previous studies that identify important internal-demand/institutional and external determinant of lending behaviors in commercial banks in Ethiopia and outside the country. However, MFIs related previous researches did not include testing interest rate charged on loan and advances, liquidity ratio, volume of deposits, capital base, operational efficiency, portfolio quality and external/macro-economic variables such as inflation, and economic growth (GDP) as factors affectimg lending behavior of MFIs.

Taking in account of why these MFIs are not supplying sufficient amount of loan to the poor, the study have been conducted with the objective of investigating Factors affecting lending behavior of MFIs using selected twelve MFIs as sample elements.

1.2.Statement of the problem

As there are different formal and semi-formal financial institutions in a financial system/sector of a country, one of their vital role is intermediary activity i.e. collecting savings from depositors and making these savings available as loans to borrowers. Banks in developed or developing countries are suggested to be more efficient in collection and use of information that affect their lending decision/behavior (Suwanaporn, 2003, cited in Jonas Ladime, Emmanuel Sarpong-Kumankoma and Kofi A. Osei, 2013). Lending practices, as it is stated by Felicia OmowunmiOlokoyo (2011), in the world could be traced back to the period of industrial revolution which was able to increase the pace of commercial and production activities and the practice was attributed to the need of large capital outlays for projects. As the author explained, so many industries at that time were not able to meet the sudden upturn in the financial requirements and, therefore, turn to the banks for assistance.

When we come to Ethiopian financial sector, it has been evolved through three stylized stages: first, financial repression and fostering state-led industrial and agricultural development through preferential credit (in the socialist regime); second, market-led development through liberalization and deregulation (post 1991); and third, financial inclusion through allowing private banks and MFIs as core components of financial sector (since second half of 1990s). As a result, Proclamation no. 40/1996 in 1996 allowed the establishment of MFIs and marked the beginning of a new era in Ethiopia's financial sector and opened the opportunity for an inclusive financial sector (Getnet Alemu, 2014).

Following its introduction, micro finance service was taken as a shift from government and NGOs- subsidized credit programs to financial services run by specialized financial institutions. With this shift, Some NGOs and government micro credit programs were transformed to microfinance institutions (Ayelech Eshete, 2010). According to Peck and W/Yohannes (2009), much of the passion behind microfinance is driven by its potential to help the poor people, better manage their financial resources, take on new economic opportunities, mitigate everyday risks, reduce vulnerability and improve their living condition. According to Eshete et al.(2013), development of microfinance institutions (MFIs) is a major innovation under the present regime in Ethiopia and the system is being governed by a separate microfinance institutions' proclamation issued in 1996. The authors assured taking 2006 NBE data that MFIs accounted for about 3% of the financial system assets, number of clients to the sector was about 1.3 million, typically in the low income bracket and only about 10% of demand for microfinance services to the potential clientele of the sector.

Additionally, it was also authenticated by Samuel Setarge (2011) that the role what MFIs are play to alleviate poverty and promot economic development is not as it should have been beause of inadequacy of credit being provided to the poor. Thus, the issue of lending loan, thus, should be the major concern different stake holders like investors, policy makers and other implementers as there is paramount importance of MFIs to the poor and to energize economic development of a country though it is difficult for MFIs to secure their loan provision by bankable collateral (American Development Bank, 2003, AEMFI, 2014 annual report). Therefore, it is the main point what the researcher taken to account as core research gap and enitiated her to identify why Ethiopian MFIs are not providing sufficient amout of loan to the poor(a group ignored by the

formal financial sector not to have credit access) so that the poor could create different economic opportunities and minimize level of poverty challenging day to day life of the poor.

As far as studies conducted by different academicians and researchers (abroad or Ethiopian perspective) are concerned, it is rare to get studies conducted to investigate factors that affect lending behavior of microfinance institutions in Ethiopia. However, there are a number of studies conducted about determinants of lending behavior of commercial banks. For example, Felicia Omowunmiolokyo(2011) conducted a study to identify determinants of commercial Banks lending behavior in Nigeria and investigated that volume of deposits, investment portfolio, exchange rate and GDP have significant and positive impact on lending behaviors of commercial Banks. Additionally, MwafagRabab'ah (2015) conducted a research entitled as "Factors Affecting the Bank Credit: An Empirical Study on the Jordanian Commercial Banks,, in Jordan and investigated that ratio of non-performing loans, liquidity ratio and window rate have a negative and significant impact on the ratio of credit facilities (dependent variable); and the bank size and the economic growth were variables identified to have a positive and significant impact on the ratio of credit facilities.

Furthermore, there is a study conducted by Mitiku (2014) aiming at identifying determinants of commercial bank lending in Ethiopia using panel data of eight commercial banks for the period from 2005 to 2011. The study tested the relationship between commercial bank lending and its determinants like (bank size, credit risk, gross domestic product, investment, deposit, interest rate, liquidity ratio and cash required reserve). Ordinary least square (OLS) was applied by the researcher to determine the impact of those predictor variables and the result showed that there is significant relationship between commercial bank lending and its size, credit risk, gross domestic product and liquidity ratio. But deposit, investment, cash required reserve and interest rate were identified not to have effect on Ethiopian commercial bank lending for the study period.

Moreover, there is a study which was conducted by Aytenew (2016) to identify determinants of Lending Behavior of Banks operating in Ethiopia. To do so, he used panel data of eight banks over the period 2004 to 2013. Fixed effect model was preferred by the researcher over the random effect model based on the Hausman Specification test. As a result of analysis result of fixed effect, liquidity ratio and lending rate were identified to have significant effect at 5% level of

significance. Additionally, all bank specific factors were identified to have statistically significant effect at 1% significant level.

Inspite of the fact that lending is the main activity of MFIs and loan portfolio is the largest assets of MFIs, these financial institutions are not supplying sufficient amount of loan/credit to the poor. Therefore, it should be researched properly to identify why these MFIs are not supplying sufficient amount of loan to the poor and to investigate what are the factors affecting the lending behavior of MFIs in Ethiopia. However, it is not possible to get previous studies conducted in Ethiopia to identify factors affecting lending behavior of MFIs though a number of studies conducted about commercial banks (even if MFIs and Commercial banks share a number of common activities as financial institutions). As a result, this existing literature gap(lack of related studies conducted about Ethiopian MFIs has been taken in to account to conduct this study so that it could be possible to minimize the gap investigating different internal(firm specific) and external(macroeconomic) factors that affect lending behavior of MFIs. The researcher used ten years panel data (from 2011- 2020) from audited financial statement of twelve randomly selected MFIs operating in Ethiopia out of purposively selected target population (MFIs with greater than or equal to ten years audited financial statment) and the proposed factors (independent variables) were liquidity ratio, volume of deposits, Asset size, Operational efficiency, Gross domestic product and interest rate and total gross outstanding loan was applied as dependent variable.

Basic Research Questions

The study consisted the following research questions developed based on statement of the problem and these are:-

- ✓ What are the macroeconomic factors affecting the lending behavior of MFIs in Ethiopia?
- ✓ What are the firm specific factors affecting the lending behavior of MFIs in Ethiopia?

1.3.Objectives of the Study

This research addresses the following general and specific objectives.

1.3.1. General Objective

The general objective of this study is to examine the factors affecting lending behavior of Micro-Finance Institutions in Ethiopia.

1.3.2. Specific Objectives

specific objectives of this study are:

- ✓ To examine the major macroeconomic factors affecting the lending behavior of MFIs in Ethiopia
- ✓ To identify internal or firm specific factors affecting the lending behavior of MFIs in Ethiopia

1.4. Scope of the Study

It is a research paper conducted to investigate factors affecting lending behavior of MFIs operating in all regions of Ethiopia. As a result, all MFIs operating in Ethiopia were considered as total population and only twelve MFIs with audited financial statement of greater than or equal to ten years were purposively selected as target population of the study. Out of purposively selected target population(twenty MFIs), twelve MFIs were selected randomly as sample size of the study. Therefore, panel data from selected MFIs ranging from the period 2011 to 2020 G.C. was used for the study collecting the data from NBE.

1.5.Significance of The Study

Since MFIs are essential role players in improving economic development of a country in general and reducing poverty level of the poor in particular, findings of this study could be used by concerned bodies as it tried to investigate factors affecting lending behavior of MFIs in Ethiopia. In other words, policy makers, academicians and researchers can use findings of the study as benchmark to in increase role of MFIs, to development policy instruments and to conduct further researcher about the topic. Furthermore, concerned MFIs management bodies could use findings of the study to identify crucial drivers of lending behavior of Ethiopian MFIs and take corrective measurements wherever necessary. Additionally, the study may also have important role to minimize existing literature gaps about the topic. Findings of this research paper will play great role to increase knowledge of the researcher as there is possibility of getting additional knowledge from the study and to be used as benchmark for further investigations.

MFIs.

1.6.Limitations of the study

The study was conducted analyzing panel data collected from twelve MFIs for the period 2011-2020. Even though MFIs, as financial institutions, are expected to have nearly similar lending performance and procedures, we may not be able to set generalized conclusions with full confindence about factors affecting lending behavior of microfinance institutions in Africa or other countries depending on findings of data analysis results conducted for Ethiopian MFIs.

1.7.Organization of the Paper

In addition to the preliminary pages, this research paper consisted five chapters. The first chapter with its sub topics is introductory parts incorporated the introduction, background of study, statement of the problem, research objectives, significant of the study, scope and limitations of the study. The second chapter describes the detail review of related literatures regard to factors affecting lending behavior of micro finance institutions in Ethiopia in focus.The third chapter expresses the information regarding the methodology and sampling techniques that had been used to conduct the research. The fourth chapter is about data analysis and interpretation followed by conclusion and recommendations. Finally, references and appendices are included as part of the paper.

CHAPTER TWO

2. Review of Related Literatures

This chapter deals with the literature review of the study. It gives a general review of the literature review (basic concepts of micro finance, micro-lending and history of MFIs. It also deals with factors affecting lending behavior of financial institutions, research gaps, theoretical and empirical models and conceptual framework of the study are among others**.**

2.1.Review of Theoretical Issues

2.1.1. Conceptual definition of MFIs

According to Karimi,et al. (2003), the history of micro-finance back dates to three decades when Mohammed Yunus founded Micro-finance in 1976. The micro-finance started offering in Bangladesh to poor women. He established the Grameen Bank. Grameen is a Bengah name which means village. Its evolution, however, dates back 30 years from the late 1960s with the efforts made toward reduction of poverty through the promotion of low income earning activities among the poor. It is an up growth small enterprise development initiative. In providing services to its clients, the micro-finance apply three approaches. The methodologies are individual lending, solidarity group lending and group of groups.

Micro-finance includes wide range of facilities of services to poor such as savings microcredit and the insurance (Chakravarty & Shahriar, 2010). MFIs provide the small loan to poor people who are disqualified for the formal loan (Morduch, 1999). According to Conroy (2002), Micro-finance is the wide range of provision of financial services included services of payment, accepting deposits, lending loans transfer of money and insurance to low income and poor people. Whereas the two terms such as micro enterprises and micro-credit financing include the value of borrowing as well as savings. Microfinance is the whole field whereas the other two terms are specifically related to provision of credit (Maria, 2004).

Microfinance is the supply of loans, savings, money transfers, insurance, and other financial services to low-income people. Microfinance institutions (MFIs) —which encompass a wide range of providers that vary in legal structure, mission, and methodology offer these financial services to clients who do not have access to mainstream banks or other formal financial service

providers (Lafourcade et al., 2005). Similarly, Parker et al., (2000) defines microfinance as provision of small loans (called "micro-credit") or savings services for people excluded from the formal banking system.

Thus, re[viewed literatures here show that there is no single and hard definition of Micro finance though different authors defined definitions at different time periods are revolving around the same concept. As commonly understood, the term micro-finance refers to the activities of financial and social intermediation services directed to low income population group. The financial intermediation refers to loans, savings, insurance, transfer services and other financial products targeted at low income population group. The social intermediation, however, refers to group formation, development of self-confidence, training in financial skills, and arrangement capabilities among the poor section of the society. This idea is supported by (Robinson, 2001) that microfinance industry strives to provide services that help the low income poor reduce financial risk, improve their management skills, increase their productivity and then their income, collect higher returns on investments, provide financial and emotional security, and improve the overall quality of life for their families.

