Factors Affecting Financial Performance of Microfinance Institutions in Ethiopia

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STATEMENT OF DECLARATION

I, Belay Beyene, declare that this thesis entitled "**Factors Affecting Financial performance of Microfinance institutions in Ethiopia"** is my own work and that all sources of material used for the thesis have been duly acknowledged. I have carried out independently with the guidance and support of the thesis advisor.

This Thesis has not been presented previously in this University or any other University. It is submitted for the partial fulfillment of the degree of Masters of Science (MSc) in Accounting and Finance

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This is to certify that the thesis prepared by Belay Beyene, entitled: **"Factors Affecting Financial performance of Microfinance institutions in Ethiopia"** and submitted in partial fulfillment of the requirements for the degree of Master of Science in Accounting and Finance complies with the regulations of the institution and meets the accepted standards with respect to originality and quality.

Signed by the Examining Committee:

Advisor _Dr. Laxmikantham P.___Signature _____ Date_____

Internal Examiner _____ Signature _____ Date_____

External Examiner _____ Signature _____Date _____

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ABSTRACT

This study examined the effect of internal and external factors on financial performance of Ethiopian microfinance institutions over a period of ten years (2010 to 2019). The study used panel data of nineteen microfinance institutions. The study employed an explanatory research design following a quantitative research approach. Secondary financial data were analyzed by using multiple linear regressions model. Random effect regression model was applied to investigate the impact of capital asset ratio, portfolio quality, and management efficiency, employee productivity, gearing ratio, microfinance size, microfinance age, inflation rate and real GDP on the financial performance of Ethiopian microfinance institutions measured by return on asset. The finding of the study shows that capital asset ratio, employee productivity and age of microfinance have statistically significant and positive relationship with financial performance. On the other hand, variables such as management efficiency, portfolio quality, and size of microfinance have a negative and significant relationship with MFI's financial performance. However, the relationship of gearing ratio, real GDP, and inflation rate with financial performance were found to be statistically insignificant. Based on the above findings, the study suggests that the management of Ethiopian microfinance institutions have to give due attention in managing their CAR, PAR, MGE, EMP, SIZE and AGE of microfinance institution

***Keywords**: financial performance, Micro finance institutions*

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List of Acronyms

ADSCI	Addis Savings and Credit Institution
ACSI	Amhara Credit and Saving Institution
AVFS	African Village Financial Service
AEMFI	Association of Ethiopian microfinance institutions
CAP	Capital asset ratio
EMP	Employee productivity
BUS.GON	Bussa Gonofa Microfinance S.C
CGAP	Consultative Group to Assist the Poor
DECSI	Dedebit Credit and Savings Institution
GDP	Gross Domestic Product
GR	Gearing ratio
INFL	Inflation
MFIs	Micro Finance Institutions
MGE	Management efficiency
NBE	National Bank of Ethiopia
NA	Not Available
OCSSCO	Oromia Credit and Savings Share Company
OMO	Omo Microfinance Institution Share Company
PAR	Portfolio at Risk >30 Days
PEACE	Poverty Eradication and Community Empowerment Microfinance S.C
ROA	Return on Asset
SFPI	Specialized Financial and Promotional Institutions S.C

CHAPTER ONE

1. INRODUCTION

1.1. Background of the Study

Microfinance institutions are financial sectors that offer different financial service for the poor people who are out of the conventional banking system in developing countries like Ethiopia. According to Gallardo et al (2003), in various underdeveloped countries the formal financial sector serves only five to twenty percent of the population and the numbers of institutions are very limited. MFIs are defined in terms of the subsequent features: targeting the poor especially the poor women; promoting small businesses; building capacity of the poor; extending small loans without collaterals; linking credit with savings; and charging commercial interest rates (Dejene, 1998 cited in Alemayehu, 2008). It has a dual goal, that of attaining financial sustainability and reducing poverty.

The need for MFIs is highly pronounced due to the fact that the poor are 'un bankable' in the views of the formal financial institutions, because the poor fail to bet collateral which these institutions put as a pre-condition for disbursement of a loan. According to Helms (2006), above three billion poor people need access to basic financial services worldwide and ignored by commercial banks for a long time.

Following the issuance of proclamation No. 40/1996, Ethiopian Microfinance institutions were formally established. Since the implementation of the above Proclamation and was later on revised in the year 2009, the number of microfinance institutions and their clients are increasing from time to time. Accordingly, numerous MFIs have formally been registered and began providing microfinance services to their clients. The first group of few MFIs was established in 1997 through the provision of sustainable financial services to the poor who actually do not have access to the financial support services of other recognized financial institutions. Currently, there are 38 MFIs registered with the National Bank of Ethiopia serving clients. The market of Ethiopian microfinance sector is dominated by some large MFIs, all of which are related to regional government ownership. The legal instrument which regulates micro-financing

institutions in Ethiopia is licensing and supervision of micro-financing business proclamation No 626/2009.

Fast growth, a wide geographic coverage, a domination of government backed MFIs, attention on rural households, the upgrade of both credit and savings products and a powerful target on sustainability are the features of Ethiopian microfinance sector and by the fact that the sector is Ethiopian owned and driven (Ebisa et al, 2013)

In developing countries, Microfinance Institutions (MFIs) have been introduced as a financial institutions with an intention of providing small sized financial service to the poor who were in need of economic services but lack of access to formal commercial banks. The microfinance institutions services consists provision of micro loans, micro savings, micro insurance service, money transfer, leasing and other relevant schemes to the target poor peoples who have been not included in the conventional commercial banks due to lack of collateral necessities and high transaction costs (Tolosa, 2014).

Micro Finance institutions contribute significantly to the national economy of Ethiopia by the virtue of improving poverty and creating jobs. An important development instrument is improving access to financial services because it helps in creating employment opportunities and enhances their earnings and consumption which would in the final analysis decrease poverty. Accesses to financial services to the poor also facilitates the economic growth by easing liquidity constraints in production, by providing capital to start-up new enterprises or adopt new technologies, and by helping producers to assume production risk (Getachew, 2017).

The formal banking system in Ethiopia presents many limitations to the lower income people to finance their productive events. 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.

Performance is the function of the capability of an institution to get and manage the resources in varies means to develop competitive advantage. To improve MFIs' performance, they better know their weaknesses and gaps in which areas are they performing well and in which did poor. This will help for better decision making to perform in cost effective way with the available resources. According to Wolday (2007), the challenges that Ethiopian MFIs commonly face are three fold: it concerns, not only, financial sustainability, but also outreach - extending the

microfinance services to large numbers of poor people, and depth of outreach - trying to reach the low income members of society. The simplest way to determine the performance of the microfinance institution is to look at its financial statement.

Financial performance is a means of how well microfinance institutions can utilize their assets from their main mode of activities and earns revenue. It is also referred as a general measure of a company's overall financial health over a specified period of time. According to Iswatia, & Anshoria (2013, cited in Abuammr, 2019), financial performance emphasizes on variables related directly to financial report. The role of Capital market is critical in the economic development of a country by facilitating mobilization and distribution of capital resources to finance long term productive investments. It facilitates and helps the process of economic growth in the country.

Microfinance institutions are considered as one of the policy instruments to eradicate poverty and to inspire different groups by providing initial money for small business. So as to sustain their tremendous contribution to the poorest and developing society in the current dynamic macro-economic environment, they need to periodically research and revisit the major determinants of their performance especially financial performance. Therefore, the objective of the study is to identify the factors that actually influence the financial performance of Ethiopian microfinance institutions.

1.2. Statements of the problem

MFIs provide financial services to low income people who are not included in the conventional banking system. According to Wolday (2000), formation of Sustainable MFIs that reach a large number poor people who are not served by the conventional financial institutions, such as the commercial banks has been the main component of the new development Strategy of Ethiopia. The objective of almost all of the microfinance institutions in Ethiopia is poverty mitigation. To achieve this objective, MFIs have a duty to be financially viable and sustainable.

Micro finance institution sector play a great role in supporting the economic activities of the rural and urban poor people in developing countries. Investigates indicate that MFIs in developing counties are important actors and wings in the financial sector, and they are well

positioned to grow and reach the millions of potential clients who presently do not have access to mainstream financial services (Lafourcade et al., 2005).

The concept of financial performance has received significant attention from researchers in the various areas of business. Financial performance is an issue of main concern almost by all business stakeholders in any sector since it is an ingredient to institutional health and ultimately its existence. Management effectiveness and efficiency may reflect by good financial performance in utilizing a company's resources and this may contribute to the economy at large (Ansah-Adu et al., 2012).

Regarding MFIs performance in Ethiopia different researches have been conducted. For instance, Ebsa.et.al (2012, cited in Belainesh, 2016) studied on determinants of financial performance and challenges of MFIs and the financial performance assessment part covers few areas of indicators mainly of breadth of Outreach: number of customers and the amount of loan grant to borrowers. Berhanu (2019) carried out an investigation on determinants of microfinance institutions performance in Ethiopia. The researcher concluded that capital structure ratio, capital adequacy ratio, operational efficiency ratio, firm size ratio and number of borrowers affect the financial performance of MFI. Sisay (2016) also conclude that portfolio at risk, loan loss reserve ratio, operational self-sufficiency, financial self-sufficiency, debt to equity ratio and size of MFI are the main determinants of financial performance of Ethiopian MFIs.

Alemeyhu (2008) conducted a research on microfinance institutions operational and financial performance by adopting simple descriptive analysis and using graphs and percentage progress rates by classifying small, medium and large. The study by Yenesew (2014) and Melkamu (2012) have also tried to see the factors influencing operational and financial sustainability of MFIs in Ethiopia. However, the researchers used a limited number of variables such as personnel productivity ratio, cost per borrower, liquidity ratio, number of active borrowers, operating expense ratio, portfolio quality, real GDP and market concentration.

Therefore, the main purpose of this study is to analyze the financial data of Ethiopian microfinance institutions from 2010 to 2019 in order to investigate the factors affecting their financial performance. To examine the relationship among measures such as capital asset ratio, portfolio quality, management efficiency, employee productivity, gearing ratio, size and age of

microfinance, GDP and inflation rate and financial performance of microfinance institutions which is measured by Return on Asset (ROA). According to the knowledge of the researcher previous studies conducted does not include the variables management efficiency and employee productivity in their study. Thus, this study would focus on filling these research gaps by adding these two new variables and replicating the existing to examine their effect on financial performance of Ethiopian MFIs.

1.3. Objective of the Study

1.3.1. General Objective

The main objective of this study is to investigate the factors affecting financial performance of microfinance institutions in Ethiopia

1.3.2. Specific Objectives

Particularly, the study addressed the following objectives

- To determine the impact of capital asset ratio on financial performance of microfinance institutions
- To assess the effect of portfolio quality on financial performance of microfinance institutions
- To investigate the influence of management efficiency on financial performance of microfinance institutions
- To analyze the effect of employee productivity on financial performance of microfinance institutions
- To assess influence of debt to equity ratio on financial performance of microfinance institutions
- To analyze the effect of size on financial performance of microfinance institutions
- To evaluate the effect of age on financial performance of microfinance institutions
- To determine the influence of GDP on financial performance of microfinance institutions
- To investigate the impact of inflation on financial performance of microfinance institutions

1.4. Hypotheses of the Study

Regarding the factors affecting financial performance of Ethiopian MFIs, varies hypotheses were tested to achieve the objectives of the study based on different empirical research and theoretical review. According to Creswell (2009), more formal way of stating research question is by developing hypotheses between explanatory and dependent variables. The hypothesis may be stated as alternative hypothesis specifying the exact results to be expected. It can also be written in null form indicating no relationship between dependent and independent variables. Thus, the researcher developed the following hypothesis.

H1. There is a positive and significant relationship between capital asset ratio and MFIs financial performance

H2. There is a negative and significant relationship between qualities of portfolio and MFIs financial performance

H3. There is a positive and significant relationship between management efficiency and MFIs financial performance

H4. There is a positive and significant relationship between employee productivity and MFIs financial performance

H5. . There is a negative and significant relationship between gearing ratio and MFIs financial performance

H6. There is a positive and significant relationship between size and MFIs financial performance

H7. There is a positive and significant relationship between age and MFIs financial performance

H8. There is a positive and significant relationship between real GDP and MFIs financial performance

H9. There is a positive and significant relationship between rate of inflation and MFIs financial performance

1.5. Significance of the Study

The results of the study will be useful to the stakeholders such as managers, Government, donors and regulators. To managers, the study will help them in identifying the factors affecting financial performance of MFIs and thereby take appropriate actions to protect their MFIs from different risks, and maintain a sound and healthy financial system through an efficient and effective financial statement management. To Government, the results will assist to develop adequate policies that encourage the growth and development of the MFI industry. To donors, the study will help them to get valuable information and understand the levels of financial performance of the MFIs have been reached. To regulators such as NBE and AEMFI, this study will contribute to set financial performance standards. The study Will also initiate microfinance institutions to give due emphasis on the management of identified variables. Furthermore, it gives some supplement motivation for future researchers to conduct a further cutting-edge study. Finally, it has been also contributed additional elements to the existing literature on financial performance of MFIs.

1.6. Scope of the study

The scope of the study was bound on the effect of microfinance internal and external factors affecting on the financial performance of microfinance institutions in Ethiopia by using ten consecutive years (2010-2019) financial statements of each microfinance institution. Based on the availability of audited financial statements data, Only 19 samples were selected out of a total population of 38 microfinance institutions operating in Ethiopia. The selected nineteen MFIs are existed in operation for more than ten years. The study used one dependent variable, return on asset (ROA) and nine independent variables, such as capital asset ratio, portfolio quality, management efficiency, employee productivity, gearing ratio, size, age, and GDP and inflation rate.

1.7. Limitation of the study

Before carrying out this study, the researcher was hoping to include all the 38 MFls which are registered by NBE in 2020. But the researcher was not able to do so, the first reason is some microfinance institutions are less than ten years old, the second reason is lack of financial data for consecutive ten years for some MFls. Therefore, the researcher has forced to include only 19 MFls in the study. Moreover, lack of financial data for 2020 has compelled the researcher to

confine the investigation only up to 2019. Except these limitations the study is believed to represent the true financial performance of the institutions.

1.8. Organization of the paper

The paper is organized into five chapters. The first chapter is an introduction part which contains background of the study, statement of the problem, objective, hypothesis, significance, scope and limitation of the study. The second chapter comprises both theoretical and empirical reviews. The third chapter presents methodologies and model specification of the study. The fourth chapter includes data analysis and discussion of results. The last chapter, which is Chapter five, is designed to provide conclusion and recommendation based on the study obtained from data analysis.

CHAPTER TWO

2. LITERATURE REVIEW

2.1. Introduction

Based on the proposed study, this chapter reviews the available literature. It deals with the theoretical framework of the study and then followed by the review of empirical studies. The chapter proceeded with determinants of financial performance of MFIs in Ethiopia, followed by the research gaps and then lastly conclusion and conceptual framework**.**

2.2. Theoretical Review

The theoretical part of this chapter involved issues such as definition of microfinance institutions, microfinance institutions history, performance measures and sustainability of microfinance institutions and internal and external factors affecting of financial performance of microfinance institutions.

2.2.1. Definition of microfinance institution

Microfinance institution are defined in different ways by varies authors and institutions. But the concept of the definitions is usually the same in which microfinance refers to the provision of financial services; mainly savings and credit to the poor and low income households that are not included to the commercial banks service.

Hossain & Knight (2008) defined microfinance as the supply of loans, savings, and other basic financial services to the poor people. As the authors noted that microcredit, an essential theme of microfinance, is broadly recognized as the practice of providing small, collateral-free loans to members of cooperatives who else would not have access to the capital essential to initiate small businesses.

Microfinance institution is defined as financial intermediation of all types of financial service areas (savings, credit, funds transfer, insurance, pension remittances, etc.) (Robinson, 2001).These services are delivered to poor people and micro businesses in both urban and rural parts, including employees who are self-employed and the public and private sectors. Parker et

al., (2000) also defined microfinance as providing of small loans (called “micro-credit”) or savings services for people who are not included in the formal banking system.

Consultative Group to Assist the poor (CGAP,2012) defined microfinance as the delivery of formal financial services to low-income and poor people, as well as others systematically excluded from the assistances of the financial system. According to the institution, Microfinance is not only providing a range of credit products for consumption but also savings, money transfers, and insurance drives.

Therefore, based on the definitions given, it can be concluded as microfinance encompasses broad financial services offered to the poor and low-income group of people for several causes involving generating of income activities. It is a place for the poor and near poor clients to get to financial service access, which contain not only just credit service but also savings, insurance and fund transfer services.

2.2.2. History of Microfinance

The microfinance history can be drawn back to the center of the eighteen century when the Lysander Spooner theorist was writing over the benefits from small amount of credits to businesspersons and farmers as a way getting the people out of poverty (Kannan and Panneerselvam, 2013). However it was at the end of World War II with the Marshall plan the concept had a big effect.

In1864, the first rural credit union was established by Friedrich Wilhelm Raiffeisen in Germany and realized that the poor farmers were being taken advantage of by loan sharks. This system was not similar with former banks because it was owned by its members, provided rational lending rates and was made to be a sustainable means of community economic empowerment. By the end of the eighteen century, the concept of credit union expanded internationally and these systems micro credit had spread all the way from Ireland to the Far East countries like Indonesia. Similar systems were establishing in Latin America at the end of the period. In European countries, the credit unions were possessed by its associates while in Latin America they were possessed by the private banks and government and the institutions were not as efficient as they were in Europe (Helms, 2006).

At university of Chittagong, Bangladesh, an economics lecturer, lent $27 to a group of poor villagers in 1976. Thirty years later, the lecturer, Professor Mohammad Yunus and the founder of Grameen Bank won the Nobel Prize 2006 for his efforts and microfinance become the world's favorite development idea, the silver bullet that will cure world poverty and the health creating force of capitalism across the globe (Kannan and Panneerselvam, 2013).

Nowadays there is an influential movement in the direction of commercialization and transformation of providers of microfinance institutions into formal financial institutions. More and more micro finance organizations became independent from donor funds and raise their capital from the capital markets while increasing their outreach (Helms, 2006).

2.2.3. History of Microfinance in Ethiopia

Ethiopian microfinance institutions were announced after the fall of the Derg regime. As mentioned by various researchers, the development of microfinance institutions in Ethiopia is a recent phenomenon. The proclamation for the establishment of microfinance institutions was issued in 1996. From that time, numerous microfinance institutions have officially been registered and started providing microfinance services (Wolday, 2000).

The Licensing and Supervision of Microfinance Institution Proclamation of the government in 1996 stimulated the expand of MFIs in both rural and urban areas as it authorized them, among other things, to officially receive deposits from the general public, to draw and receive drafts, and to manage funds for the micro financing business (Getaneh, 2005).

Ethiopian microfinance institutions development was started in latest times. However the industry has shown outstanding growth. The issuance of Proclamation No 40/1996 provided the establishment of formal microfinance institutions. Currently, thirty eight microfinance institutions have legally registered by the National Bank of Ethiopia (NBE) and started delivering financial services to the poor people.

2.2.4. The Need for Microfinance

In the development process, microfinance institutions play several roles. The need for microfinance institutions is also enhancing in many nations. Microfinance institutions can

accomplish several roles such as financer economic choices of people, spreading household income, making household less vulnerable to recession in the economy or individual, smoothening income flows of the household, increase quality of life throughout the year and strengthen the economic position of women so that they can act better control of decisions and actions in their lives. In addition to this microfinance helps in the course of household asset building. Microfinance also delivers savings service, permitting poor households to accumulate safe, but flexible cash accounts to draw on when needed (Parker et al., 2000).

Microfinance institution services lead to women enablement by positively impacting women's decision making power at household level and their general socioeconomic status. Microfinance institution services had touched over 79 million of the poorest of the world in the last 20000. As such it has the capacity to make an important involvement to gender equality and promote sustainable livelihood and better working condition for women (Noreen, 2011).

The problem poorness is a rotation that continues itself. When there is lack of money, there is a lack of basic needs such as food, water and shelter. The pain of people by famine leads them to fewer likely to work. A nonexistence of healthy makes the possible of illness that inhibits working days. A microfinance institution changes these conditions by creating more money accessible. Families can capitalize into better wells, better sanitation, and afford the time it may take to access the health care they need at the time of meting their basic needs. People can stay more productive when they are safe and healthy. When better health care can be obtained, they make them a proportional average family size since there are more assurances of existence in their residence. And when that happens, the possibilities of future investments will occur because there is more confidence in being able to meet basic needs (Ayres, 2019).

Microfinance is a policy to improve the life of the poor people in terms of generating income to cover the required cost and institutions meet the demand. Micro finances help the procedure of development by altering the situation of the poor through facilitating several services which are essential for poor.

2.2.5. Financial services of microfinance institutions

Credit services

The best common credit services in MFIs are microcredit and micro leasing. Micro credits are loans of small size that can help poor to escape their Micro leasing is a low value contract with which one party/MFI (the lessor), in exchange for the payment of a regular installment, concedes to another party/customer (the lessee) the use of equipment, however the ownership of the asset remains to the lessor/MFI. Low income clients are usually unable to find the tool and therefore MFIs allow them to obtain the availability of the asset without having to tie up capital equal to the whole leased asset. Credit facility can be used in different ways such as source of meeting consumption needs, source of short term working capital, and source of long term investment capital (Torre and Vento, 2006 cited in Ayenew, 2019)

Savings services

Almost all poor need to save in order to protect themselves against periods of low income or specific emergencies and to store the value of excess income for future investments. There are two broad forms for which MFIs collect savings, compulsory savings and voluntary savings .Obligatory saving products comprise of methods of mandatory saving, which indicate that some percentage of the provided loan is detained back and placed in a fund that acts as a guarantee. The customers can assess the amount at the end of the loan cycle. Nevertheless, the low income people normally choose charitable saving products. These are volunteer ways of saving gathering that permit the investor to deposit and withdraw, with varying frequency and expiry dates, according to the products‟ liquidity (Torre and Vento, 2006). Hence micro saving deposits provide facilities for safe keeping of savings, consumption smoothing emergencies and accumulation of resources as well as self-financing of investments (Mukama, 2005 cited in Ayenew, 2019).