2.1.2. Why MFIs? (The Need of MFIs)

Dejene (2003) argues in his study on the economic importance of the informal institutions in Ethiopia that the poor are often marginalized in the formal credit markets. This can be explained partly in terms of: 1) a lack of collateral, which makes lending to the poor a risky venture; 2) transaction cost of lending to and borrowing by the poor is often high; and 3) utility loss from repayment is higher for the poor as compared to the rich. So, the poor don't have access to the formal financial sources. Lack of access to institutional credit is one of the crucial factors impeding peasant agricultural production in particular and rural development in general. On the other hand, credit from informal sources is inadequate and the interest rate charged is exorbitantly exploitative. Fidler and Webster (1996) note that although informal credit markets operate widely in rural areas, moneylenders typically charge very high interest rates, inhibiting the rural poor from investing in productive income generating activities. Thus, failure of the formal financial institutions to fulfill the financial needs of the rural poor, on the one hand, and inadequacy and exploitative or costly nature of informal credit sources on the other, led to the establishment of specialized financial institutions known as MFIs with the purpose of extending micro-credit to the

rural and urban poor. MFIs use peer monitoring and joint liability structure to overcome the screening, monitoring and enforcement problems commonly encountered by formal lending institutions (Sinha, 1998).

MFIs act as the financial intermediaries like the formal banks. The main difference between the MFLs and the formal banking is that formal banking focus on rich client and the MFIs focus on poor client (Nawai, 2010).The role of microfinance institutions as catalysts for economic growth and development through granting of loans and advances. According to United Nations Millennium Development Goal (MDGs) microfinance is a strategy to change the life of the poor people in terms of generating revenue to cover the necessary cost and institutions meet the demand (United Nation, 2011). Micro finances support the process of development by changing the situation of the poor through facilitating different services which are necessary for poor. Thus, MFIs sector has the ability to effectively engender among others:

a) economic equality in the economy;
b) improvement in gender welfare ;
c) equitable allocation of resources;
d) SME development and capacity building;
e) improved participation of women in the mainstream economy

Microfinance has a very important role to play in development according to proponents of microfinance. UNCDF (2004) states that studies have shown that microfinance plays three key roles in development. It: a) helps very poor households meet basic needs and protects against risks, b)is associated with improvements in household economic welfare, and c)helps to empower women by supporting their economic participation and promot gender equity.

Microfinance institutions play many roles in the development process. The need for microfinance is also increasing in many developing countries. According to (Parker et al., 2000), in the right environments, microfinance can accomplish many roles such as financing people's economic choices, diversifying household income, making household less vulnerable to downturn in the economy or personal, smoothening income flows of the household, improve quality of life throughout the year and strengthening the economic position of women so that they can take

greater control of decisions and events in their lives. In addition to this, MF contributes in the process of household asset building. It also provides savings service, allowing poor households to accumulate safe, but flexible cash accounts to draw on when needed.

2.1.3. MFIs in Ethiopia

The history of micro-finance back dates to three decades when Mohammed Yunus founded and established the Grameen Bank or Micro-finance in 1976 when MF started offering financial services in Bangladesh to the poor women. Grameen is a Bengah term which means village. (Karimi,et al.2003). The micro-finance in Ethiopia has greatly contributed to the uplifting of the status of the low income earners to a point that the banks are competing for the customers that they refused before. In Ethiopia, MFIs were established as share companies in line with Proclamation 40/1996 and the Commercial Code of Ethiopia issued in 1960. The ownership structure of sample MFIs had been a blend of regional governments, NGOs, associations, private organizations and individual shareholders.

When we try to see history of financial services in Ethiopia, majority of the poor had been accessing financial services through informal channels namely Iquib (Rotating Saving and Credit Associations), Iddir (form of mutual support mainly for funeral service), Moneylenders, friends, and relatives. Though the recovery rate of informal financial service providers is high and benefiting the borrower with flexible loan terms, the rate of interest is very high and unaffordable (Wolday, 2002). The history of formal establishment of Ethiopian MFI dates back to 1997 following the issuance of Proclamation No. 40/1996 which lately replaced by proclamation No.(Anbessie Chaka Robele, 2012). Getaneh (2005) stated that the Licensing and Supervision of MFI Proclamation of the government encouraged the spread of MFIs in both rural and urban areas as it authorized them, among other things, to legally accept deposits from the general public (hence diversify sources of funds), to draw and accept drafts, and to manage funds for the micro financing business.

AEMFI is an association of Ethiopian Microfinance Institutions (MFIs) of all sizes, from small institutions with approximately 1, 000 borrowers to large-sized ones with more than 1,000,000 borrowers. The National Bank of Ethiopia (NBE) is authorized to license, regulate and supervise MFIs activities. As per the proclamation article 3(2), MFI is defined as the provision of financial

services like accepting savings extend credit, drawing and accepting drafts payable, providing money transfer services and others specified in the Article (proclamation No. 626/2009). It is clearly stated that they can deliver loans to clients based on two guarantee arrangements namely group Guarantees without any additional property collateral and real collateral for individual based lending system (Yigrem, 2010).

The lower income segments of the society were previously excluded from financial services of formal banking system to engage in any productive economic activities as the existing system was ignoring the poor and not proper. This has led to give more attention to microfinance as financial intermediary through which the poor section of the population gets access to financial services. In order to provide microfinance services to the lower income section of the population on the one hand and to carry out micro finance service in a sustainable way on the other hand, the proclamation of licensing and supervision of MFIs (proclamation number 40/1996) was issued in 1996. As of June 2017, there were 35 microfinance institutions operating in the country, all of which are deposit taking, with an aggregate capital of 10.5 billion birr, and more than 4 million active borrowers. The five largest MFIs are regional institutions supported by the government (Amhara, Dedebit, Oromia, Omo and Addis Credit and Saving micro finance institutes) which accounted for 93.6% of the savings and 90% of the credit of the sector(GTP, 2011-2015).

Government policy establishes that MSEs and MFIs have a key role to play in economic development in Ethiopia. There are two primary areas of policy which steer the development of microfinance in Ethiopia. The first core policy area is the government's national economic development strategy, implemented in a series of five-year strategic plans – Sustainable Development and Poverty Reduction Programme (SDPRP, 2001-2005), Plan for Accelerated and Sustainable Development to End Poverty (PASDEP, 2006-2010), and the Growth and Transformation Plan (GTP, 2011-2015).

GTP is the most recent economic plan which was Launched in late 2010 with the aim of sustaining current economic growth, achieve the 2015 Millennium Development Goals (MDGs), and set the longer term vision for Ethiopia as being: 'to become a country where democratic rule, good-governance and social justice reign, upon the involvement and free will of its peoples, and once extricating itself from poverty to reach the level of a middle-income economy as of 2020-2030' (GOE, 2010: p21). The GTP makes explicit reference to the role of MFIs. They are viewed

as key role players to establish an accessible, efficient and competitive financial system within the five year GTP period to increase Gross Domestic Saving from 6% of GDP in 2010 to 15% by 2015 (MoFED, 2010:30). MFIs are also expected to play an important role in facilitating access to finance for Ethiopians, targeted to reach 67% by the end of the plan period from 20% in 2010 (MoFED, 2010: 34) though it seems significantly more ambitious target than the commitment by the National Bank of Ethiopia at the May Declaration, 2013.

The second core policy area is the support for MFIs in the Micro and Small Scale Enterprise Development Strategy (2010-2015) (GoFDRE, 2011) which recognizes the importance of MFIs and their role in the development of MSEs. The strategy aimed to address six major challenges that impede the growth of micro-enterprises, including: skills development, technology transfer, market facilitation, access to finance, the reduction of entry barriers, and improving information (World Bank, 2015a). As NBE 2016/17 annual report, the number of Micro-finance Institutions (MFIs) remained at 35 by end June 2017 while their total capital and total assets increased significantly by 20.8 and 35.1 percent, to reach Birr 10.7 billion and Birr 49.6 billion, respectively. Their deposit mobilization and credit allocation also expanded remarkably. Compared to last year, their deposits surged by 42.8 percent and reached Birr 26.3 billion while their outstanding credit went-up by 28.5 percent to Birr 32.4 billion.

2.1.4. The Concept of Lending and Micro-credit

As a financial institution, lending is the main business of MFIs and loan portfolio is the largest asset and source of revenue for MFIs. Therefore, its administration requires considerable skill and profession as MFIs with well conceptualized lending and credit administration policies and procedures can survive the emerging competition what financial institutions are facing today. In view of the significant contribution of loans to the financial health of institutions through interest income earnings, these assets are considered as the most valuable assets of institutions. Thus, lending is undoubtedly the heart of MFIs. Access to financial credit is a requisite precursor to the progress and development of any nation in the world. The smooth flow of funds from the savers to the borrowers in an economy is an initial impetus that snowballs into the growth of a nation and the advancement of its people. Financial institutions which assume diverse forms and structures act as intermediaries in this flow of credit between a nation's savers and borrowers. But, when the majority of a country's population cannot participate in this flow of credit, the

economy can be said to be financially constricted and the population, financially excluded. This is a stranglehold which could bind a nation's economy in a state of developmental deadlock(Fernando, 2006)..

Lending which may be on short, medium or long-term basis is one of the services that MFIs do render to their customers. In other words, MFIs do grant loans and advances to individuals, SME, business organizations, as well as government in order to enable them embark on investment and development activities as a mean of aiding their growth in particular or contributing toward the economic development of a country in general. Micro credit can also be called micro lending it can be defined as "A very small loan given to poor people for helping them to be self-employed". It is given to poor ones for increasing the living standard of loan taker by investing it in income giving activities (Fernando, 2006).

2.1.5. Theoretical Framework

In this section of the paper, different theoretical frameworks supported by different authors and literatures about factors affecting lending behavior of financial institutions are discussed. Thus, Credit market theory, firms characteristics theory, agency theory, loan pricing theory and liquidity management theory discussed here are vital for this study:-

i. The Agency theory- The agency theory is basically concerned with the manner in which agency affect the form of the contract, especially where the contracting parties are asymmetrically informed. Asymmetric information means circumstances where one party to a transaction is more equipped with information than the other party. Citing different studies like Arrow (1968), Akerlof (1970), Hillier and Ibrahim (1993), John Nma Aliu **(2013)** pointed to the fact that such situations could cause markets to deviate from the conventional behavior patterns which can lead to moral problems and adverse selection.

ii. The liquidity theory- The liquidity theory on the other hand, looks at the interest rate as the token paid for abstinence and inconveniences experienced for having to part with an asset whose liquidity is very high. It is a price that equilibrates the desire to hold wealth in the form of cash with the available quantity of cash, and not a reward of savings. Interest rate is a function of income. Its primary role is to help mobilize financial resources and ensure the efficient utilization of resources in the promotion of economic growth and development. From the traditional theory,

nominal interest rates adjust fully to the expected rate of inflation leaving real interest rates unchanged. In his works, Irving Fisher held the same sentiments and he believed that there is a positive relationship between expected future price increases and nominal interest rate. An increase in price increases the nominal value of trade, resulting in an increase in demand for money and leading to an increase in nominal interest rate. Iriving Fisher's theory is controversial, however, particularly when it is interpreted as suggesting a constant real interest rate. Moreover, Ngugi and Kabubo (1998) applying the traditional theory showed that positive real interest rate are achieved when inflation is moving down and when they move up the prospects of keeping them are narrow. Their study further argued that the spread between lending and deposit rates widened with liberalization, while the short-term rates increase at a faster rate compared with long term rates resulting in a negatively sloped yield curve. Frederick (1986) also stated that high interest rate is an effective tool for stopping high inflation.