Insurance services

Micro insurance products drawn up to reduce doubt and its effects represent an important tool in microfinance. The micro insurance services include specialized insurance services such as life, health, accident or livestock insurance and non-specialized facilities that deliver social safeguard

through available to a client's savings or credit in cases of emergency for risk management, social security and loan protection. This kind of delivering financial service is not common in Tanzania.

Payment services

This is the service that allows poor to transfer money through secure channels. So far, MFIs that give payment services are not numerous since of the difficulty of the infrastructure and the technology that payment system require. This payment service in mainly used by banks which force MFIs to use affiliated banks to transfer money. In this circumstance, MFIs should develop good relationship and partnership with banks. (Torre and Vento, 2006 cited in Ayenew, 2019).

2.2.6. Microfinance institution and Poverty Mitigation

Poverty is lack of access by the poor households to the assets like human capital, natural, physical, social-political, or financial (savings and access to credit) necessary for a higher standard of income or welfare. In poor countries like Ethiopia greater attention has been paid to poverty alleviation through microfinance, especially in the last decade. The successful use of the micro finance is considered as a victory for the disadvantaged segments. Considering the poverty alleviating impact of micro finance, currently many microfinance institutions are working throughout the developing world. The capacity of microfinance institution to allow its beneficiaries by decreasing the income poverty and through possibility to expand ones agency and economic independence could further add to the incentives to join and stay. Yet, the institutional policies and vulnerability of the poor people limit the chances of the poor to participate and maintain the banking relationship and could erode the impact or reduce the benefits that this relationship brings (Mulugeta, 2015 cited in Ayenew, 2019).

2.2.7. Challenges of Microfinance Institutions in Ethiopia

The stated below are some challenges faced by MFIs.

Internal challenges such as deficiency of loan able funds for additional enlargement, high turnover of employees, lowly customer treatment, poor documentation, poor management system, not use computerized system, no training given by the microfinance institutions, the

institutions couldn't assume the customer objections and don't take corrective decisions; and external challenges such as high credit risk due to poor loan repayment, high competition with conventional banks and improper interference of third party in the decision of loan approval (Kumar, 2011).

Restricted in product development and inventions due to the regulatory framework affecting the kind and development products; the owner (mother NGO, government or shareholders) not clear defining the products; lack of competition; high risk and high cost developing new products; and limited capacity of the institutions to develop financial products (Wolday, 2000).

According to Vilkar (2016), Geographic factors are the challenges faced by MFIs. Most MFIs approve that the environmental factors make it hard to connect with customers of far areas which create a problem in growth and expansion of the organization. The other difficulties for MFIs are different business models. Assisting the very wide variety of attributes and lending activities is difficult and necessitates a considerable amount of cost and efforts. In addition, high transaction cost is a big challenge for microfinance institutions. The size of transactions is very small, while the fixed cost of those transactions is very high.

Rural agriculture related constraints due to seasonality environment of the agricultural loans are creating stresses on the markets; lack of well-developed small, medium or large scale irrigation practices. In addition, major challenges that affect microfinance institutions are default risk inherited from borrowers, insufficient donor funding and lack of understanding of the definition and concept of microfinance institutions by the client (Dahir, 2015 cited in Getachew, 2017)

2.2.8. Performance Measures of Microfinance institutions

Performance of an institution shall be measured from the objectives of the organizations angel. The primary goal of microfinance institution is to decrease poverty and to increase the living standards of the poor both in rural and urban areas. The different perspective on which the microfinance institutions financial and total performance is to be measured has created two opposing but having the same goals school of thought about the microfinance institutions industry. The first one is called Welfarist approach and the second is the institutionist approach.

The Institutionist Approach: According to this approach the primary aim of microfinance institution is financial deepening. That is, the setting up of a distinct system of "sustainable" financial intermediation for the poor who are either ignored or are underserved by the recognized financial system. The activists of this Institutionist approach offer emphasis to more on the accomplishment of financial self-sufficiency, breadth of outreach or numbers of clients, depth of outreach or levels of poverty reached and positive effect of clients. The institutionists initiate from the main and obvious suppositions that donors cannot subsidize adequate financial services by the MFIs delivered to all of the possible institutions clients. These institutionists also trust that the only way to overwhelmed this restriction is to attract private sources of capital and this in turn needs MFIs to be sustainable and profitable (Elia, M. 2006). According to this approach point of view sustainable financial institutions that deliver financial services to the poor are essential if the main goal is substantial poverty eradication.

The focus of this school of thought is not on depth of outreach (level of poverty of clients) rather must be place on breadth of outreach (number of clients reached). It would fail the target of poverty reduction if the system is not able to raise the number of clients reached. Moreover, they believe and focus that if the approach of structuring sustainable MFIs are used the poorest will also obtain advantage from it, while the other way around of pointing the poorest with extremely subsidized programs will have a low overall influence due to the restricted and unbalanced donor funding. The Welfarist Approach: The main objective of this school of thought is self-employment of the poorer of the economically active poor, especially women. The interest of the Welfarist approach depends in the "family" and they offer more attention on the depth of outreach (the levels of poverty reached). The Welfarists are extremely concentrated with the use of financial services to shrink the impact of severe poverty among distinct members as well as societies. The concentration of this approach is on the unexpected improvement in the well-being of observers. Although there are significant attendances of differences between these two schools of thought, they have some similarities in their thoughts as well. As much as the two schools of thought want to solve the problem of financial needs of the poor people, microfinance events should aim at attaining the objectives of the two approaches (Nelson, 2011). The Welfarist school of thought emphasizes on depth (number of clients reached) rather than breadth of outreach (poverty level of clients) and receive subsidies on a continuing basis. The Welfarist

school of thought receive subsidies as they trust and attention that if sustainability is considered as essential requirement, the achievement of the social mission of microfinance is at risk. Now the clients are the center of attention that are aided rather than the institution or developing self-sustained industry and also the they accept the subsidies or needed subsidies on continuing basis and this school of thought not just emphases on financial self-sufficiency as an essential tool (Elia, 2006).

The main difference of the two schools of thought is on the way or methodology of eradicating poverty. According to Welfarists, targeting the very poor is the primary objective and profitability shall be secondary. The Welfarists choose to charge subsidized and low interest rates by trusting on donor funds. Institutionalists on the other hand debates that donor funds are unreliable and MFI by themselves must generate adequate incomes to reach more poor people in the future.

2.2.9. Sustainability of Microfinance Institutions

Sustainability of a microfinance institution refers to the long-run extension of its program subsequent the project activities have been ended. It causes that proper systems and processes have been put in place that will empower the microfinance services to be accessible on a continuous basis and that the clients ongoing to get advantage from the services in a repetitive manner. This also would mean that the package would meet the requirements of the participants through resources raised on their own strength, either from among themselves or from outside sources (Guntz, 2011).

As the concept of microfinance came into consideration, the debatable issue of whether donor support is essential in the long term and the matter of sustainability of such microfinance institutions came up as well. It could be debated that the long term sustainability of microfinance institution is not vital as long as money was given to micro businesspersons and a startup help was rendered. This in turn would imply that the current operational activities of the micro businesses are more vital than the long term survival of the financial institution that rose after the startup (Fikremariam, 2015).

As MFIs desire to reach as many poor people as possible in the long run to fulfill their goal to fight against the worldwide poverty, it became apparent that this outreach of microfinance institution is only attainable on a sustainable and well-organized basis. It could be assumed that sustainable MFls are typically for profit commercial firms, but actually this is not the case. About two-thirds of the sustainable microfinance institutions are NGOs, cooperatives, public banks, or other not-for-profit organizations (Rosenberg et al., 2009).

In general Sustainability means the capability of a program to continuously carry out events and services in quest of the statutory objectives. Sustainability can be separated in to two types; operational sustainability and financial sustainability.

2.3. Financial sustainability

The capability of microfinance institutions to happen in the long run by means of their own income producing activities excluding any contributions from donors is referred as financial sustainability. According to Meyer (2002), the MFI's financial sustainability o is significant as the poor gets best advantage if they have access to financial services to the poor over period rather than obtain just certain future loan but deprived of future loans since the MFI has died out. As Meyer (2002), there are two levels of financial sustainability that can be measured; operational self-sustainability and financial self-sustainability. Operational self-sustainability means that operating income is sufficient to cover operating costs. Financial self-sustainability means that the MFI also can cover the costs of funds and other forms of subsidies received when valued at market rates.

Microfinance institution has received a lot of emphasis as an important poverty mitigation tool. The UN declared to be the international Year of Microcredit in 2005, and Mohammad Yunus received the Nobel Peace prize in 2006. These developments have directed to great expectations about the possible poverty-reducing effects of microfinance between policy-makers and aid organizations. But in order to be able to make a significant and long-term contribution to reducing worldwide poverty, MFIs need to be successful in extending loans to poor borrowers, while at the same time, they require to be able to at least replace the costs of their lending

activities, i.e., they may want to concern on being financial sustainable in the long run (Armendariz & Labie, 2011).

2.4. Empirical Literature review

This part provides a short review of the previous researches made on the determinants of micro finance performance from both developed and developing countries. Below are some of the summaries of previous empirical studies by different scholars in various nations.

(Hermes & Hundon, 2018), in their research on "determinants of microfinance institutions", made a systematic review on determinants of financial and social performance of MFIs, by using secondary data. The majority of their study was based on quantitative methods to analyze the performance of microfinance institutions. Their result was maturity; size and type of organization, funding sources available, governance structure, conditions external to MFIs etc. have direct and inverse impact on performance of MFIs.

Ongore & Kusa, (2013) has also conducted an investigation on Operational Sustainability determinants of Kenyan Micro Finance Institutions. The main objective of the research was to investigate the factors that affect the operations self- sufficiency and financial sustainability. A descriptive research design was employed by the study and data was collected from thirty microfinance institutions. The obtained data was analyzed by linear multiple regression model. The study used Capital to asset ratio and Operating Expenses/Loan Portfolio indicators as independent variable and Operational Self Sufficiency ratio as dependent variable in the regression model. Accordingly, the study revealed that the factors that influence the operations and financial sustainability are capital/ asset ratio and operating expenses.

Lawrence (2012) has also tried to find out the factors influencing the sustainability of Microfinance Institutions in Murang'a Municipality. The main objective the study was to identify whether financial regulations, geographical coverage and reach of the microfinance institutions in Morang's municipality influence their sustainability. The study used financial regulations, geographical coverage and reach as explanatory variables to see their effect on explained variable, sustainability of microfinance institutions. The study concluded that financial regulations, number of clients served, financial coverage and volume of credit transacted were the factors that highly influenced the sustainability of microfinance institutions.

Waithaka (2013), made a study on indicators that influence the social performance of microfinance institutions in Kenya. The analysis was made by using various statistical tools to make tests like validity, reliability, and factor analysis and normality test for dependent variable. The result was the leadership characteristics, involvement of stakeholders in MFIs, size of MFIs, age of MFIs have impact on performance of MFIs.

Yenesew (2014) conducted a research entitled on factors influencing Ethiopian microfinance institutions performance. His objective is to investigate determinants of MFIs financial performance in Ethiopia from the period 2003 to 2011 using OLS estimation method to extent the effect of microfinance specific and macroeconomic determinants on financial performance of MFIs with is measured by return on asset (ROA). The outcomes of the investigation indicated that variables such as operational efficiency, GDP, and size of MFIs influence financial performance of MFIs significantly. On the other hand, variables like portfolio at risk, debt to equity ratio and market concentration have negative and insignificant effect of financial performance of MFIs.

Letenah (2009, cited in Eyerusalem, 2014) conducted a research on performance analysis of selected Ethiopian MFIs. The study assessed both outreach and sustainability and revealed that there was a relationship between them. The study was conducted on sixteen MFIs whose reports were available on Mix Market data. Data were analyzed using statistical analysis techniques specifically one sample test and the investigation used Kruskal-Wallis test and Pearson correlation coefficients. The result of this investigation exhibited that performance of MFIs in terms of depth of outreach for the fact they couldn't reached the poorest of the poor, but they are good at measures of breadth of outreach.

Berhanu, (2019) carried out a research on determinants of microfinance institution in Ethiopia to examine their Financial Performance in the case of Damota branch. The study collected primary data from 38 staff respondents through quationarrie and secondary data from five years (2013-2017).The researcher concluded capital adequacy ratio, operational efficiency ratio, firm size ratio, numbers of borrowers and age ratio of MFI have inverse relationship on performance measurement of ROA.

Alemayehu (2008) also studied on determining the performance of MFIs in Ethiopia by selecting six microfinance institutions. The study focused on analysis of profitability and sustainability, asset and liability management, and efficiency and productivity of MFIs in Ethiopian using a descriptive analysis of data collected from audited annual reports of 6 microfinance institutions covering a period of five years (2002-2006). The result of the study showed that most of the MFIs were doing well in terms of Operational self-sufficiency and financial self-sufficiency though both operational and financial self-sufficiency declined with the size of the institutions. The researcher concluded that the sustainability of large and medium Ethiopian MFIs were inspiring, but the case in small MFIs in Ethiopia demands concern for the fact their good outreach actions are not accompanied with good sustainability determinants.

2.5. Factors Affecting Financial Performance of MFIs

As suggested by varies empirical studies, internal and external factors influenced the performance of microfinance institutions. Muriu (2011) point out that the determinants of MFIs performance can be categorized into two main classes namely the internal determinants which are under the control of management and the external determinants those factors that are not related to management controllable. The internal determinants include microfinance specific variables while the external factors reflect environmental factors that are expected to influence the performance of microfinance institutions

2.5.1. Internal Factors

Internal factors of microfinance performance can be defined as factors that are influenced by microfinance's management decisions. These include: capital asset ratio, portfolio quality, management efficiency, employee productivity, Gearing ratio, size and age of MFIs.

A. Capital asset ratio

Capital to asset ratio is a measure of solvency of MFIs. This ratio supports MFIs assess their ability to achieve their obligations and absorb unexpected loss.

An acceptable capital to asset ratio level of determination is generally based on an assessment of microfinance institution expected losses as well as its financial strength and ability to absorb such losses. The expected losses of microfinance institutions have to generally be covered through provisioning by the accounting policies, which eliminates expected losses from both

assets and equity. According to Yenesew (2014), the amount of capital needed to cover additional unexpected losses is measured by the ratio to substantiate that the MFI is well capitalized for potential shocks.

Muriu (2011), studied on determinants of profitability of MFIs employing a panel data set of 210 microfinance institutions; he revealed that capital adequacy had robust and significant positive association with MFI profitability. It was described by the comparatively high coefficient of the equity to assets ratio through the specifications. The influence remains the same even after the inclusion of the outside indicators. Intuitively, it had been a sign that well capitalized MFIs are further flexible in dealing with problems ascending from unexpected losses and witnessed a reduced cost of funding or lower external funding. Hartarska and Nadolnyak (2008) found a positive impact of capital ratio on the financial performance of MFI measured by the ratio of operational self-sufficiency.

B. Portfolio quality

A Portfolio is the total funds available for the MFI as loans to its clients. Portfolio quality indicates how best the institution is able to defend such portfolio against all forms of risks. It is a vital area of performance analysis, since the major source of risk for any financial institution resides in its loan portfolio. Therefore, MFIs have to attempt to keep the quality of their portfolios (Dissanayake, 2012). For this research, portfolio quality is measured as portfolio at risk over 30 days (PAR >30 days).

The portfolio at risk (PAR) measure indicates how efficient a MFI is in making collections. The higher the PAR indicates that low repayment rates. This is an implication of the MFI is inefficient. The more inefficient the MFI results from the higher the Portfolio at risk and then, the less financial performance of the MFI. In general it indicates that the portfolio-at-risk (Par>30) is the key indicator influencing the performance of microfinance institutions in Ethiopia. Regarding the standard of portfolio, managers have a positive insight in keeping its quality. In other words, a high portfolio-at-risk would restrict the revenue derived from microcredit operations and thus decline the amount of lendable funds (Sima, 2013)

According to Muriu, (2011) investigation on factors determining profitability MFIs in African, Credit risk of the institutions which is measured by the addicting the level of loans past due 30

days and still accruing interest is negatively and significantly correlated to the profitability of microfinance institutions. Lafourcade et al, (2006) has also undertaken a research on Overview of the Outreach and Financial Performance of Microfinance Institutions in Africa by taking 163 MFIs from 25 nations indicates that MFIs round the world continue to confirm low PAR > 30 days, with a global average of 5.2 percent but African MFIs uphold relatively high portfolio quality, with a mean PAR > 30 days of four percent, carrying out better than their counterparts in South Asia. When microfinance institutions are met with poor portfolio quality, they will write off the loans from their records or refinance the loans by ranging the term, varying the payment schedule, or both. The result specifies that loan at risk is inversely related with financial performance of MFIs. Therefore, this study finds confirmation to support the conjecture that increased exposure to credit risk is normally associated with lower financial performance of MFIs.

C. Management efficiency

Management efficiency is one of the influential factors that determine the MFIs financial performance. The capability of the management to exploit its resources efficiently, income maximization and reducing operating costs is measured by financial ratio. The ratio of operating expense to operating income is used as the proxy of efficient microfinance management.

D. Employee productivity

The people in a MFI are the most valuable resources and the major driving force for successes and failures. The quality of human resources employed by a MFI affects its financial performance. Currently increase in global competition in every direction makes MFIs to use competent employees on the one hand and efficient technology on the other hand. MFIs increase their financial performance from improved labor productivity, which, among other things, is a result of the higher quality hired labor. Employee productivity is measured by the ratio of income to salary and other benefit expense.

E. Gearing ratio

The debt /equity ratio or gearing ratio of a microfinance institution is computed by dividing total liability by total equity. Total liability of MFI comprises everything that owes to others,

including deposit, borrowings, account payable and other liability accounts. Capital adequacy of a MFI is measured by the simplest measure of liability to equity ratio because this ratio measures the total leverage of the microfinance institutions.

The debt to equity ratio implies what proportion of equity and debt the microfinance institution is using to finance its assets. In the life cycle of a MFI, This proportion is so much allied to where it is found. Habitually, the capital structure of a MFI keeps a definite arrangement over its life cycle. Startups are observed by a greater dependency on donations, usually in the form of equity grants while as the MFIs mature, they have a tendency to display higher debt leverage through borrowing and even enter into a formal institution or a regulated niche bank (Jorgensen, 2011). According to Dissanayake (2012), debt to equity ratio of MFIs is a statistically insignificant determinant variable for the model at 5 percent significance level. The direction of the coefficient of the corresponding models is not as per the predicted direction of the researcher.

F. MFI Size

A total asset of a microfinance institution is used to measure its size. The size of a MFI is included to capture the economies or diseconomies of scale in this study. Large firms have the advantage of getting the access to credit finance for investment, possess a larger pool of qualified human capital and have a greater choice for strategic diversification compared to small firms (Hermes & Hundon, 2018). According to Cull et al, (2007) MFI's size is directly positively linked to its financial performance. MFI's total asset is used as a proxy of size.

As Cull et al, (2007) point out that the size of MFIs and financial performance are significantly related but loan size is negatively related to financial performance. This means that controlling for other relevant factors; institutions that make smaller loans are not necessarily less profitable. However the result showed that larger loan sizes are associated with smaller average costs for both individual-based creditors and solidarity group creditors. Since larger loan size is often occupied to specify less outreach to the poor society, the result could have negative implication.

G. Age of MFIs

The MFI age deals to the period that the institution has been in operation since its initial inception. There is an idea that as MFIs matures, and thus acquire experience in their sector; they

increase their likelihood of achieving financial sustainability after they get mature in their operation. This can be clarified by the fact that MFIs progressively improve their control over all operations related to issuance of micro credit related performance (Ayayi & Sene, 2010). The age of MFI is measured by number of years' experience.

The age of microfinance institution has positive impact on financial performance of MFI measured by microfinances dual objectives of financial sustainability and outreach. The number of years' experience is used to measure the age of MFI by since establishment of MFI that age has great influence on financial performance of MFIs.

2.5.2. External Factors

The external factors are variables that are considered to be beyond microfinance management but reflect the economic environment that affects the operation and performance of financial institutions. Several external factors have been suggested as impacting on financial performance of MFIs but for this study GDP and inflation rate are used.

A. Real GDP

The research used real GDP growth as a proxy of the macroeconomic environment. Questionably, this is the prime informative single indicator of progress in development economic of a country. Weak economic environments can adverse the standards of the loan portfolio, thereby decreasing income. In contrast, an expansion in economic conditions has positive impact on the profitability of the institutions (Muriu, 2011).

An investigation conducted by Imai et al., (2012) working paper entitled financial performance of microfinance institutions a macroeconomic and institutional perspective drawing up on the Microfinance institutions and they obtained that GDP has positive influence on microfinance institutions financial performance. According to (Yenesew, 2014), Real GDP is a variable which is expected to exhibit positive relationship with MFIs financial performance. This macroeconomic variable is the most informative particular indicator of improvement in economic development. Weak economic environments can adverse the quality of loan portfolio, thereby decreasing financial performance of MFIs. In contrast, an enhancement in economic environments, have positive impact on the profitability of the institutions (Muriu, 2011).