Furthermore, Fredric (1986) provided additional information that interest rate is the price what lenders charge on borrowed funds; as he contends the forces of demand and supply in the market would attain the market equilibrium interest rate. This position is in conformity with the classical economic theory, thus, supply side of this money market represents the supply of loanable funds while the demand side will represent the demand for loanable funds. Therefore, the interest determination is at equilibrium at the point of intersection of the supply and demand curves. The MFIs give credit to the small entrepreneurs and households whatever it has high risk of defaulting with funds which are mainly borrowed from other financial institutions or donations from well wishers. Classical financial institutions typically require the existence of collateral as security before granting loans to a client. However, low income levels and the lack of assets would exclude most people in developing countries from obtaining credit from standard banks.

iii. The Grameen Solidarity Group Theory

This model is based on group peer pressure whereby loans are made to individuals in groups of four to seven (Armendariz et al, 2005). Group members collectively guarantee loan repayment, and access to subsequent loan is dependent on successful repayment by all group members. Payments are usually made weekly According to Armendariz et al, (2005). Solidarity groups have proved effective in deterring defaults as evidenced by loan repayment rates attained by organizations such as the Grameen Bank, who use this type of microfinance model. They also

highlighted the fact that this model has contributed to broader social benefits because of the mutual trust arrangement at the heart of the group guarantee system. The group itself often becomes the building block to a broader social network (as cited by Gatimu, Eric Maina, 2014; Frederick Mukoma Kalui, 2014).

iv. **Loan Pricing Theory** -Banks cannot always set high interest rates. Before trying to earn maximum interest income, Banks should consider the problems of adverse selection and moral hazards since it is very difficult to forecast the borrower type at the start of the banking relationship (Stiglitz and Weiss, 1981). If banks set interest rates too high, they may induce adverse selection problems because high risk borrowers are willing to accept these high rates. Once these borrowers receive the loans, they may develop moral hazard behavior or commonly called borrower moral hazards since they are likely to take a highly risky projects or investments (Chodecal 2004). From the reasoning of Stiglitz and Weiss, it is usual that in some cases, we may not find that the interest rate set by bank is commensurate with the risk of credit default.

v. **Firm Characteristics theories**-These theories predict that the number of borrowing relationships will be decreasing for small high quality informational opaque and constraints firms, other things reman constant (Godlewski & Ziane, 2008, Cited by Olokoyo, 2011 p.64).

vi. **Adverse selection –Credit market theory-** A model of the neoclassical credit market postulates that the storms of credits clear the market. If collateral and other restrictions (covenants) remain constant, the interest rate is the only price mechanism with an increasing demand for credit and a given customer supply, the interest rate rise and vice versa. It is, thus, believed that the higher the failure risk of borrower, the higher the interest premium (Ewert et al, 2000, cited by Olokoyo, 2011 p.64). it was also stated in the study that this theory explains the effect of the financial risk, and the interest on the credit. The theory rests on two main assumptions: that lenders cannot distinguish between borrowers of different degrees of risk, and that loan contracts are subject to limited liability (that is, if the project returns are less than debt obligations, the borrower bears no responsibility to pay out of pocket). The analysis is restricted to involuntary default, that is, it assumes that borrowers repay loans when they have the means to do so.

In a world with simple debt contracts between risk-neutral borrowers and lenders, the presence of limited liability of borrowers imparts a preference for risk among borrowers, and a corresponding

aversion to risk among lenders. This is because limited liability on the part of borrowers implies that lenders bear all the downside risk. On the other hand, all returns above the loan repayment obligation accrue to borrowers. Raising interest rates then affects the profitability of low risk borrowers disproportionately, causing them to drop out of the applicant pool. This leads to an adverse compositional effect higher interest rates increase the average riskiness of the applicant pool. At very high interest rates, the only applicants are borrowers who could potentially generate very high returns (but presumably with small probability). Since lenders' preferences over project risk run counter to those of borrowers, they may hold interest rates at levels below market-clearing and ration borrowers in order to achieve a better composition and lower risk in their portfolio. Excess demand in the credit market may persist even in the face of competition and flexible interest rates (Christine Wanja Mbuch, 2015).

vii. Portfolio Theory -Since the 1980s, companies have successfully applied modern portfolio theory to market risk, many companies are now using value at risk models to manage their interest rate and market risk exposures. Unfortunately, however, even though credit risk remains the largest risk facing most companies, the practice of applying modern portfolio theory to credit risk has lagged (Margrabe, 2007). Companies recognize how credit concentrations can adversely affect financial performance. A number of institutions, therefore, are actively pursuing quantitative approaches to credit risk measurement. This industry is also making significant progress toward developing tools that measure credit risk in a portfolio context. They are also using credit derivatives to transfer risk efficiently preserving customer relationships. (Kairu, 2009). The combination of these developments has vastly accelerated progress in managing credit risk in a portfolio context.

Traditionally, organizations have taken an asset-by-asset approach to credit risk management. As the approach generally involves periodical evaluation of the quality of credit exposures, applying a credit risk rating, and aggregating the results of this analysis to identify a portfolio's expected losses. The foundation of the asset-by-asset approach is a sound credit review and internal credit risk rating system. This system enables management to identify changes in individual credits, or portfolio trends in a timely manner. Based on the changes identified, credit identification, credit review, and credit risk rating system management can make necessary modifications to portfolio strategies or increase the supervision of credits in a timely manner. While the asset-by-asset

approach is a critical component to managing credit risk, it does not provide a complete view of portfolio credit risk, where the term risk refers to the possibility that actual losses exceed expected losses. Therefore, to gain greater insight into credit risk, companies increasingly look to complement the asset-by-asset approach with a quantitative portfolio review using a credit model (Mason and Roger, 1998). Companies increasingly attempt to address the inability of the asset-by-asset approach to measure unexpected losses sufficiently by pursuing a portfolio approach. One weakness with the asset-by-asset approach is that it has difficulty to identify and measure concentration. Concentrated risk refers to additional portfolio risk resulting from increased exposure to credit extension, or to a group of correlated creditors (Richardson, 2002).

The portfolio theory approach, therefore, is the most important theory and plays a great role in bank performance studies. As per the Portfolio balance model of asset diversification, the best possible holding of each asset in a wealth holder,s portfolio is a function of policy decisions determined by a number of factors such as the vector of rates of return on all assets held in the portfolio, a vector of risks associated with the ownership of each financial assets and the size of the portfolio ((Njerl, 2012). The portfolio theory further explained as portfolio diversification and the desired portfolio composition of commercial banks are results of decisions taken by the bank management. Further, the ability to obtain maximum profits depends on the feasible set of assets and liabilities determined by the management and the unit costs incurred by financial institutions especially banks in producing each component of assets. Portfolio theory largely supposes that bank performance is influenced by internal efficiencies and managerial decisions (Njerl, 2012, as cited by Abebaw Yenesew, 2014: p. 23)

2.2. Review of Empirical Studies

There are many studies that have been conducted relating to this study of significant variables that affects the lending behavior of banks. And the researcher used these empirical studies which are conducted on banks (as there is no chance to get studies specifically conducted to identify factors affecting lending behavior of MFIs) as bench mark taking in account of the fact that MFIs and Banks are sharing a number of common financial institutions related activities.

2.2.1. Studies world Wide context

Globally, many countries have come up with microcredit initiatives to start small businesses especially to empower women and the youth. The youth enterprises' fund is a widely used initiative by many governments to promote youth employment and a key driver to the economic growth. For example, the Royal bank of Scotland came up with support services that helped the youth to access funds, to do mentorship and networking program and startup capital for businesses. Similarly, the Canadian Youth Business Foundation established in 1996 was meant to design youth business loan program specifically tailor made for the unemployed and underemployed (Karlan & Morduch, 2009).

Mwafag Rabab'ah (2014) examined the determinants of commercial banks' lending in Jordan. The study used sample of ten Jordanian commercial banks with panel data from 2005-2013. The study used the ratio of credit facilities to total assets as a dependent variable and eleven independent variables like deposits ratio, non-performing loans ratio, capital ratio, liquidity ratio, asset size, lending rate, deposits rate, window rate, legal reserve ratio, inflation and economic growth rate. Thus, the ratio of non-performing loans, liquidity ratio and window rate were identified independent variables to have negative and significant impact on the ratio of credit facilities and the bank size and the economic growth rate were investigated to have positive and significant impact on the ratio of credit facilities of commercial banks in Jordan.

Olusanya Samuel, Olumuyiwa Oyebo. Afees Oluwatosin and Ohadebere Emmanuel Chukwuemeka (2012) as a group of researchers conducted a study to identify determinants of lending behavior of commercial banks in Nigeria as a Co-integration analysis using data from 1975 to 2010. The study used secondary data and series of Econometrics techniques to investigate the long run relationship between Commercial banks and their lending behavior over the period used for the analysis. Moreover, the model used Loan and advances (LOA) as dependent variable and Volume of deposits (Vd), annual average exchange rate of the naira to dollar (Fx) for the period of thirty-seven (37) years, Investment Portfolio (Ip), Interest rate (lending rate) (Ir), Gross domestic product at current market price (Gdp) and Cash reserve requirement ratio (Rr) as independent variables. As a result, analysis output revealed that there is positive relationship between Loan and advances and Volume of deposits, annual average exchange rate of the naira to dollar, Gross domestic product at current market price and cash reserve requirement ratio except

Investment portfolio and Interest rate (lending rate) that showed a negative relationship. Analysis result also revealed that there is a long run relationship between Loan and advances and all the explanatory variables used in the model.

Additionally, there is a research work which was conducted by Imran and Nishatm(2013) to examine factors that explain bank credit provided to the companies in Pakistan during the period of 1971-2008. The study focused on the supply side (the factors associated with the offer of money by the bank) and it was conducted using the rate of growth in bank credit provided to the private sector as a dependent variable and foreign liabilities growth rate, growth in the domestic deposits, market interest rate, the money supply as a percentage of the GDP, economic growth rate and the exchange rate as independent variables. Thus, analysis result indicated that foreign liabilities, domestic deposits, the rate of economic growth, the exchange rate and the monetary conditions have a significant impact on the size of the bank credit provided to the private sector in Pakistan, especially in the long term. The result also showed that the rate of inflation and market interest rate do not affect the credit provided to the private sector in the short-term. Furthermore, the result revealed that the financial health and liquidity in banks play a vital role in determining the credit, and the good economic conditions induce banks to increase the volume of credit provided to the private sector.

Adedoyin and Shobodun (1991) conducted a study entitled as "lending is undoubtedly the heart of banking business". Therefore, its administration requires considerable skill and dexterity on the part of the bank management while a bank is irrevocably committed to pay interest and deposits, it mobilized from different sources. The ability to articulate loanable avenue where deposit funds could be placed to generate reasonable income, maintain liquidity and ensure safety requires a high degree of pragmatic policy formulation and application. Osayameh (1991) supported this veiw by stressing that the days of arm| chain banking are over, and that the increasing trend in bad debts and absence of basic business corporate advisor services in most Nigerian commercial banks, suggest an apparent lack of use of effective lending and credit administration technique in these banks. (cited by Olokoyo, 2011 p.62).

The study conducted by Mohd Abdur Rahman **a**nd Ahmad Rizal Mazlan (2014) investigated the performance of operational self-sufficiency and its determinants of Microfinance Institutions (MFIs) and compared their positions in Bangladesh. The study used secondary quantitative data

from the MIX market website where containing information from financial statements from the MFIs operating in Bangladesh. To achievement objectives of the study, the researchers used descriptive statistics and financial ratio analysis techniques as well as econometric technique on the several performance indicators standardized by CGAP to measure MFIs performance. The multiple regression technique was used here to measure the determinants of operational self-sufficiency to justify with yield on gross loan portfolio (nominal), cost per borrower, average loan balance per borrowers, age of MFIs and number of active borrowers and operating expense ratio of MFIs in Bangladesh. The multiple regression output revealed that most of the MFIs are operationally self-sufficient to operate their operations in the country.

Futher more, Sharma and Gounder (2012) examined the change in the bank credit provided to the private sector in six economies in the South Pacific using panel data from the period 1982-2009. The study used the credit granted to the private sector as a dependent variable and average interest rate on the loans, inflation rate, deposits ratio to GDP and the size of the banks' assets of output as independent variables including a dummy variable reflecting the existence of a financial market and the GDP. The results showed that the higher average interest rates on loans and the higher inflation rate may have negative effects on the rate of growth in credits, while the size of the deposits and assets had a positive impact on the growth of credit. The results also indicated that the strong economic growth leads to higher growth in credit.

Ayman Mansour Khalaf & Alkhazaleh (2017) conducted a study to identify the effect of some factors proposed as determinants of bank lending in Jordanian commercial banks collecting data from the financial reports of thirteen banks during the period 2010-2016. The study has adopted Ordinary least square model (OLS) to test the main hypotheses. The analysis results of the study showed statistically significant adverse effect of both credit risk and liquidity on bank lending. However, significant positive effect of the return on assets, size of the bank measured by assets, inflation, money supply and growth in gross domestic product in determining the level of lending were identified by the researchers. Additionally, the study does not show a significant statistical relationship between investments, the volume of deposits and bank lending. The review points out that because of the negative impact of liquidity and credit risk factors, commercial banks need to focus more on reducing their impact because presence of this impact at the end will decrease the ability of these banks to provide loans and stay in the banking market.

There was also a study conducted by Awdeh to investigate determinants of development banks credit in the Lebanese state financial data of sixteen years from 2000 to 2015 for 34 commercial banks. The analysis result showed that factors contributed positively to the private sector are GDP growth, inflation, deposit growth, and money supply. Wereas lending interest rate, credit risk, T-bill rate, public borrowing and remittance inflows are determinants identified to have a negative impact on growth(Awdeh, 2016, cited by Ayman Mansour Khalaf & Alkhazaleh,2017).