B. Inflation rate

Another important external condition which may affect both the costs and revenues of MFIs is the inflation rate. High inflation is related with higher costs as well as higher income. According to Ahlin et al. (2008), inflation can hamper the microfinance lending mission and may also effect on microfinance cost of funds and borrowers' incentives for defaults. The study used annual inflation rate to express the inflation for microfinance institutions.

The other study undertaken by Belayneh (2011) in the banking industry that is determinants of profitability in commercial banks also show that high inflation rate is associated with higher costs as well as higher income. If a bank's revenue increases more quickly than its costs, inflation is expected to exert a positive effect on profitability. On the other hand, if its costs increase faster than its revenue a negative coefficient is expected on profitability.

2.6. Conclusion and Research Gap

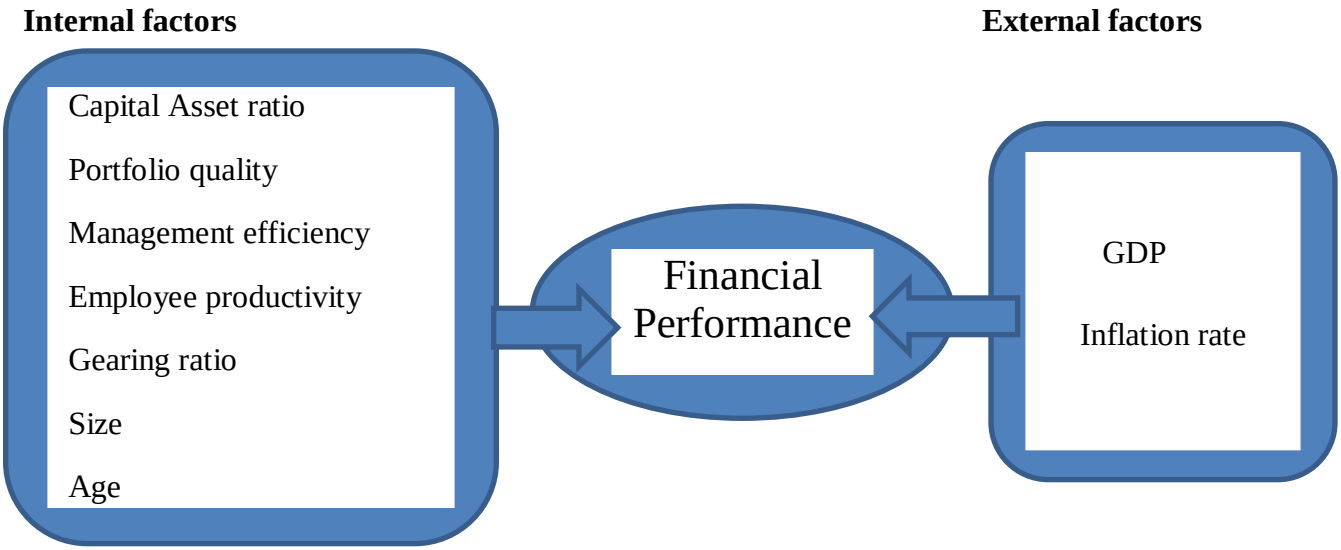
Financial performance is important to all business sectors mainly for microfinance industry which is in line with the above mentioned theoretical as well as empirical review since the stability of MFIs depends on their performance. The empirical literatures that are discussed so far showed that, MFIs performance is affected by different factors such as internal, external and industry specific factors. The literatures that are developed to examine the determinants of microfinance performance show different and even contradictory results. This indicates that there is no consensus in the micro financing literature on determinates of financial performance of MFIs.

In the context of Ethiopia, the studies conducted by Letenah (2009), Yenesew (2014), Berhanu (2019), Sisay (2016), Alemayehu (2008) assessed the determinants of financial performance of Ethiopian MFIs. In order to investigate the determinants financial performance of MFIs, the previous studies have used variables such as breadth of outreach, portfolio quality, capital adequacy, debt to equity ratio, liquidity ratio, operational efficiency, asset quality, loan loss reserve, number of active borrowers, size of MFI, age, real GDP, inflation, foreign exchange rate and market concentration. Accordingly, as per the knowledge of the researcher, all the studies failed to include the important variables like management efficiency and employee productivity. Because these variables are important variables which can significantly affect the performance of Ethiopian microfinance industry.

2.7. Conceptual framework

Varies empirical evidences proposed that the financial performances of microfinance institutions are influenced by both internal and external factors. Both Internal and external factors used in this study include Capital asset ratio, Portfolio Quality, Management efficiency, Employee productivity, Debt to equity ratio, Microfinance Size, Age, real GDP and Inflation rate only for the study proposed.

Figure2.1. Relations between financial performance and its factors



Conceptual framework for the study

CHAPTER THREE

3. RESEARCH DESIGN AND METHODOLOGY

3.1. Introduction

This chapter mainly includes research approach, research design, research method, target population, sampling techniques and sample size, methods of data collection, data analysis, techniques data reliability and validity, ethical considerations, model Specification, model assumptions and Description and Measurement of variables.

3.2. Research Approach and Design

The main objective of this study is to investigate the factors affecting financial performance of Ethiopian MFIs for the period covers 2010 to 2019. The study adopted an explanatory research design following a quantitative research approach to achieve the stated objective. The rationale behind selecting an explanatory research design is, it is useful especially when a study needs to measure the cause and effect relations between dependent and independent variables.

3.3. Research Method

3.3.1. Source of data

This study used purely secondary source of data that was taken from the national bank of Ethiopia and audited financial statements of each MFI for consecutive 10 years were utilized. Accordingly, financial data for 19 MFIs for the year 2010-2019 were collected from the NBE.

3.3.2. Target Population

The target population of this particular study included all the microfinance institutions currently operating in Ethiopia. At present, there are 38 microfinance institutions registered by the NBE which are providing a microfinance service to the poor society in Ethiopia on the current period.

3.3.3. Sampling Technique and Sample size

The study employed non probability sampling specifically purposive sampling technique to select the samples based on the age and accessibility of complete audited financial statements. The rationale behind selecting purposive sampling technique than others is, it considered more

appropriate when the universe happens to be small. Accordingly, from 38 microfinance institutions currently operating in Ethiopia, 19 microfinance institutions have included as a sample in the study operating for more than ten years (2010-2019). The selected nineteen MFIs are: ACSI, ADCSI, OCSSCO, OMO, DCSI, Aggar, AVFS, Ben.Gum, BUS.GON, Eshet, Gasha, Harbu, Meklit, Metemamen, PEACE, Sidama, SFPI, Wassa and Wisdom. Among the 19 MFls selected the first five are government owned as per the order mentioned.

3.3.4. Data Analysis Technique

The collected panel data were analyzed by using descriptive statistics and multiple linear regression analysis. The secondary data was analyzed by using E-views 10 for windows software package and then obtain and analyze statistical results. Basically, the mean, standard deviation, minimum and maximum values of the study were analyzed using descriptive statistical tools.

3.3.5 Data Validity and Reliability

To insure the validity and reliability of this study, the researcher has provided sufficient information and reliable data. Moreover, as much as possible the researcher tried to get audited financial statements of the selected MFIs from national bank of Ethiopia which is legally legitimate.

3.4. Ethical considerations

The study has been followed to ethical principles with respect of the data collection and use of it in the study. All the ideas and concepts taken from other scholars that used for reviewing the literature are acknowledged. In addition the data obtained will not be passed to third party at any circumstances and only used for the purpose of this research study.

3.5. Model Specification

In this research, the general multiple linear regression model is adopted to examine the effect internal (CAR, PAR, MGE, EMP, GR, SIZE and AGE) and external (real GDP and inflation rate) variables on MFIs financial performance. The regression model is stated as shown on the equation below.

$$ROAit = \beta oi + \beta 1CARit + \beta 2PORit + \beta 3MGEit + \beta 4EMPit + \beta 5GRit + \beta 6SIZEit + \beta 7AGEit + \beta 8GDPit + 9INFit + €it$$

Where: β1 to β9 are the coefficients of the variables and €it is the error term.

Boi = constant term which differs across MFIs but constant over time

ROAit = Return on total asset for MFI i at time t

CARit = Capital asset ratio for MFI i at time t

PARit = portfolio quality for MFI i at time t

MGEit = management efficiency for MFI i at time t

EMPit = employee productivity for MFI i at time t

GRit = gearing ratio for MFI i at time t

SIZEit = size of microfinance for MFI i at time t

AGEit = age of micro finance for MFI i at time t

GDPit = real growth domestic product of the country

INFit = inflation rate for MFI i at time t

3.5.1 Model Assumptions

To ensure that the data fits the basic assumptions of classical linear regression model, the following diagnostic tests were conducted in this study.

Heteroscedasticity Test

According to Brooks (2008), Heteroscedasticity occurs when the variance of the error term is not constant. From the several tests used to detect the Heteroscedasticity problem, this study used the Autoregressive Conditional Heteroscedasticity (ARCH) test to detect Heteroscedasticity. The test based on the null hypothesis that there is no Heteroscedasticity problem in the model.

Test for Autocorrelation

Autocorrelation or serial correlation assumed that the errors are uncorrelated with one anothe**r.** That means errors associated with one time period are uncorrelated with the errors of any other

time period**.** If the errors are correlated with one another, it would be stated that auto correlated occurs or the errors are said to be serially correlated. To test the presence of autocorrelation, the researcher employed Breusch-Godfrey Serial Correlation LM test.

Test for normality

Normality test was conducted to confirm if the residuals are normally distributed. To ascertain this assumption, the researcher employed the Jacque-Bera (JB) test in this study. As noted by Brooks (2008), if the residuals are normally distributed, the histogram should be bell-shaped and the Jacque- Bera statistic would not be significant at 5% significant level.

Test for Multicollinearity

Multicollinearity will occur when some or all of the independent variables are highly correlated with one another. If the multicollinearity occurs, the regression model is unable to tell which independent variables are affecting the dependent variable. According to Gujarati (2004), the rule of thumb is that if the pair-wise correlation coefficient between two repressors is above of 0.8, it is concluded that there is problem of multicollinearity.

Model Specification Test

According to Brooks (2008), there are two broad types of panel data estimator approaches that can be employed in the empirical research: fixed effects (FE) and random effects (RA) models. In order to run the regression, the Hausman test was made to detect which model is appropriate from the two classes of panel data approaches. Accordingly, if the result of the p-value for the test is less than 5% or 0.05, it indicates the fixed effect model is appropriate but if p-value for the test is in excess of 5%, it shows that the random effect is to be preferred. The test was based on the null hypothesis that the preferred model is random effect and the alternative states that the fixed effect is appropriate.