2.2.2. Studies at African Context

The study conducted by Ayieyo (2016) identified the effect of deposit size and interest rate on the total loan using data collected from nine commercial banks in Kenya over ten-year period from 2002 to 2011. Using the multiple regression analysis, the results showed that interest rate was identified to ave negative correlation and affected the total loan significantly. Moreover, Ladime, Sarpong-Kumankomah and Osei (2013) conducted a study on the determinants of bank lending behavior in Ghana. As aresult, they found that the behavior of bank lending is directly and positively affected by the size of the bank and the structure of bank capital and also found evidence of the negative impact of the central bank lending rate and exchange rate.

Despite the high potential of MFIs in Africa, serious and closely related problems in microcredit debt payment have been noted for the last consecutive decades(Buss, 2005). As a result, most MFIs are likely to have unreliable financial and portfolio information in addition to a poorly equipped system in managing their credit portfolio or protecting customers' savings (CGAP, 2013). Recorded financial performance of most of MFIs in SSA showed high outstanding loans, high transaction costs and rising managerial costs (ibid). The MFIs provide microcredit through group lending to the rural smallholders to narrow the gap between the demand and supply of credit (CBE, 2010). In Ghana, MFIs provide financial assistance to cooperative groups organized by farmers since groups have common goals and interests (Ayogyam et al. 2013). For the last three decades, these MFIs have been successful in granting loans but the trend has been worrying due to high default rate (ibid). Udoh (2008) observed that in Nigeria, 75 percent of government sponsored loans disbursed by Akwa Ibon State Agricultural Loan Board to farmers, 59 percent were loan defaulters. In Tanzania most rural SACCOs suffer from 'weak internal control systems and high non-performing loans because of ineffective loans management' (Maghimbi, 2010 and Bibi, 2006).

Chodechai (2004) conducted a study to investigate factors that affect interest rates, degree of lending volume and collateral setting in the loan decision of banks, says: Banks have to be careful with their pricing decisions as regards to lending as banks cannot charge loan rates that are too low because the revenue from the interest income will not be enough to cover the cost of deposits, general expenses and the loss of revenue from some borrowers that do not pay. Moreover, charging too high loan rates may also create an adverse selection situation and moral hazard problems for the borrowers. Chedia (2016) used financial data covering the period from 2000 to 2013 concerning a sample of 18 Tunisian banks to identify the impact of some internal and external factors. However, only inflation was idebtified to have a significant impact on loan and advances, while ROA, net interest margin and liquidity have had a significant impact on the volume of bank loans (as cited by Ayman Mansour Khalaf & Alkhazaleh, 2017).

Olokoyo (2011) has tested the determinants of bank lending for the commercial banks in Nigeria during the period 1980-2005, and their effectiveness in influencing the behavior of bank lending. The study used loans and advances granted by the Nigerian banks as dependent variable and size of the deposit, the size of the investment portfolio, the interest rate on the loans, the reserve requirement ratio and the liquidity ratio as independent variables. Using the regression analysis model, analysis result showed statistically significance results of the deposits of the commercial banks have the biggest impact on the behavior of lending by the Nigerian banks. Also, the study suggested the need that the commercial banks attract more deposits because this will improve the performance of bank lending.

Guo and Stepanyan (2011) have conducted a study to look at the change in the bank credit across a broad range of emerging economies over the past decade. The study used the credit granted to the private sector as the dependent variable and foreign liabilities of banks, volume of domestic deposit, inflation rate, real GDP, interest rate on deposits, the exchange rate, non-performing debt and the money supply as independent variables. Analysis result indicated that the domestic and foreign financing contributes positively to the growth of credit provided by banks. The study investigated that strong economic growth leads to an increase in credit growth and inflation rate; and that the expansionary monetary policies locally and globally lead to an increase in the volume of credit and thus strengthening the banking sector.

Jonas Ladime, Emmanuel Sarpong, Kumankoma and Kofi A. Osei conducted a research paper to investigate the determinants of bank lending behavior in Ghana. Using the GMM-System estimator developed by Arellano and Bover (1995) and Blundell and Bond (1998), they found that bank size and capital structure have a statistically significant and positive effect on bank lending behavior. The paper also found evidence of negative and significant impact of some macroeconomic indicators (central bank lending rate and exchange rate) on bank lending behavior. Moreover, competition in the industry was found to have a positive and significant impact on bank lending behavior. Thus, policies aimed at maintaining stable macroeconomic fundamentals would greatly accelerate bank lending decision. The crucial role of a bank is intermediation by way of collecting savings from depositors and making these savings available as loan to borrowers. Banks are more efficient in the collection of information and loan production to dispel doubt on asymmetric information (Suwanaporn, 2003). Notwithstanding, these specialties, banks are more circumspective about their lending decisions.

Mercy Mukhanyi (2016) examined the determinants of lending behavior among commercial banks in Kenya as a major objective and exploring the effect of bank specific characteristics and external factors on lending behavior of commercial banks in Kenya as specific objective of the underlying study. The study employed secondary panel data collected from 35 commercial banks in Kenya for a period of ten years (2006-2015). The Fixed Effects Model was used to conduct the estimation. Significancy was evaluated at 1%, 5% and 10% levels. Estimation results showed that bank capitalization, volume of deposits, and interest rate spread were positive and statistically significant while real GDP growth rate was found to be statistically significant with negative effects respectively on total loans advanced by commercial banks in Kenya.

Jimenez et al. (2012) also conducted a research to test wheter monetary and economic conditions could affect the supply of credit using the least squares method for the period February 2002 to June 2010. The supply of loans was characterizez as lending volume. Supply of credit is determined by macroeconomic factors, factors of banking and corporate factors. Among the factors the bank authors included short-term interest rate, the annual inflation rate and annual change in gross domestic product (GDP). Banking factors included capital calculated as the ratio of capital to total assets of banks, liquidity calculated as the ratio of liquid assets to total bank assets and return on assets and annual change of assets. The results suggested that the supply of

credit receive a positive influence from return on assets of the banking sector, the annual change in the total assets of the banking sector and the ratio of own funds to total assets. However, determinants identified to have negative impact on the supply of credit were short-term interest rate, the ratio of capital to total assets of banks and the ratio of liquid assets to total assets of banks.

Further more, John Nma Aliu(2012) conducted a study to investigate the major determinants of loans and advances in the Micro- Finance sub-sector of the Nigerian financial system. Specifically, capital base, liquidity ratio, deposit base and lending rate were examined. The study obtained data from 60 Microfinance banks in Kaduna and Kano states over a period of five (5) years from 2007 to 2011. Regression analysis was applied on secondary data that was used by the researcher to confirm the appropriate relationships between the dependent variable (Micro Finance Banks' Loans and advances) and the independent variables (determinants). Analysis result revealed that there is a positive relationship between loans and advances (dependent variable) and the bank capital. Similar result was also recorded for the deposit base of the bank. However, the result identified inverse relationship between dependent variable an liquidity position and lending rate.

According to Mangani (2009), both inflation rate and lending rate in Malawi between the years 1970 and 2008 exhibited an upward trend. The nature of behavior of these macroeconomic indicators may results in varying responses by the commercial bank borrowing and investment by both public sector and private sector. Latifet al. (2009) studied the analysis of determinants of investment in Senegal for the period spanning 1994 and 2000 and the result revealed that the desire to invest comes out of low and favorable lending rates that induce high lending volumes by the commercial banks. Felicia et al. (2011) asserted in Nigeria that commercial bank deposits have the greatest impact on their lending behavior.

2.2.3. Empirical studies at Ethiopian context

When we come to Ethiopian context, it is rare to get studies conducted specifically in the area of factors affecting the lending behavior of MFIs though there are many studies that had been conducted about performance, profitability and sustainability of MFIs performance; and there are only around three studies conducted about factors or determinants of commercial banks lending behaviour.

A study conducted by Mitiku malede (2014) was mainly aimed to confirm the main determinants of commercial bank lending in Ethiopia using panel data of eight commercial banks in the period from 2005 to 2011. OLS (Ordinary least square) model was applied by the researcher to identify the explanatory variables affecting commercial bank lending behavior. Independent variables tested by the researcher were bank size, credit risk, gross domestic product, investment, deposit, interest rate, liquidity ratio and required cash reserve. Analysis of seven years panel data from eight purposively chosen commercial banks revealed that there is significant relationship between commercial bank lending behavior and its size, credit risk, gross domestic product and liquidity ratio. However, deposit, investment, cash required reserve and interest rate variables that did not show statistically significant effect on commercial banks lending behavior in Ethiopia.

Additionally, there is a study that was conducted by Aytenew (2016) and the study was conducted to emphasize determinants of Banks' lending behavior in Ethiopia. Hence, explanatory research design was applied on panel data that was collected from eight banks over the period 2004 to 2013. It tested and confirmed the impact of internal and external factors on Ethiopian commercial banks' lending behavior. The study used Bank loans and advances as dependent variable and internal explanatory variables (liquidity ratio, volume of deposit, credit risk and bank capital), monetary policy instruments (cash reserve requirement and lending rate) and macroeconomic factors (GDP and annual foreign exchange rate of birr to USD) as explanatory or independent variables. Fixed effect model has been preferred over the random effect model following Hausman Specification test result of the analysis. Finally, clustered robusted standard error was applied to solve the hetroscedasticity problem. Thus, analysis result of fixed effect regression model showed that all bank specific factors were identified to have statistically significant effect at 1% significant level except liquidity ratio and lending rate which are significant at 5% level of significance. Regardless of level of significance difference among them, all of bank specific determinants were investigated to have statistically siginificant effect on lending behavior of commercial banks in Ethiopia. However, macroeconomic variables (GDP and annual foreign exchange rate of birr to USD) and cash reserve requirement ratio did not show result of affecting the lending behavior of Ethiopian commercial banks.

2.2.4. Factors Affecting Lending Behavior of MFIs

A.Internal/firm specific factors

i. Liquidity ratio

According to Churchill (1997), liquidity is the amount of available cash (or near-cash) relative to the MFI's demand for cash. MFIs are exposed to high levels of liquidity risk: seasonal factors influence many of their SME customers. MFIs tend to depend on donors, whose funding can be unpredictable; and their non-donor liabilities tend to be short term. If the organization is operating a stable financial market, it might be possible to deal with liquidity risk through short-term borrowings (Christen, 1995). However, depending on the stability of the market, regulators may find it prudent to set relative high liquidity standards for MFIs, taking into account the added costs that this implies.

Greater liquidity provides greater security, but too much can lead to higher risky loans. A MFI with high liquidity may be tempted to encourage rapid growth, especially in terms of the number of borrowers per branch (González, 2010). A rapid rise in microloans, driven by excess liquidity, may relax restrictions on granting these loans. This easing of restrictions will cause an increase in the default rate (Cermeño et al., 2011).

As long as the role of liquidity ratio is concerned to affect lending behavior, there are a number of studies conducted by Ethiopians and foreign researchers using liquidity ratio as one of tested explanatory variables though the result varies from country to country and researcher to researcher. There is a study conducted by Aytenew (2016), to identify determinants of Banks' lending behavior in Ethiopia. He used panel data collected from eight banks over the period 2004 to 2013. Using Bank loans and advances as dependent variable and different internal bank specific and external macro economic explanatory variables as independent variables, the researcher analyzed collected data applying fixed effect model. Thus, analysis result of fixed effect regression model showed that liquidity ratio is one of the variables that were identified to have statistically significant effect at 5% level of significance with (p-value 0.014) on banks lending behavior in Ethiopia.

Moreover, the coefficient **(-2.939843**) value of Aytenews finding about liquidity ratio showed that the variable has negative relationship with bank lending. Additionally, Mitiku (2014) conducted a study to examine determinants of commercial bank lending behavior in Ethiopia using panel data

(period from 2005 to 2011) of eight commercial banks. OLS model was applied by the researcher to identify the explanatory variables affecting commercial bank lending behavior. Thus, the researcher investigated liquidity ratio (with coefficient (**0.0072372)** value and p-value of **0.000**) to be one of the independent variables that have statistically significant positive relationship with lending behavior of commercial banks in Ethiopia.

Olokoyo(2011) conducted a study to investigate determinants of Commercial Banks' Lending Behavior in Nigeria and he used liquidity ratio as one of the independent variables. Thus, his finding revealed that liquidity ratio has positive relationship with commercial banks loans and advances. Therefore, depending on these existing literatures the researcher set the first hypothesis as follows:

$H0_1$:There is negative and statistically significance effect of liquidity ratio on lending behavior of MFIs in Ethiopia.

ii. volume of deposit

'Deposit' mobilization has long been a controversial issue in microfinance. In recent years, there has been increasing awareness among policy makers and practitioners that there is a vast number of informal savings schemes and MFBs around the world (in particular, credit union organizations) have been showing success in mobilizing deposits. These developments attest to the fact that low income clients can and do save. The World Bank's "Worldwide Inventory of microfinance Institutions" found that many of the largest, most sustainable institutions in microfinance rely heavily on savings mobilization. "In 1995, over $19 billion are held in the surveyed microfinance institutions in more than 45 million savings accounts compared to nearly $7 billion from 15 million active loan accounts (Ledgewood, 2012). Often neglected in microfinance, deposits provide a highly valued service to the world's poor who seldom have reliable places to store their money or the possibility to earn a return on savings" (Paxton, 1996). The survey also found that the ability to effectively mobilize deposits depends greatly on the macroeconomic and legal environment. "Statistical analysis of the surveyed institutions reveals a positive correlation between the amount of deposits mobilized and the average growth in per capita GNP of the country. Likewise, higher deposit ratios are negatively correlated with high levels of inflation. Finally, the amounts of deposits are positively correlated with high levels of

population density" (Ledgerwood, 2012). On the other hand, as Vohra and Sehgal (2012) argued, lending is one of the two principal functions of banks, not only because of their social obligation to cater to the credit needs of different sections of the community, but also because lending is the most profitable, for the interest rates realized on loans have always been well above those realized on investments.

Haron and Azmi (2006) asserted that, most business organizations, especially in developing countries are highly dependent on bank loans as a source of capital and the ability of banks in giving loans depends much on their ability to attract deposits.

Freixas and Rochet (2008), as cited in Fouopi- Djiogap and Ngomsi (2012), noted that bank loans are one of the most important long-term financing sources in many countries. However, Fouopi-Djiogap and Ngomsi (2012) found that the ability of banks to extend long-term business loans in the Central African Economic and Monetary Community (CEMAC) depends on its size, capitalization, gross domestic product growth and the availability of long term liabilities. From the foregoing, it is realized that the deposit and lending activities of the banks are affected by a myriad of factors, with ultimate effects on banks' liquidity and profitability. The effect of an increase in deposits and loans will be that the performance of the banks would be impressive. This is because an increasing trends in deposit mobilization implies more liquidity for the banks and more funds will be available for lending, thereby increasing the ability of the banks to make more.

Further more, volume of deposit was tested and investigated by Aytenew with coefficient (0.531) value and p-value of (**0.000**) and the analysis result revealed that there is a positive and statistically significant relationship at 1% of significant level between volume of deposits and commercial banks' lending in Ethiopia. More over, volume of deposit also was used by Mitiku as one of bank specific variables to identify determinants of banks lending behavior. As a result of his data analysis, he investigated volume of deposit with coefficient (0.0016074) value and p-value of (**0.124**) to have positive and statistically insignificant effect on commercial banks' lending in Ethiopia. Based on the existing literatures, the second hypothesis is set as follows:

$H0_2$: There is positive and statistically significance effect of volume of deposit on lending behavior of MFIs in Ethiopia.

iii. Asset size

Size of the MFI: The effect of size on the probability of crisis can be two fold. Firstly, the size of the institution may be a reflection of its success and good practices. This is because the institutions that are better managed with lower costs are able to attract more customers and increase their market share (Demsetz, 1973; Peltzman, 1976). Therefore, larger institutions have a lower probability of crisis as a result of their better management. On the other hand, growth that is too fast can lead to major imbalances within a MFI (Steege, 1998, Marulanda et al., 2010). These imbalances may lead to less efficiency, unsuitable loans being granted, and a lack of control over these activities. According to Bashir, (2003, cited in Bhattarai, 2016), large-sized banks have the advantage of providing a larger menu of financial services to their customers and there by mobilize more funds. Moreover, Salas and Saurina (2002) assert that, a big balance sheet allows managers to invest in different geographical or business segments to deal with asymmetric shocks.

There is a study that was conducted by Aderajew (2017) to identify determinants of banks lending performance in Ethiopia. Analysis result revealed that coefficient of bank size is 0.6689 and which indicated that holding the effect of other independent variables constant, as bank size increase by 1%, total loans and advances of sampled private commercial banks would increase by 0.6689% at 1% level of significance. As the researcher condcluded depending on his finding, this is due to the fact that large banks have economies of scale advantage to provide loans and advances efficiently and their capability to provide large amount of loans and advance. Additionally, mitiku(2014) tested the effect of bank size on banks lending behavior in Ethiopia and he found that bank size has positive and statistically significant impact on lending behavior with coefficient value of (**0.01244**) and p-value (**0.000**) and the result was identified by the researcher to be consistent with findings of Cole et al. (2004) and Andreas & Gabrielle (2009)

Therefore, based upon the objective and the existing literatures, the third hypotheses was hypothesized as follows:

$H0_3$: There is positive and statistically significance effect of asset size on lending behavior of MFIs in Ethiopia.

iv. Operational efficiency/transactional cost

The transaction cost is another hurdle for the poor to get loans. The growth of sound microcredit or microfinance policies highlight the path of a better approach to solve the incapacitation of the poor in rural and poor areas to move out of deficiency. The high interest rate and the high transaction cost have a difficult task for the farmers in those areas where information not send immediately and properly, that's why the farmers and others that they are not getting loans for their work. The transaction cost includes the boring and lengthy paper work, practice loan process connected with formal loans (Foltz, 2004), securities risk (Boucher et al., 2007), incomplete information, and also the accessibility of formal credit institutions. (He, 2007, cited by Ambreen Kausar, 2013) have recognized as these are important obstacles for the demand of the formal credit markets.

The pricing of microfinance services like any other good or service is a function of transaction cost. Transaction cost in the delivery of financial services, basically has three components: the costs of funds on-lending, the costs of risk (loan loss), and administrative costs such as processing loan applications, training of clients/customers and monitoring for loan repayment. These literatures enable to conclude that the absolute transaction cost per head of a poor person is more expensive than a client of a formal financial institution.

Campion et al, (2010) found that the advent of the global economic and financial crisis in the last quarter of 2008 had further constrained liquidity in the region. The study found that most Microfinance Institutions were coping with the crisis, focusing on improving their internal procedures and operational efficiency. Meanwhile, however, many governments in the region were found to have announced new or expanded subsidized credit programs targeting the low-income population. He concluded that many of the Microfinance Institution that participates in these programs has to adhere to fixed intermediation margins, which are sometimes insufficient to cover operating costs.

Hashemi and Morshed (1997) shown in their study that the Grameen bank should not only condensed poverty and enhanced benefits of participating but also superior the household capacity to continue their gains over time. Moreover, Kamal (1996) recognized from his finding that the maximum increase in per capita income is due to microcredit program. Therefore,

demand side factors are mostly linked to the income and economic status of loan using customers. The supply-side factors are associated to the cost of credit where the distance to the adjacent bank, output of the crops (minimizes doubt of refund), future share of credit (policy-driven) and weather characteristics. Thus, based on the existing literatures, the researcher hypothesized the fourth hypothesis as follow:

$H0_4$: There is negative and statistically significance effect of operational efficiency on lending behavior of MFIs in Ethiopia.

B. Macro-Economic/external factors

i. Gross Domestic Product (GDP)

GDP is one of the known macroeconomic tools to measure growth rate of economy a country. is growing. According to Aderajew(2017), measurement of an Economy is done by comparing market price value of one period economic output to the last period of a country. he also stated that GDP is driven by the four different components and personal consumption including retail sales is the most important driver of GDP. Government spending, as Aderajew says, is the third driver of growth followed by exports and imports which is known to be the fourth eriver. Banks core formal financial institutions, therefore, adjust their lending behavior taking in account of the signals of different factors as positive signals make banks become more favorably disposed to lending(Aderajew, 2017; Mitiku, 2014). Thus, banks' loan portfolio is highly affected by their expectation towads performance of the economy both in terms of stability and rate of growth. Banks make out more loans during periods of boom and reduce level of loan when there is macroeconomic uncertainty and curtail lending when the economy is in recession (Lucky E & Dr. Lyndon M, 2016, cited in Aderajew, 2017).

As it was investigated by Mitiku(2014), Gross domestic product was identified by his analysis result to be one of the independent variable to have positive and statistically significant relationship with commercial bank lending in Ethiopia though Ayitenew(2016) found GDP to have positive and statistically insignificant relationship with Bank lending in Ethiopia. Moreover, a study conducted by Olokoyo(2011) in Nigeria revealed that gross domestic product has statistically significant effect at 10% level of significant authenticating that the level gross

domestic product of an economy at any given time affect banks' lending behaviour. Therefore, depending on the existing literatures, the study hypothesized the fifth hypothesis as:

$H0_5$: There is positive and statistically significance effect of grossdomestic product on lending behavior of MFIs in Ethiopia.

ii. Interset rate

According to Haritone & Mirie(2016), On interest rate, the findings conform to that of Malede (2014) who found that the lending interest rate has a positivebutstatistically insignificant relationship with commercial banks' lending.

According to Olokoyo(2011), the coefficients of interest rate, minimum cash requirement ratio and liquidity ratio further demonstrate that there is a positive functional relationship between commercial banks loans and advances and the interest rate (lending rate), stipulated cash requirement and liquidity ratios. The regression coefficients show that every 1% increase in lending rate, cash reserve requirement and liquidity ratios for commercial banks will cause their loans and advances to change by 0.9%, 0.12% and 0.04% respectively. These positive correlations disagree with the point that two of the variables – Ir and Rr tend to change in opposite directions with loans and advances of commercial banks in Nigeria.

According to Mwafag Rabab'ah (2015), the average interest rate on loans (LR): the interest rate on loans is considered the most important source of income for the bank, and the high interest rate is usually accompanied by the increase in the amount of the money offered for lending. Chodechai (2004) has pointed out that banks should be cautious when determining the interest rates on loans where the imposition of low interest rates will affect the returns achieved by the bank, which should be sufficient to cover the cost of deposits and general expenses and losses in the loan portfolio resulting from faltering some customers. Also, imposing high interest rates on loans might lead borrowers to deliberately avoid paying the loans. This study will be based on the average annual interest rate on the loans and advances granted by banks. The effect of the interest rate might be positively or negatively effective on the volume of bank lending because the increase in the interest rate may encourage banks to provide more loans, but at the same time could lead to reduced demand for loan borrowers because of their high interest rates.

According to Ayitenew(2016), The result of the regression of interest (lending) rate shows a p-value of 0.014, and this value shows that it is statistically significant at 5% level of significance. This revealed that Ethiopian commercial banks' loan and advance is highly influenced by interest (lending) rate. Hence, it can be concluded that lending interest rate is a good explanatory variable for Ethiopian commercial banks loans and advances. On the other hand the coefficient value indicates that commercial bank lending and lending rate are positively related. It reveal that a one unit change in lending rate will cause their loan and advance to change by 0.242 units in the same direction.

$H0_6$: There is positive and statistically significance effect of interest rate on lending behavior of MFIs in Ethiopia.

2.3. Identfied Literature Gaps

African countries set Millennium development goals to eradicate poverty through use of MFIs as a tool and Ethiopia is one of among these countries. Though there is consistent result (even studies conducted in Ethiopia (Mitiku 2014) and Aytenew (2016), it was evident from the literature review that there were many macro and micro determinants/factors affecting the lending behaviors of Banks conducted in and outside Ethiopia and the researchers assumed that these determinants also determine the lending behaviors of Ethiopian MFIs because MFIs and banks share a number of financial institution related activities. MFIs have been financing a multidirectional challenges that include many criteria because of the risky nature of SMEs businesses. A number of strategies are being applied by loan management system os MFIs like individual versus group lending(for group collateral purpose), women versus men and age related applications. Different previous indicated that those MFIs customers who managed to get loans also are facing another dilemmas like ineffective management or servicing of their debt. As we have tried to see in problem statement part of this study, there is existence of knowledge or literature gap about factors affecting lending behaviors of MFIs, particularly in Ethiopia context as empirical studies are rare for African and Ethiopian context specifically in the area of MFIs. It is because it is rare to find studies specifically conducted to identify factors affecting lending behaviors of MFIs in and outside the country. However, there are a few previous studies conduted using banks in Ethiopia to investigate determinants of lending behavior. Therefore, it is better to conduct a study specifically to investigate lending behavior of MFIs as lending is the main

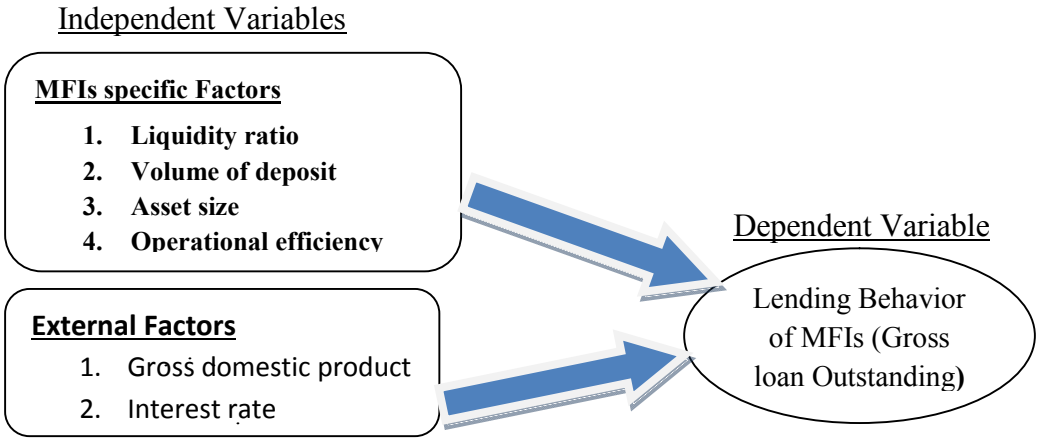
activities of financial institutions and loan portfolio is the largest assets of MFIs in addition to their undeniable contribution for Ethiopian economic development and provision of financial service to the poor.