3.6. Description and Measurement of variables

3.6.1. Dependent variable

Specifically for this study the dependent variable is the financial performance of the MFIs which was measured by the ratio of return on total asset (ROA).

Return on Asset (ROA)

The ROA measures how well the MFI uses all its assets to generate income.

Return on Asset (ROA) =Net income/ Total asset

3.6.2 Independent variables

To measure the financial performance of Ethiopian MFIs, nine explanatory variables were chosen. The seven independent variables are selected based on previous studies conducted in the area of microfinance institutions performance and the rest two are new variables. These variables are capital asset ratio, portfolio quality, management efficiency, employee productivity, gearing ratio, size of microfinance and age of microfinance, GDP and inflation rate.

Capital asset ratio: The ratio of equity to asset was used

Portfolio Quality: Outstanding balance, loan overdue>30 days to Adjusted gross loan portfolio

Management efficiency: The ratio of operating expense to operating income was used

Employee productivity: The ratio of total income to salary and benefit expense

Gearing ratio: The ratio of debt to equity was used

MFI size: The natural logarithm of the total asset of the MFI

MFI Age: Number of years of operation

Real GDP: The yearly real gross domestic product growth rate was used

Inflation: The yearly inflation rate was taken for each MFI.

Table3.1 Summary of the variables and measurements

	Variable	Measures	Notation	Exp. sign
Dependent variable	Return on asset	The ratio of net income to total assets	ROA	N/A
Independent variables	Capital asset ratio	The ratio of equity to total assets	CAR	+
	Portfolio quality	The ratio of outstanding balance, loan overdue>30 days to Adjusted gross loan portfolio	PAR	_
	Management efficiency	The ratio of operating expense to operating income	MGE	+
	Employee productivity	The ratio of income to salary and other benefit expense	EMP	+
	Gearing ratio	The ratio of debt to equity	GR	_
	Size of MFI	Natural logarithm of the total asset	SIZE	+
	Age of MFI	Number of years of operation	AGE	+
	Economic growth	Real GDP growth (in %)	GDP	+
	Inflation	The annual inflation rate	INFL	+

CHAPTER FOUR

4. Data Analysis and Discussion of Results

4.1. Introduction

The previous chapter presented the research method adopted in this study. The purpose of this chapter is to present results and discussions of the factors affecting financial performance of microfinance institutions in Ethiopia based on annual balanced panel data of the selected microfinance institutions over the period of 2010-2019. The next discussion presents the tests for the assumptions of classical linear regression model, the descriptive statistics, the correlation analysis among the dependent and explanatory variables and the results of the panel data regression analysis respectively.

4.2. Test results for the CLRM assumptions

As it is mentioned in the methodology part of this study, diagnostic tests were carried out to confirm that the data fits the basic assumptions of classical linear regression model. Hence, the following sections discuss results of the diagnostic tests (i.e., heteroskedasticity, autocorrelation, multicollinearity, normality and model specification test) that ensure whether the data fits the basic assumptions of classical linear regression model or not.

4.2.1. Test for Hetroskedasticity

One of the basic assumptions of the classical linear regression model is homoscedasticity which states that the variance of the errors must be constant. If the errors of the different observation do not have the same variance, they are said to be heteroskedastic (Brooks, 2008). The study would be employed the Autoregressive Conditional Heteroskedasticity (ARCH) test to detect the presence of heteroskedasticity. The null hypothesis is that the variance of the errors is constant or the alternative hypothesis that the errors do not have a constant variance.

In this study as it observed from table 4.1 below, both the F-statistic and Chi-Square versions of the test statistic gave the same conclusion that there is no evidence for the presence of heteroscedasticity, since the p-values were above 0.05. This shows that, there is no evidence that we do not reject the null hypothesis indicating that the residuals are homoscedastic, since the p-value was considerably in excess of 0.05 or it is above5%.

Table4.1. Heteroskedasticity Test: ARCH

F-statistic	0.769379	Prob. F(1,186)	0.3815
Obs*R-squared	0.774448	Prob. Chi-Square(1)	0.3788

Source: E-views 10 output (2021)

4.2.2. Autocorrelation test

According to Brooks (2008), autocorrelation problem exist in the model if there is an indication that the error term for any observation is correlated to the error term of other observation. In other words, it is assumed that the errors term in one-time period is uncorrelated with the error term in any other time period. If the errors associated with one observation are not uncorrelated with any another observation, they are stated as auto correlated or serially correlated. To conduct the autocorrelation test, Breusch-Godfrey Serial Correlation LM Test was adopted in this study. The p-value is gained to determine whether there is an autocorrelation problem or not in the model. If the p-value is more than 5 percent significant level, it implies that there is no autocorrelation problem in the model. The model specification test consists of the null hypothesis that there is no problem of autocorrelation or the alternative hypothesis that there is autocorrelation problem. Decision: Reject H0 if the p-value is less than significance level 0.05. Otherwise, do not reject H0. The table 4.2 below showed that the probability value (p-value) of F-statistic is 0.0673 which is greater than 0.05. The Chi-Square P-value of the model also supports the absence of serial correlation. Thus, there is no evidence for the presence of auto correlation in the model.

Table4. 2 Autocorrelation test: Breusch-Godfrey serial correlation LM test

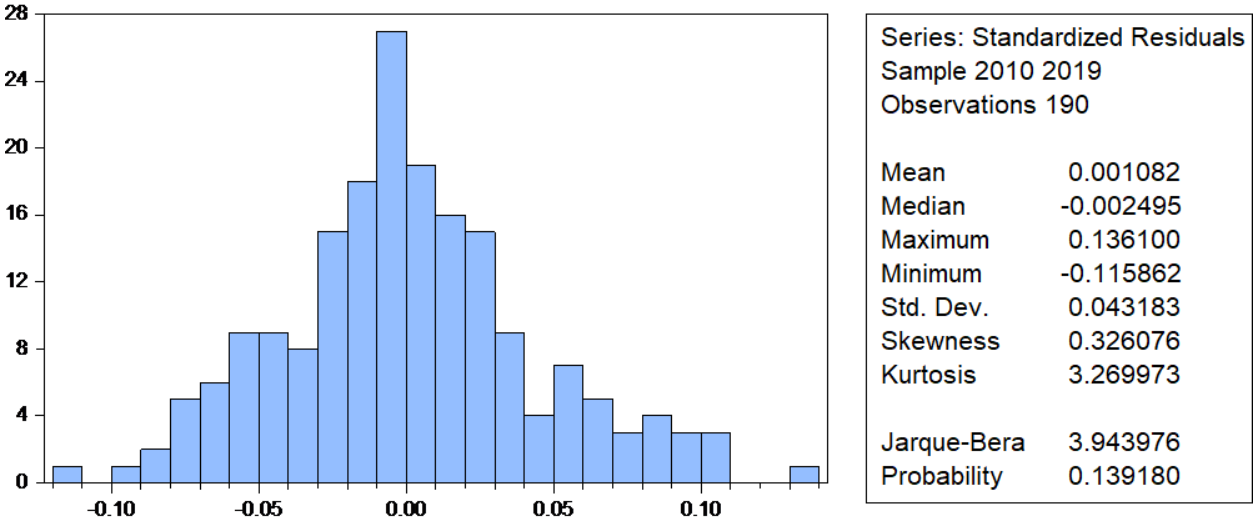
F-statistic	1.872231	Prob. F(8,170)	0.0673
Obs*R-squared	15.30353	Prob. Chi-Square(8)	0.0535

Source: E-views 10 output (2021)

4.2.3 Test for Normality

Another third important diagnostic test carried out in this study is the normality assumption. Normality test is used to decide whether the residuals are normally distributed or not. According to Brooks (2008). If the p-value of the Bera-Jarque statistic is not significant at 5% significant level, the residuals are normally distributed. As he noted also the histogram should be bell-shaped. The null hypothesis of the model specification is that the residuals are normally distributed. The normality tests for this study as shown in figure 4.1 below, the histogram is bell-shaped and the Bera-Jarque statistic had a P-value of 0.139 which is greater than 0.05, implying that the residuals are normally distributed. Therefore, the residuals are normally distributed in this study and concluded that there was no problem of normality in the model.

Figure4. 1. Normality test for residuals



Source: E-views 10 output (2021)

4.2.4 Test for Multicollinearity

Multicollinearity will occur if some or all of the independent variables are highly correlated with one another. If there is no multicollinearity problem in a model, adding or removing a variable from a regression model would not cause to change the values of the coefficients on the former variables (Brooks, 2008). This study used high pair-wise correlation coefficients method to detect the existence of multicollinearity. According to Hair et.al (2006), multicollinearity could only be a problem if the pair-wise correlation coefficient among repressors is above 0.90. As it appears in the correlation matrix table below, correlations between size and gearing ratio (0.5787) and between age and size (0.53680) are relatively higher than the rest coefficients but still it can be said fair. The rest of the correlation coefficients were lower indicating the absence of multicollinearity in this study, making the regression analysis more reliable. Thus, there is no such high correlation between independent variables. Accordingly, there is no multicollinearity problem in this study.

Table 4.3 Correlation matrixes of independent variables

	CAR	PAR	MGE	EMP	GR	SIZE	AGE	GDP	INFL
CAR	1.0000								
PAR	-0.1148	1.0000							
MGE	0.1388	0.2159	1.0000						
EMP	0.1317	-0.1225	-0.3454	1.0000					
GR	-0.7283	-0.0232	-0.0191	-0.1861	1.0000				
SIZE	-0.3997	-0.2499	-0.2758	-0.0842	0.5787	1.0000			
AGE	-0.4321	-0.0486	-0.1787	-0.1552	0.4364	0.5368	1.0000		
GDP	0.1980	0.0333	0.0203	0.2416	-0.1840	-0.2213	-0.4995	1.0000	
INFL	0.0108	-0.0525	-0.0175	0.0550	-0.0535	-0.0816	-0.1964	-0.2219	1.0000

Source: E-views 10 output (2021)

4.3 Model selection

To examine internal and external factors affecting the financial performance of MFIs in Ethiopia under this study, panel regression method was applied. According to Brooks (2008), there are two types of panel estimator approaches, namely: fixed effects models (FEM) and random effects models (REM). In order to run the regression, the study decided on the appropriate panel regression model between the two panel data estimators- fixed effect and random effect model.

The Hausman test was performed to detect the appropriateness of the model to be adopted. According to Brooks (2008), if the null hypothesis is rejected then we employ Fixed Effects method. The null hypothesis is that the preferred model is random effects and the alternative hypothesis states that the fixed effect is preferred. Decision: Reject null hypothesis if probability value is less than significance level 0.05. Accept null hypothesis if probability value is greater than 0.05.

The table 4.4 below showed that the probability value (p-value) here is 1.0000 which is greater than 0.05. Therefore, according to the results presented below the study adopted Random effects model.