Generally, as source of finance majority of Ethiopian people is dependent on MFIs because more than eighty percent of Ethiopians are dependent economically on agricultural sector. However, it is authenticated from findings of different previous studies that these MFIs are not providing sufficient amount of financial or credit sudrvice to the poor. Therefore, it is the core literature gap that energized the researcher to know why these MFIs are not supplying sufficient amount of credit service, what are the bottlenecks or what are the factors(internal and external) that are seriecly affecting loan providing or lending behavior of MFIs in Ethiopia.

2.4. Conceptual framework

The variables that to included in the study are divided into dependent variable and independent variable. To organize data for these variables, secondary data will be collected from NBE. Additionally, these factors are selected taking into consideration of the availability of data and its influence on lending behavior in banks as mentioned in literature. The independent variables have been carefully selected as potential factors affecting lending as stated in previous theoretical literature and based on previous studies in the banking sectors of different countries of the world. The Figure, below presents the researcher's conceptual framework. The researcher conceptualizes that the given independent variables in the figure determine micro-finance loan lending behaviors MFIs in Ethiopia.

Figure 1 **Conceptual framework**



Source : personal computation of the researcher /2022

CHAPTER THREE

3. Reearch Methodology and Design

3.1.Research Approach

As it is revealed in the specific objective part of the study, the tried to identify factors affecting lending behavior of MFIs in Ethippia. As a result, secondary panel data was collected and analyzed to finalized the paper using qualitative and/ or quantitative approach.

3.2.Research Design

Since research design mostly enables researchers providing crucial frameworks and guidelines about how to collect, organized and analyze data, being able to choose appropriate research design help to different researchers to answer primarly set research questions and specific objectives of a study. Thus, it is the most important part of a research work to identify and evaluate sound research design before conducting a research (Aderajew, 2017).

Out of different research design types, explanatory research design aims at establishing the cause and effect relationship between variables. It is because any researcher who use explanatory research design uses already existed facts and information; make a critical evaluation conducting analysis of provided data/information(Aderajew, 2017). However, exploratory research is less formal as it focuses only on gaining background information and helps to understand and clarify a problem. It could be used to develop hypotheses and questions to be answered (Addis Ababa University, 2009, cited in Aderajew, 2017).

Since this study was conducted to show cause and effect relationship between dependent and independent variables identifying factors that affect lending behavior of MFIs in Ethiopia, explanatory research design was choosen and used by the researcher.

3.3.Target Population

All MFIs *(Acsi, Ocssco, Omo, Adcsi, Decsi, Aggar, Avfs, Benshangul, Bussa Gonofa, Dire, Digaf, Eshet, Gasha, Harbu, Letta, Meklit, Metemamen, Peace, Sfpi, Kendil, Sidama, Wasasa, Vision Fund /Wisdom, Harar,One Lefayeda, Dynamic, Tesfa, Somali, Lideta, Nisir, Afar, Adeday, Debo, Rays, Kershi, Sheger, Yemisrach and Grand)* operating in Ethiopia are considered as total population. Additionally, MFIs *(Omo, Addis, Acsi, Ocssco, Meklit, Sepi, Wasasa, Peace, Kendil, Aggar, Bussa Gonofa, Digaf,*

Eshet, Harbu, Metemamen, One, Sidama, Lefayeda, Vision Fund/Wisdom and Dynamic) with greater than or equal to ten years audited financial statement data were used as target population of the study.

3.4.Source of Data, Sample size and Sampling Technique

Since it is not practical or not economic to most of research activities to take the whole population to conduct a study, MFIs that have greater than or equal to ten years financial statement data (from 2011-2020) were purposively selected as target population. Out of these purposively selected target population, the researcher randomly selected twelve MFIs (*Omo, Addis, Acsi, Ocssco, Meklit, Vision, Sfpi, Wasasa, Peace, Dynamic, Digaf And Kendil*) as sample size of the study. In other words, for a micro finance institute to be selected as part of sample size, it was oblied to have a minimum of ten years audited financial stetment data. As a result, collected Secondary or balanced panel data from these twelve MFIs was organized, coded and analyzed properly.

3.5.Method of Data Analysis

Following collection of the secondary data from the MFIs, the data was organized, coded, and fed into EViews(version-8) software where panel regression analysis, Pearson correlation analysis and testing of CLRM assumptions were conducted using the software. According to Gujarati (2004), panel data estimators could be estimated using fixed effect or random effect regression models. To take either of them, the researcher has conducted hausman test and the result revealed that random effect is most preferable model and best fitable to conduct the analysis. As a result, organized data of the study was analyzed using random effects regression model to identify factors affecting lending behavior of MFIs in Ethiopia.

3.6.Model specification, Variables Definition and Measurements

3.6.1. Model Specification

The researcher used panel data regression model because Panel data have the dimensions of both time series and cross-sections. To identify factors affecting lending behavior of MFIs, the researcher has used random effect after testing the validity of the models by Hausman test.

Therefore, formulated model to conduct the analysis was given as follows:.

$GOL_{it} = \beta o + \beta_1 LRit + \beta_2 VODit + \beta_3 ASSit + \beta_4 OPEit + \beta_5 GDPit + \beta_6 INRit + £$

Where:-

GOL = Gross Outstanding Loan

βi = coefficients of independent or explanatory variables

LR = Liquidity Ratio

VOD = Volume of Deposit

ASS = Asset Size

OPE = Operational Efficiency

GDP = Gross domestic product

INR = interest rate

3.7. Ethical Considerations

3.7.1. Permission

Factors affecting Lending behavior of MFIs operating in Ethiopia as a title was approval by Wolkite University so that the researcher could conduct the study.

3.7.2. Confidentiality and Privacy

I am sure that the information collected from MFIs are kept secured and it was used only for the intended (Academic) purpose.

3.8. Study Variable definition

The variables that have been used for the study are divided into dependent variable and independent variable, dependent variable which is governed by many determinants was calculated (lending) from the financial ratios of credit facilities to the total assets. As for the independent variables, data was collected on these variables from MFIs.

This subdivision presents the proxies that engage to operationalize the variables. Plus those factors affecting are selected by taking into consideration the availability of data and its influence on lending behavior in MFIs as mentioned in literature. Independent variables are carefully selected as potential factors of lending behavior as stated in previous theoretical literature and based on previous studies in the MFIs and Banks sectors of different countries of the world including Ethiopia. The availability of financial information about these variables has also been taken into consideration. This section explains the variables used as dependent and independent

(explanatory) variables in this study. The definitions/measurements used for these variables are described and summarized under the following table.

A. Dependent Variable

i. Gross outstanding loan

This is the dependent variable of the model. It is define as the total annual gross loans and advance the MFIs advances to SMEs, youths, women's individual or group business and other private or public sectors.

B. Independent Variables

To measure the predictor variables of Factors Affecting lending behavior of MFIs in Ethiopia, four internal and two external variables were used as independent variables which are selected reviewing different previous studies. The variables namely, Asset size, interest rate, volume of deposit, operational efficiency, liquidity ratio and gross domestic product

Table 3.1: Summary of variables used in the study and their expected sign/impact

Variables	**Description**	Expected Effect/Sign
Dependant Variable		
Total Loans And Advance	Log of Gross outstanding loan of MFIs	Na
Independent Variables		
Asset Size	Natural logarithm of Total Asset	Positive
Volume of Deposit	The Ratio of Total Deposit To Total Liability	Positive
Liquidity Ratio	The Ratio of Current Asset To Total Asset	Negative
Operational efficiency	All the cost associated with loan and advance	Negative
Gross Domestic Product	Annual Real Gross Domestic Product (GDP price index)	Positive
Interest Rate	Annual Average Lending Interest Rate	**Negative**

Source: own computation/2022

CHAPTER FOUR

4. Da0ta Analysis and Interpretation

To investigate factors affecting lending behavior of MFIs and to be able to achieve objectives of the paper, twelve microfinance institutes that have audited financial data for ten years were randomly selected and included in the analysis process. As a result, financial data for the period of 2011-2020 was collected from these randomly selected MFIs. Therefore, one hundred twenty(10*12) observations were used to analyze the data.

To conduct the analysis, the researcher first used descriptive statistics and correlation (to identify the relationship among independent variables (liquidity ratio, volume of deposits, asset size, operational efficiency, GDP and Average lending interest rate). Various tests on the data were applied and multiple regression analysis was employed to investigate the contribution of predicting variables in explaining the dependent variable (**Gross outstanding loan**). Significance levels of 1%, 5% and 10% were used to evaluate outputs of correlation and regression analysises.

Table 4. 1 Correlated Random Effects - Hausman Test for gross outstanding loan

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	6	1.0000

Source: the researchers personal computation and Eviews/8

Since the analysis result in the above table 4.1 showed that probability of the result is greater than 5%(p>5%) at five percent level of significant, the null hypothesis (Random effect was identified to be appropriate) and accepted for random effect and fixed effect(alternative hypothesis) is rejected.

4.1. Descriptive Statistics

The distribution of data set for dependent and independent variables used in the study is explained by descriptive statistics. The central idea of descriptive statistics is for a given study to measurement location and variability. The central value of the variables denoted by location is measured mean where as the spread of the data from mean is measured by standard deviation. Illustrated below in table 4.2 is the summary of descriptive statistics for the study.

Table 4. 2 Summary of descriptive statistics

	Observations	Mean	Median	Maximum	Minimum	Std. Dev.
Gross_Loan_Ratio	120	-0.37247	-0.3001	1.685362	-2.11663	0.381609
Liquidity_Ratio	120	0.166108	0.151326	0.508724	0	0.092834
Total_Deposits_Ratio	120	0.359262	0.341298	0.747	0	0.129519
Asset_Size	120	12.39765	12.55018	17.32818	0	2.989758
Operational_Efficency	120	0.506716	0.168671	11.86241	0	1.353554
Gdp_Price_Index	120	0.087495	0.100453	1.093834	-1	0.470915
Average_Lending_Interest	120	14.3715	12.315	21.5	11.875	3.585834

Source: Eviews-8/2022 & own computation

Table 4.2 above shows summary of descriptive statistics output of Eview-8 for the dependent and explanatory variables of 120 observations and it indicated the results over the period from 2011 to 2020 of 12 randomly selected Ethiopian Micro finance institutes. Liquidity ratio (which is measured by ratio of liquid asset to total asset) measures whether the variable has role to affect the lending behavior of microfinance institutes or not. Thus, the mean value of the variable is 0.166108, whereas the minimum and maximum values are 0.000 and 0.508724 respectively. The standard deviation from the mean is 0.092834.

Volume of total deposit(measured by total amount of asset deposited by customers of these MFIs) is the main source of capital to be provided to customers as loan. In other words, MFIs are types of financial institutes that play significant role to transfer money from surplus group(in the form of deposit) to deficiet group(in the form of loan). Therefore, the mean value of volume of deposit is 0.359262. Additionally, minimum and maximum values are 0.00 and 0.747 .respectively. The table also showed that the value of the standard deviation is 0.129519

Asset size (measured by the natural logarithm of total asset) indicates how large a given microfinance institute is in terms of its total asset to be able to provide more loan to its customers. Total asset in turn is given by sum of current asset and fixed assets. The mean value of asset size is 12.39765. As a result, the table showed that there exists significant/insignificant variation across the sample MFIs for the reason that the value of the standard deviation is 2.989758. Hence, the highly variated firm size among MFIs may have significant impact on debt provision service coverage in these institues that we are going to see in the regression results.

The mean of operational efficiency which was measured by ratio of operational expense to total revenue of MFIs showed mean value of 0.506716 with a minimum and maximum value of 0.0000

and 11.86241 respectively with standard deviation of 1.353554 percent. Similarly, the mean of economic growth (the annual GDP rate) was 0.087495 with the standard deviation of 0.470915. The maximum value of economic growth was 1.093834 and the minimum value was -1.

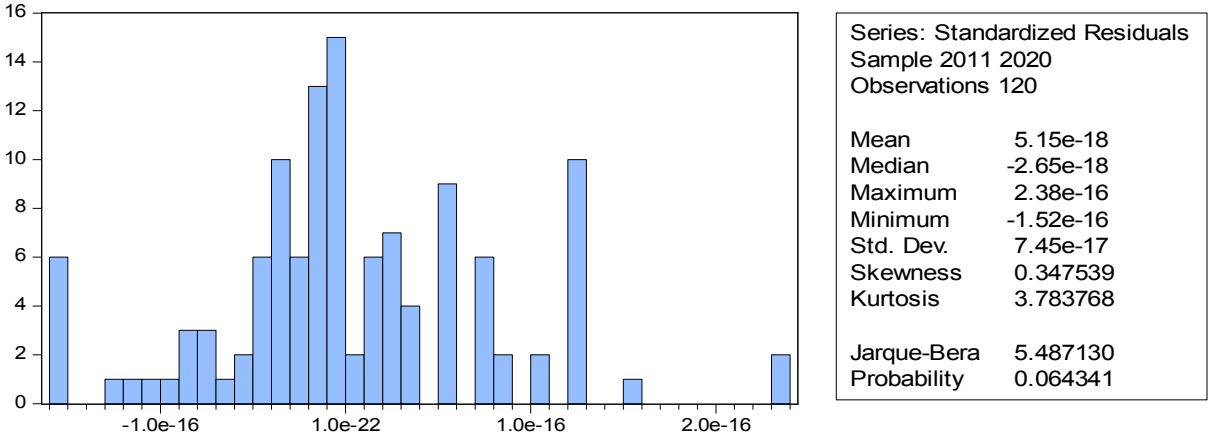
Moreover, table 4.2 of the analysis also showed that the rate of average lending interest over the study period. The mean interest rate mounts up to almost 14.3715 per annum. The minimum value and maximum value are 21.5 and 11.875 respectively with standard deviation of 3.585834.

4.2. Testing for Assumptions of Regression Model

This section deals about the test results for the multiple regression model assumptions.

i. Normality Test

Figure 2 Normality Test result



As it is shown in the histogramic figure above, kurtosis is around four (i.e. 3.783768) and probability of skewness is approaching 0 (i.e. 0.347539). Moreover, analysis result about Jarque-Bera statistics showed that it is insignificant as P-value in the histogram is greater than five percent (p= 0.064341). As a result, there is no probability of rejecting the null hypothesis of the residuals at 5 percent of significant level. Thus, the result revealed that the error terms are normally distributed in the model.

ii. **Test for Hetroscedasticity**

One of the important assumptions of the multiple regressions reveals that the variance of the disturbance term is constant. This is called the assumption of homoscedasticity. If errors terms of a multiple linear regression model does not have constant variance, then it is said to be hetroscedastic (Gujarat, 2003).

As presented below in table 4.3, in this study the F-statistic and the Chi-Square version of the test statistic shows that there is no evidence for the presence of hetroscedasticity as p-values are greater than 0.05 except for 10% significant level.

Table 4. 3 Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.112078	Prob. F(6,112)	0.0573
Obs*R-squared	12.09588	Prob. Chi-Square(6)	0.0599
Scaled explained SS	109.9694	Prob. Chi-Square(6)	0.0000

Source: researchers own computation & Eview-8

Analysis result in table 4.3 above indicated that, both $\chi 2$ and F-test versions were not able to reject the null hypothesis. In other words, the result indicated that the variance of the errors is constant (i.e there is no hetroscedasticity problem in the model.)

iii. **Test for Autocorrelation**

Regression model assumes that there is no pattern in the errors or disturbance terms i.e. the covariance between the error terms over time or cross-sectionally is zero (Brook, 2008). As it is indicated in table 4.6, Durbin Watson (DW) value(1.608258) is approaching two which is the most acceptable standard to fulfill the standard (i.e. no auto correlation problem). In other words, to accept as there is no autocorrelation problem, the DW test statistic should be closer to 2.

iv. Multicollinearity Test

Table 4. 4 Colinearity Statistics

	Gross_Loan_Ratio	Liquidity_Ratio	Total_Deposits_Ratio	Asset_Size	Operational_Efficency	Gdp_Price_Index	Average_Lending_Interest
gross_loan_ratio	1						
liquidity_ratio	-0.35406	1					
total_deposits_ratio	0.21295	0.169419	1				
asset_size	0.352337	0.047149	0.39736	1			
operational_efficency	-0.68765	0.324743	-0.16656	-0.50539	1		
gdp_price_index	-0.10572	-0.14641	-0.08539	-0.03214	-0.10775	1	
average_lending_interest	0.08456	-0.02514	0.336637	0.211499	0.03078	-0.31444	1

Source: Eview-8 output/2022

The correlation among independent variables is shown in the Co-linearity statistics table (table 4.4) above. The correlation result indicated an output level which is acceptable level of correlation among the variables. Because the correlation among these predictors is not high and this ensured that there is no Multi-co-linearity problem among the variables.

v. **Panel unit root test**

Table 4. 5 panel unit root test

Panel unit root test: Summary
Series: D(GROSS_LOAN_RATIO)
Date: 04/10/22 Time: 03:38
Sample: 2011 2020
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-Sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-7.47648	0.0000	12	120
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-1.45834	0.0724	12	120
ADF - Fisher Chi-square	53.9476	0.0004	12	120
PP - Fisher Chi-square	97.3952	0.0000	12	120

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Panel unit root test is one of the critical assumptions in panel data regression analysis involving time series data as the time series being considered is stationary. If mean and variances of panel data are constant over time and the value of covariance between two time periods depends only on the distance or gap between the two periods and not the actual time at which the covariance is computed, thus the time series is said to be stationary. Additionally, a time series is strictly stationary if not only mean and variance are invariant over time and also all moments of its probability distribution(Gujarati, 2004, cited in Aderajew, 2017). Commonly, panel root test is used to check the presence of stationarity in the data.

4.3. Results of Regression Analysis

As it is shown, regression result output is presented below in the table 4.6. The specified model used to test factors affecting lending behavior of MFIs in Ethiopia is as follows.

GOLit = $\beta o + \beta_1 LR + \beta_2 VOD + \beta_3 ASS + \beta_4 OPE + \beta_5 GDP + \beta_6 INR + £$

Table 4. 6 Summary of regression model estimation **(Random Effect regression)**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.252318	0.140525	-1.795541	0.0753
LIQUIDITY_RATIO	-0.823358	0.267437	-3.078696	0.0026
TOTAL_DEPOSITS_RATIO	0.428389	0.199713	2.145019	0.0341

ASSET_SIZE	-0.002074	0.010238	-0.202575	0.8398
OPERATIONAL_EFFICENCY	-0.173735	0.020685	-8.399056	0.0000
GDP_PRICE_INDEX	-0.154765	0.048582	-3.185636	0.0019
AVERAGE_LENDING_INTEREST	-0.000653	0.006900	-0.094631	0.9248

Effects Specification	S.D.	Rho
Cross-section random	0.021736	0.0086
Idiosyncratic random	0.233105	0.9914

Weighted Statistics

R-squared	0.535608	Mean dependent var	-0.357305
Adjusted R-squared	0.510730	S.D. dependent var	0.374582
S.E. of regression	0.262054	Sum squared resid	7.691279
F-statistic	21.52924	Durbin-Watson stat	1.608258
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.546170	Mean dependent var	-0.372466
Sum squared resid	7.798533	Durbin-Watson stat	1.586162

Source: Eviews-8/2022 output & own computation

As it is shown from panel data analysis result of random effect regression model in the above table(4.6), all of the proposed variables except asset size and interest rate have showed statistically significant impact on lending behavior of these randomly selected MFIs in Ethiopia though the sign of some of the variables is in contrast to what was expected earlier. Random effect regression output of the analysis indicated that 53.56% (R^2 = 0.5356) of the deviation of dependent variable from its mean is explained by the model (the set of all of the predictors). And the remaining 46.44% is left to variables that were not included in the model or MFIs that were not included in the study(model).

The value of F-statistics (F = 21.52924) and p-value (P =.000) in the model summary authenticates the overall significance of the model and it also implied that there is strong relationship between the predictors and the outcomes of the regression variables. The output also corroborated that the model best fitted to predict the lending behavior of MFIs selected for the stuy in particular and for all of Ethiopian MFIs in genral.

Additionally, the beta (β) sign or the coefficients to all of the variables (except for volume of deposit) showed negative effect of the independent variables over the dependent variable. In other words, as percentage change in independent variable increases, percentage change in dependent variable decreases except for volume of deposit. The result indicated that some of the variables

showed opposite sign in contrast to what was expected when hypothesis was set for each and every variable. Forexample, asset size and GDP are among variables that were expected to have positive and statistically significant effect on lending behavior of MFIs in Ethiopia. However, both of them showed negative sign though the effect of asset size is insignificant($p>0.05$).

When we see the statistical significance of independent variables over the dependent variable, four out of six proposed independent variables were identified to have statistically significant($P<0.05$) effect(liquidity ratio, volume of deposit, operational efficiency and gdp price index) on lending behavior of MFIs at five percent level of significance. Thus, it is possible to conclude that all of these variables are important factors to affect lending behavior of MFIs in Ethiopia though liquidity ratio is the most crucial factor than any other factor to play the role. Regardless of their beta sign, asset size and average lending behavior are variables that were identified not to have significant influence on lending behavior of MFIs in Ethiopia because they have a sig. value of (sig. > 0.05).

4.4. Hypothesis Test

As it is presented earlier, analysis of data was conducted using random effect model and the model was selected depending on hausmantest result of the regression analysis. As a result, these hypotheses were tested based on the regression output of the analysis.

$H0_1$: There is negative and statistically significance effect of liquidity ratio on lending behavior of MFIs in Ethiopia.

Liquidity ratio is the first hypothesis in this study and it was hypothesized that lending behavior of MFIs is indirectly related with liquidity ratio. Analysis result showed that there is strong correlation between lending beavior and liquidity ratio. The negative beta sign and a statistically significant result of liquidity ratio related with the lending beavior ($\beta = -0.823358$, $t = -3.078696$, $P<0.05$) supported the previously proposed hypothesis should be accepted. It is authenticated from analysis result that as the ratio of current asset increase, the less will be lending of loan to customers of MFIs. Additionally, the investigated result is consistent with previous researchers work like (Ayitenew Temesgen, 2016, Shikumo, David & Mwangi, Mirie, 2016; Mitiku, 2014).

$H0_2$: There is positive and statistically significance effect of volume of deposit on lending behavior of MFIs in Ethiopia.

Volume of deposit ratio was proposed as the second hypothesis in this study that it has positive and statistically significant impact on lending behavior of MFIs. As the result showed above in tabl-4.6, volume of deposit has coefficient of (β = 0.428389, t= 2.145019, P<0.05) and has positive relationship with lending behavior of MFIs. Additionally, the result showed that the variable has statistically significant effect on lending behavior of MFIs in Ethiopia. In other words, analysis result was identified to be as it was proposed earlier. Moreover, the result is consistent with the previous studies conducted by (Mitiku, 2014; Ayitenew Temesgen, 2016).

$H0_3$: There is positive and statistically significance effect of asset size on lending behavior of MFIs in Ethiopia.

The third hypothesis of this research was asset size has positive and statistically significant impact on lending behavior of MFIs. However, output of regression analysis showed in table- 4.6 above that asset size (coefficient of β = -.102, t= -.863) is negatively related with the lending behavior of MFIs. Moreover, the result was insignificant and inconsistent with other researchers work.

$H0_4$: There is negative and statistically significance effect of operational efficiency on lending behavior of MFIs in Ethiopia.

operational efficiency is the fourth hypothesis in this study and it was hypothesized that lending behavior of MFIs is indirectly related with operational efficiency. As it was expected earlier, analysis result showed that there is strong correlation between lending beavior and operational efficiency. In other words, analysis result of random effect regression model showed that operational efficiency has negative and statistically significant effect on lending behavior of MFIs in Ethiopia. The negative beta sign and a statistically significant result of operational efficiency related with the lending beavior (β = -0.173735, t = -8.399056, P<0.05) supported the previously proposed hypothesis four should be acceptable. It is authenticated from analysis result also that as the ratio of total expense to gross loan increase, the lending of loan to customers of MFIs be less and less.