Table4.4. Hausman Test

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f	Prob.
Cross-section random	0.000000	9	1.0000

Source: E-views 10 output (2021)

4.4 Descriptive statistics

This section discusses the outcomes obtained from the descriptive statistics for both dependent and independent variable. The dependent is Return on Asset (ROA), and the independent

variables: capital asset ratio (CAR), portfolio at risk (PAR), management efficiency (MGE), employee productivity (EMP), gearing ratio (GR), SIZE, AGE, real gross domestic product (GDP) and inflation rate (INFL). Key figures, including mean, standard deviation, minimum and maximum values were reported. These figures give overall description about the data used in the model. In all, a total of 190 observations were presented for nineteen microfinance institutions covering a period of 2010-2019. The table below provided a summary of the descriptive statistics for all variables.

Table 4.5.Descriptive Statistics

Variable	Observation	Mean	Median	Max	Min	Std.Dev
ROA	190	0.106076	0.066028	0.454508	-0.223296	0.122551
CAR	190	0.344911	0.339895	0.802099	-0.024816	0.142918
PAR	190	0.045848	0.033300	0.260000	0.000000	0.044951
MGE	190	0.675471	0.644332	4.817761	0.138060	0.432913
EMP	190	4.721482	3.836808	18.30826	0.172794	2.991238
GR	190	2.233518	1.893987	11.88495	0.246722	1.504452
SIZE	190	12.52305	12.12500	17.30000	9.700000	1.904885
AGE	190	15.18421	15.00000	22.00000	5.000000	3.686492
GDP	190	0.095590	0.100750	0.114000	0.077000	0.011996
INFL	190	0.124021	0.097105	0.341000	0.028000	0.082639

Source: E-views 10 output (2021)

As it is shown in the table 4.5 above, the financial performance of Ethiopian Micro Finance institutions which is measured by Return on Asset for 190 observations indicates that averagely positive value of 0.10 during the study period of (2010-2019). In addition to this the Maximum

value of ROA is 0.454 and its minimum value is -0.223. This shows that the MFIs included in the sample in the study period was generated on average 0.10 cents in every one birr investment they made on total asset and the profitable MFIs earned 0.454 cent of profit after tax for a single birr investment they made on total asset. On the contrary, not profitable MFIs lost 0.223 cents for one birr investment made on total assets of the firm. The Standard deviation of financial performance (ROA) is 0.122. This standard deviation ascertains the disparity of rates of return earned by MFIs.

Regarding to the Capital to asset ratio variable the maximum and the minimum values were 80.20 % and -2.48%.respectively. In addition the average capital to asset ratio showed a value of 34.49% which is above the statutory requirement of 12% set by national bank of Ethiopia. 14.29% is the standard deviation of this variable. This indicates the presence of large deviation in capital to asset ratio of the selected MFIs for the study period.

Quality of Portfolio measured in terms of portfolio at risk greater than 30 days for the selected MFIs was on average 4.58% which revealed that, there is a healthy loan portfolio. The maximum and minimum values were 26% and 0% respectively. The maximum 26 % result implies that the credit portfolio of some MFIs in the sample is fairly risky. The standard deviation is 4.49%. This indicates that there is a large deviation among the MFIs. The result of the study shows during the study period on the sample MFIs is that from loan portfolio the portion of the portfolio unpaid is 4.58 % in average that is good. Thus, the result of PAR greater than 30 days reflects that Ethiopian MFIs in the study period 2010-2019 had acceptable portfolio quality.

Management efficiency is measured by the ratio microfinance operating expense to operating income. The mean value of management efficiency was 0.675 its standard deviation was 0.432. The results 0.138 and 4.817 represent the minimum and maximum values respectively. The mean value reveals that Ethiopian microfinance institutions are efficient due to the low operating expense per unit of operating return, which means for 0.675 birr operating expense there was one birr operating income.

Employee productivity has maximum of 18.03 and a minimum of 0.172. The mean value is 4.72. 2.99 is its standard deviation. This indicates that the Ethiopia microfinance institutions obtain an average return of 4.72 birr for each 1 birr of salary and other benefit expense paid. The outcome

shows that the Ethiopia MFIs are utilized their manpower effectively during the study period. In relation to gearing ratio or Debt to equity ratio implies that the average value of 2.233 and maximum value of 11.88 and 0.4467 minimum value. Meaning as per the mean value of this variable (2.233) indicates, MFIs in Ethiopia are leveraged on average than financed through equity capital because the AEMFI's suggested standard of debt to equity is 1.5177. On the other side the minimum gearing ratio (debt to equity) 0.2467 indicating few MFI are financed more through equity capital than debt. However, the maximum value for this variable is 11.88 which indicate that debt financing is more considered instead of having proportional financing structure, therefore highly leveraged. Gearing ratio or the debt to equity ratio has a standard deviation 1.5044. This illustrates the disparity of gearing ratio between the MFIs. The debt to equity ratio or gearing ratio of Ethiopia microfinance institution was able to uphold a mean value of 1.5 of their equity (AEMFI, 2013). Hence, the outcome of the study indicates the value greater than the minimum requirement.

The size of microfinance institutions were proxy to their natural logarithm of each MFI's total asset. The average value of this variable was 12.52358 during the study period .The minimum value of this variable is 9.696961 and its maximum value is 17.2998. The standard deviation is 1.904863. This value is the third highest value among explanatory variables and indicating higher disparity of size (total asset) in sample MFIs in Ethiopia. This is due to the variability of data obtained from MFIs. On the other hand, the outputs of the descriptive statistics indicate that, the age of microfinance institutions which is measured by number of years of operation had a mean value of 15.18 with the minimum and maximum values of 5 and 22 respectively. The largest standard deviation was recorded in this variable which was 368.86%. The outcomes of the variables illustrate the presence of big difference in size and age of the sampled MFls during the study period. This is actually visible in Ethiopian MFls.

In regard to macroeconomic variables, table 4.5 also shows that the mean real GDP growth in Ethiopia for the last consecutive ten years was 9.56%, with a maximum of 11.4% and a minimum of 7.7%. The standard deviation is 1.19%. This implies that economic growth in Ethiopia during the period of 2010 to 2019 remains reasonably stable and the result of this stable economic growth led positive effect to the MFIs financial performance. The other macro-economic variable employed in this study is inflation, which had a mean value of 12.4%. The

minimum and maximum values were 2.8% and 34.1% respectively. Inflation had somewhat a higher standard deviation (8.23%) compared to GDP. This implies that inflation rate in Ethiopia remains somewhat unstable during the study period.

4.5. Correlation Analysis

This analysis is used to indicate that at what extent the explanatory variables are influential on the financial performance indicator (ROA). Correlation coefficient between two variables ranges from positive one of perfect positive relationship to negative one of perfect negative relationship. The main significance of calculating each variables correlation is to describe about the reliability of relationship to each other. The degree of relationship between the explanatory and dependent variables were explained by the parameter coefficients. The coefficients show the magnitude and direction of the relationships. The higher the value of the coefficient, the stronger is the relationship and the smaller the coefficient, the weak relationship. The sign also shows the direction of the relationship.

As we can see in the table 4.6 below, employee productivity is positively correlated to ROA and relatively, highly impacting to this performance indicator variable, ROA. This indicates that improve employee productivity results to increase in income. On the other hand, portfolio quality, management efficiency, gearing ratio, size and inflation seems to be negatively correlated with the financial performance measure, ROA, indicating that, when these mentioned microfinance explanatory variables increase, financial performance moves to the opposite direction. In contrary the other variables, capital asset ratio, age and real GDP were positively correlated with return on asset, indicating that as these variables increase, financial performance also increases or moves to the same direction.

Table4.6. Correlation matrix of dependent and independent variables

	ROA	CAR	PAR	MGE	EMP	GR	SIZE	AGE	GDP	INFL
ROA	1.0000									
CAR	0.1633	1.0000								
PAR	-0.2752	-0.1148	1.0000							
MGE	-0.6896	0.1388	0.2159	1.0000						
EMP	0.5187	0.1317	-0.1225	-0.3454	1.0000					
GR	-0.2262	-0.7283	-0.0232	-0.0191	-0.1861	1.0000				
SIZE	-0.0552	-0.3997	-0.2499	-0.2758	-0.0842	0.5787	1.0000			
AGE	0.0537	-0.4321	-0.0486	-0.1787	-0.1552	0.4364	0.5368	1.0000		
GDP	0.0501	0.1980	0.0333	0.0203	0.2416	-0.1840	-0.2213	-0.4995	1.0000	
INFL	-0.0149	0.0108	-0.0525	-0.0175	0.0550	-0.0535	-0.0816	-0.1964	-0.2219	1.0000

Source: E-views 10 output (2021)

4.6. Finding of the Regression

This section presents the regression result of random effect model that was made to examine the factors affecting financial performance of Ethiopian MFIs. Accordingly, the regression result was made and coefficients of the variables were estimated via E-views 10 software package. As stated above, random effect regression model is an appropriate model used in this study. Therefore, the model used to examine the factors affecting financial performance of MFIs in Ethiopia. To test the relationship between the financial performance of the MFIs and selected internal and external determinant variables, as stated in chapter three the following linear regression model was developed.

$$ROA = \beta 0 + \beta 1\ CAR + \beta 2\ PAR + \beta 3\ MGE + \beta 4\ EMP + \beta 5 GR + \beta 6\ SIZE + \beta 7\ AGE + \beta 8\ GDP + \beta 9 INFL + \varepsilon$$

Table 4.7 Regression Result for factors affecting financial performance of Ethiopian microfinance institutions.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.241134	0.103791	2.323259	0.0213
CAR	0.121700	0.062494	1.947398	0.0530*
PAR	-0.336693	0.108924	-3.091078	0.0023***
MGE	-0.145599	0.012254	-11.88186	0.0000***
EMP	0.008513	0.001955	4.354422	0.0000***
GR	-0.002605	0.005903	-0.441307	0.6595
SIZE	-0.014170	0.006939	-2.041919	0.0426**
AGE	0.005317	0.002669	1.992187	0.0479**
GDP	0.049232	0.480998	0.102354	0.9186
INFL	-0.045279	0.056859	-0.796347	0.4269
R-squared	0.588882			
Adjusted R-squared	0.568326			
S.E. of regression	0.054625			
F-statistic	28.64785			
Prob(F-statistic)	0.000000			

Source: E-views 10 output (2021)

Note: ***, ** and * denote significant at 1%, 5%, and 10% levels respectively.