$H0_5$: There is positive and statistically significance effect of grossdomestic product on lending behavior of MFIs in Ethiopia.

As a fifth hypothesis, it was hypothesized that lending behavior of MFIs is directly related with grossdomestic product. Analysis result showed that there is strong and inverse correlation between lending beavior and grossdomestic product. The negative beta sign and a statistically significant result of grossdomestic product related with the lending beavior (β = -0.154765, t = -3.185636, $P<0.05$) supported the previously proposed hypothesis interms of significancy though its sign is in contrast to what was proposed earlier. Additionally, the investigated result is consistent with previous researchers findings (Ayitenew Temesgen, 2016, imterms of sign)

$H0_6$: There is negative and statistically significance effect of interest rate on lending behavior of MFIs in Ethiopia.

The sixth hypothesis was proposed assuming that interest rate and lending behavior of MFIs have indirect relationship with lening behavior of MFIs. As the analysis result showed (coefficient of β =-0.000653, t= -0.094631), interest rate is negatively related with the lending behavior of MFIs though the relation is not statistically significant because of the statistical result ($P>0.05$) and the result does not support the sixth hypothesis. And also the result is inconsistent with some previous studies like (Shikumo, David & Mwangi, Mirie, 2016; Mitiku, 2014; Ayitenew Temesgen, 2016)**.**

CHAPTER FIVE

5. Conclusions and Recommendations

Depending on the analized result, conclusions and recommendations have been generated below. The major objective of the study was identifying factors affecting lending behavior of MFIs in Etiopia. The study was conducted using random effect testing its appropriateness out of alternative econometric analysis methodologies for the estimation of variables under regression model. Thus, conclusions and recommendations have been included in the following sections.

5.1. Conclusions

As it was shown by analysis result of the study, four variables(liquidity ratio, volume of deposit, operational efficiency and GDP) were identified to be the crucial role players of lending behavior of MFIs in Ethiopia. The power of all the variables collectively to explain the model, as it was identified from regression analysis of the study, was recognized to be 53.56% ($R^2 = 0.5356$). The researcher also identified from the analysis result that liquidity ratio is the most inportant driver of lending behavior of MFIs in Ethiopia.

As it is revealed in panel data analysis result of random effect regression model in the above table(4.6), all of the proposed variables except asset size and interest rate have showed statistically significant impact on lending behavior of these randomly selected MFIs in Ethiopia in particular and all MFIs in Ethiopia in general though the sign of some of the variables is in contrast to what was expected earlier. Random effect regression output of the analysis indicated that 53.56% of the deviation of dependent variable from its mean is explained by the model (the set of all of the predictors). And the remaining 46.44% is left to variables that were not included in the model or MFIs that were not included in the study(model).

Analysis result of the paper also authenticated that lending behavior of MFIs is influenced negatively by all of the variables except for the second variable that has showed positive relationship with dependent variable. Except for the third and sixth variables, random effect regression analysis result indicated also that the result obtained about four out of six varibles was statistically significant. However, analysis result about the third and the sixth variables is statistically insignificant at 5% level of significance. More specifically:

⇒ Analysis result showed that there is strong correlation between lending beavior and liquidity ratio (β = -0.823358, t = -3.078696, P<0.05).

⇒ Analysis result revealed also that volume of deposit has statistically significant effect (β = 0.428389, t= 2.145019, P<0.05) on lending behavior of MFIs.

⇒ Output of regression analysis showed that asset size has negative and statistically insignificant impact on lending behavior of MFIs. Oreov

⇒ operational efficiency is the fourth hypothesized variable in this study. As it was expected earlier, analysis result showed that there is strong correlation between operational efficiency and lending behavior; and there is statistically significant effect of operational efficiency on lending beavior (β = -0.173735, t = -8.399056, P<0.05).

⇒ Additionally, analysis result identified that grossdomestic product has negative and statistically significant effect on lending beavior of MFIs in Ethiopia(β = -0.154765, t = -3.185636, P<0.05).

⇒ However, it was assured from regression analysis result that interest rate has negative statistically insignificant effect on lending behavior of MFIs in Etiopia (β =-0.000653, t= -0.094631, P>0.05)

5.2. Recommendations

The study was conducted to examine the factors affecting lending behaviors of Micro-Finance Institutions in Ethiopia. There are many internal and external factors which could affect the lending behavior of financial institutions as suggested in literature review part of this study but not included in the model of this study. So, it is possible to undertake further studies by including variables which are not included in this study model like the effect or impact of cash reserve ratio, competition, government indicators, age of MFIs and so on.

Additionally, the researcher used only 12 MFIs in this study with ten years of panel data from their audited financial statments(from 2011 to 2020). So, the researcher needs to recommend that it is better to conduct a research including almost all of MFIs(specially those that have ten years data) operating in Ethiopia to come up with generalized factors affecting lending behavior of MFIs in the country.

Moreover, all concerned bodies, policy makers, university academicians and higher research institutions should give special attention about sustainability of MFIs in Ethiopia as these financial institutions are the only sources of financial access to the poor(almost more than eighty percent of Ethiopians).

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Appendices

A. Random Effect Regression Result

Dependent Variable: GROSS_LOAN_RATIO
Method: Panel EGLS (Cross-section random effects)
Date: 04/12/22 Time: 02:48
Sample: 2011 2020
Periods included: 10
Cross-sections included: 12
Total panel (unbalanced) observations: 120
Swamy and Arora estimator of component variances

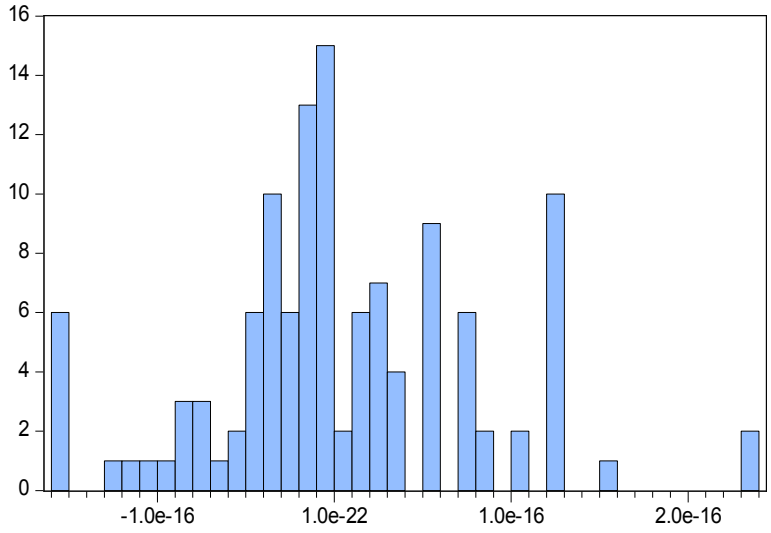
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.252318	0.140525	-1.795541	0.0753
LIQUIDITY_RATIO	-0.823358	0.267437	-3.078696	0.0026
TOTAL_DEPOSITS_RATIO	0.428389	0.199713	2.145019	0.0341
ASSET_SIZE	-0.002074	0.010238	-0.202575	0.8398
OPERATIONAL_EFFICENCY	-0.173735	0.020685	-8.399056	0.0000
GDP_PRICE_INDEX	-0.154765	0.048582	-3.185636	0.0019
AVERAGE_LENDING_INTEREST	-0.000653	0.006900	-0.094631	0.9248

Effects Specification	S.D.	Rho
Cross-section random	0.021736	0.0086
Idiosyncratic random	0.233105	0.9914

Weighted Statistics			
R-squared	0.535608	Mean dependent var	-0.357305
Adjusted R-squared	0.510730	S.D. dependent var	0.374582
S.E. of regression	0.262054	Sum squared resid	7.691279
F-statistic	21.52924	Durbin-Watson stat	1.608258
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.546170	Mean dependent var	-0.372466
Sum squared resid	7.798533	Durbin-Watson stat	1.586162

B. Normality Test figure



Series: Standardized Residuals
Sample 2011 2020
Observations 120

Mean	5.15e-18
Median	-2.65e-18
Maximum	2.38e-16
Minimum	-1.52e-16
Std. Dev.	7.45e-17
Skewness	0.347539
Kurtosis	3.783768
Jarque-Bera	5.487130
Probability	0.064341

C. Collinearity statistics

	Gross_Loan_Ratio	Liquidity_Ratio	Total_Deposits_Ratio	Asset_Size	Operational_Efficency	Gdp_Price_Index	Average_Lending_Interest
Gross_Loan_Ratio	1	-0.35406	0.21295	0.352337	-0.68765	-0.10572	0.08456
Liquidity_Ratio	-0.35406	1	0.169419	0.047149	0.324743	-0.14641	-0.02514
Total_Deposits_Ratio	0.21295	0.169419	1	0.39736	-0.16656	-0.08539	0.336637
Asset_Size	0.352337	0.047149	0.39736	1	-0.50539	-0.03214	0.211499
Operational_Efficency	-0.68765	0.324743	-0.16656	-0.50539	1	-0.10775	0.03078
Gdp_Price_Index	-0.10572	-0.14641	-0.08539	-0.03214	-0.10775	1	-0.31444
Average_Lending_Interest	0.08456	-0.02514	0.336637	0.211499	0.03078	-0.31444	1

D. Descriptive statistics

	Observations	Mean	Median	Maximum	Minimum	Std. Dev.
Gross_Loan_Ratio	119	-0.37247	-0.3001	1.685362	-2.11663	0.381609
Liquidity_Ratio	120	0.166108	0.151326	0.508724	0	0.092834
Total_Deposits_Ratio	120	0.359262	0.341298	0.747	0	0.129519
Asset_Size	120	12.39765	12.55018	17.32818	0	2.989758
Operational_Efficency	120	0.506716	0.168671	11.86241	0	1.353554
Gdp_Price_Index	120	0.087495	0.100453	1.093834	-1	0.470915
Average_Lending_Interest	120	14.3715	12.315	21.5	11.875	3.585834

E. Panel unit root test

Panel unit root test: Summary
Series: D(GROSS_LOAN_RATIO)
Date: 04/10/22 Time: 03:38
Sample: 2011 2020
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-7.47648	0.0000	12	120
Breitung t-stat	-0.18923	0.4250	12	120
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-1.45834	0.0724	12	120
ADF - Fisher Chi-square	53.9476	0.0004	12	120
PP - Fisher Chi-square	97.3952	0.0000	12	120

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

F. List of Microfinance Institutions Operating in Ethiopia

Category A		**Abbrev.**	**Category B**		**Abbrev.**	**Category C**		**Abbreviation**
1	Amhara credit and savings ins.	ACSI	1	Specialized fina.& prom. ins.	SFPI	1	African village financial serv.	AVFS
2	Dedebit credit and savings ins.	DECSI	2	Gasha micro-financing ins.	Gasha	2	Sha.Idi.ye.Ag. micro-financing ins.	ONE
3	Oromiya credit and savings ins.	Ocssco	3	Wisdom micro-financing ins.	VISION	3	Metemamen micro-financing ins.	Metemamen
4	Omo credit and savings ins.	OMO	4	Sidama micro-financing ins.	Sidama	4	Leta micro-financing ins.	LETTA
5	Addis credit &savings ins.	ADCSI	5	Buussa Gonof.micro-financing ins.	Bus.Gon.	5	Digaf micro-financing ins.	Digaf
			6	PEACE micro-financing ins.	PEACE	6	Harar micro-financing ins.	Harar
			7	Meklit micro-financing ins.	Meklit	7	Lefayda credit & saving ins'n	Lefayeda
			8	Eshet micro-financing ins.	Eshet	8	Tesfa micro-financing ins.	Tesfa
			9	Wassassa micro-financing ins.	Wasasa	9	Dynamic micro-financing ins.	Dynamic
			10	Ben. Gum. micro-financing ins.	Benshangul	10	Somali micro-financing ins.	Somali
			11	Dire micro-financing ins.	Dire	11	Lideta micro-financing ins.	Lideta
			12	Agar micro-financing ins.	Aggar	12	Nisir micro-financing ins.	Nisir
			13	Harbu Micro-financing ins.	Harbu	13	Adeday micro-financing ins.	Adeday
						14	Afar micro-financing ins.	Afar
						15	Rays micro-financing ins.	Rays
						16	DEBO	
						17	KENDIL	
						18	SHEGER	
						19	YEMISRACH	
						20	GRAND	
						21	KERSHI	