Empirical model of the factors affecting financial performance of Ethiopian microfinance institutions was provided as follows:

ROA=0.2411 + 0.1217CAR - 0.3367PAR + -0.1456MGE + 0.0085EMP -0.0022GR - 0.0142SIZE + 0.0053AGE + 0.0053GDP -0.0453INFL+ ε

4.7. Discussion of the Regression Results

Based on the outcomes indicated in table 4.7 above, the internal independent variables, capital asset ratio, management efficiency, portfolio quality, employee productivity, size and age had statistically significant impact on financial performance of microfinance institutions. The rest microfinance specific independent variable, gearing ratio and the macroeconomic independent variables used in this study, GDP and inflation rate had statistically insignificant impact on financial performance of the MFIs. The significant variables, portfolio quality, management efficiency and employee productivity were significant at 1% significance level since the p-value for these variables was almost 0.000 and capital asset ratio, size and age were significant at 5% significance level since the p-value for these variables were 0.0530, 0.0426 and 0.0479 respectively.

The result also shows that the coefficient of Portfolio at Risk>30 days, management efficiency, gearing ratio, size, and inflation against ROA were negative with the coefficients of -0.3367, -0.1456, -0.0026, -0.0142 and -0.0453 respectively. This described as; there was an inverse relationship between the aforementioned five explanatory variables and ROA. As a result, the increase of the above mentioned variables will lead to a decrease in financial performance. On the other hand, variables like capita asset ratio, employee productivity, age and GDP had a positive relationship with financial performance as indicated by the coefficients of 0.1217, 0.0085, 0.0053 and 0.0492 respectively. This clearly shows that there was a direct relationship between the above listed four explanatory variables and ROA.

Based on the regression result, the values of R-squared statistics and the Adjusted-R squared statistics of the model was 58.88% and 56.83% respectively. The R-squared result implies that 58.88% variation in the dependent variable (ROA) is described by the explanatory variables of the Ethiopian microfinance institutions, Capital to Asset ratio, Portfolio at Risk>30 days, MGE, EMP, GR, Size, Age, GDP and Inflation jointly and the remaining 41.12% was explained by

other factors which are not included in the model, while the result of the adjusted-R squared indicates that the changes in the independent variables explain 56.83% of the changes in the dependent variable. That is Capital to Asset ratio, Portfolio at Risk>30 days, MGE, EMP, GR, Size, Age, GDP and Inflation collectively explain 56.83% of the changes in ROA. The 0.000 value of the Prob (F-statistic) indicates that strong statistical significance, which enhanced the reliability and validity of the model. Each variable is presented in detail in the following section.

Capital to Asset ratio

The regression results of this study indicated that the relationship between capital to asset ratio and ROA is positive (0.1217). It is statistically significant variable at 10% significance level (P-value 0.053). This reveals that for the study period 2010 up to 2019 capital strength of Ethiopian MFIs have a positive relationship with their financial performance or holding constant all other variables, increasing CAR by one unit causes to increase the ROA by 0.1217 birr. Hence, the hypothesis saying there is a significant positive effect between capital to asset ratio and financial performance of MFIs is not rejected or data did support the hypothesis. The result of this study is similar to the findings of Muriu (2011) but inconsistent with the finding of Sima (2013) and Ayayi (2009). In general, capital strength can affect financial performance of Ethiopian microfinance institutions.

Portfolio quality

The regression results of table 4.7 above showed that the explanatory variable portfolio at risk which was measured by Loan overdue greater than 30 days to gross loan portfolio was statistically significant at one percent of significant level (P-value 0.0023). The beta value or coefficient of this variable was -0.336693 which implies that there is an inverse relationship between portfolio at risk and performance indicator, return on asset of MFIs. This negative relationship proves that a higher portfolio at risk would tend financial performance to decrease or the higher the PAR, the more inefficient the MFI will be and, thus, the less financial performance. Accordingly, this study failed to reject the hypothesis saying, there is a significant negative relationship between quality of portfolio and financial performance of Ethiopian MFls because the data did support to ascertain. The result of the study is compatible with the findings of Sisay (2016), Sima (2013), Muriu (2011) and it is opposite to Dissanayake (2012). In general,

it can be said that the portfolio-at-risk (Par>30) is the key indicator of the financial performance of Ethiopian MFIs.

Management Efficiency

The regression results of this study indicated that the impact of management efficiency on financial performance of Ethiopian MFIs is negative. The result shows that, a negative coefficient of -0.1456 and it was statistically significant at 1% significance level (p-value= 0.0000). The result indicated that there was an inverse relationship between management efficiency and financial performance of Ethiopian MFIs during the study period. The negative relationship revealed that holding constant all other variables, increasing operational expense on operational income, causes to decrease the financial performance of microfinance institutions, ROA. Thus, the hypothesis that states there is a positive and significant relationship between management efficiency and financial performance is rejected or data did not support the hypothesis. Therefore, the managers of Ethiopian MFIs should improve their efficiency to decrease operating expense and increase their financial performance, ROA. Generally management efficiency was a key factor affecting financial performance of Ethiopian MFIs for the study period 2010-2019.

Employee Productivity

As the above random effect regression output indicated that, employee productivity has a positive impact (0.0085) on MFIs financial performance (ROA). The result also showed that it was found to significantly affect the financial performance of MFIs at 1% level of significance (p-value= 0.0000). This revealed that holding other things constant, an increase in employee productivity causes to increase the dependent variable, ROA. It shows that microfinance institutions can increase their financial performance from improved employee productivity and with a better pay. This result also implies that the better MFIs pay the better employee productivity and competition among the institutions. Therefore, better pay to employee leads to enhance the financial performance of microfinance institutions in Ethiopia. Thus the hypothesis that stated earlier, there is a significant positive relationship between employee productivity and financial performance was failed to reject because data did support the hypothesis.

Gearing Ratio

The regression results of this study indicates that the relationship between gearing ratio/debt to equity ratio and ROA is negative (-0.0026) and it was also statistically insignificant (p-value=0.6595). This higher p-value indicating that the variable is statistically insignificant to explain the dependent variable return on asset of MFIs. This indicates that, this variable has little effect on performance of Ethiopian MFIs during the study period. The negative relationship was in line with the results of prior studies Sisay (2016), and Yenesew (2014). However, the result was opposite to Dissanayake, (2012) and Muriu, (2011). Thus, based on the regression result from the study, the study rejected the hypothesis which states gearing ratio has negative and significant relationship with financial performance of Ethiopian MFIs.

Size

Natural logarithm of total asset is used as a proxy of size of MFIs in the regression model. The result indicates that size is inversely related to financial performance of microfinance institutions and statistically significant at 5% of significance level (p-value=0.0426). The negative coefficient of -0.0142 implies that microfinance size has a negative causal relationship with the financial performance of microfinance institution, return on asset. This could show that, large microfinance institutions are not effectively managing their organizational resources and they couldn't capitalize their economies of scale. Therefore the study rejected the hypothesis which states that size of microfinance institution is positively and significantly related with its financial performance of MFIs because the data did not support the result. The finding of this study was consistent with the findings of Sisay (2016) and Sima (2013) but opposite to Melkamu (2012) and Muriu (2011).

Age of MFIs

The regression results of this study showed that age of a MFI has a positive (0.005317) impact on ROA. The regression result also indicated that this variable was found to statistically affect at 5% significance level (P-value of 0.0479). The direct relationship between age of microfinance and financial performance of MFI in Ethiopia indicates that as MFIs mature gets experience, they increase their likelihood of achieving financial performance better than new MFIs. This indicates that age was a key factor of financial performance of Ethiopian MFIs having a direct relationship with ROA. This is also practical in Ethiopia where matured MFIs have high

financial performance compared to new MFIs Thus, based on the regression result from the study, the study accepted the hypothesis which states age has positive and significant relationship with financial performance of Ethiopian MFIs. The finding of this study was consistent with the findings of S Yenesew (2014) and Yonas (2012).

Real GDP

Turning to the macroeconomic variables, the researcher observed that the macroeconomic variable, real GDP had a positive coefficient (0.0492). This variable was statistically insignificant even at 10 percent (P-value of 0.9186) which indicates that improvement in economic conditions did not significantly affect financial performance of Ethiopian MFls during the study period 2010-2019. The positive coefficient sign which is not beyond the researchers expectation result shows that one-unit increase in GDP contributes nearly 0.049 units to increase in return on assets. Moreover, higher GDP growth leads to higher microfinance financial performance in Ethiopia. This result is agreed with Fikremariam (2015) but inconsistent with the studies by Muriu (2011) and Sima (2013)). Therefore the hypothesis which says there is a significant positive relationship between GDP and financial performance of MFls is failed to reject since the data supported the hypothesis.

Inflation

Inflation was the other macroeconomic factor included in the study. The coefficient estimate of inflation (-0.0453) in this particular study revealed that a negative association with the financial performance of MFIs in Ethiopian. This implies the existence of inverse relationship among inflation and financial performance of microfinance institutions. However, this negative association was statistically insignificant (a p-value of 0.4269). Thus, the findings suggested that inflation was not a major factor that affects the financial performance of Ethiopian MFIs. Accordingly, the hypothesis saying, there is a significant positive effect between inflation and financial performance of Ethiopian MFIs not accepted because the data did not support the hypothesis formulated earlier. The result is similar with the findings of Muriu (20 11) and Fikremariam (2015).

Table4. 8. Regression result summary

Explanatory Variables	Expected impact on financial Performance (ROA)	Actual impact on financial Performance (ROA)
CAR	Positive & significant	positive& insignificant
PAR	Negative & significant	Negative & significant
MGE	positive & significant	Negative& significant
EMP	positive &significant	positive & significant
GR	Negative & significant	Negative & insignificant
SIZE	Positive & significant	Negative & significant
AGE	Positive& significant	Positive& significant
GDP	Positive & significant	Positive & insignificant
INFL	Positive & significant	Negative & insignificant

CHAPTER FIVE

5. CONCLUSIONS AND RECOMMENDATIONS

The preceding chapter presented the analysis of the findings and discussions of the study. This chapter deals with the conclusions attained and the recommendations forwarded by the researcher based on the findings of the study. This final chapter is organized into three sections. The first section presents the conclusions of the study, the second section presents the recommendations provided based on the findings of the study and the third section raises issue for further study in the subject matter.

5.1. Conclusions

The main objective of this study was to examine the internal and external factors affecting financial performance of MFIs in Ethiopia from 2010 to 2019. The internal factors included in this study are variables such as capital asset ratio, portfolio quality, and management efficiency, employee productivity, gearing ratio, size and age of MFIs. The macroeconomic factors included in the study are GDP and inflation rate. Furthermore, the study used Return on Asset (ROA) as the main measure of financial performance of MFIs.

By considering the nature and objective of the research, a quantitative research approach was adopted to accomplish the stated objective of the study. The study used secondary data of 19 audited Ethiopian MFIs. The data was found from the national bank of Ethiopia. The collected data from a sample size of nineteen MFIs over the period of 2010 to 2019 were analyzed using descriptive statistics, correlation matrix and multiple linear regression analysis.

Based on the descriptive and empirical evidence obtained from the econometric results in the prior chapter, the researcher generally concluded that financial performance of Ethiopian microfinance institutions are highly affected by the internal factors than external factors.

Descriptive analysis outcomes show that Ethiopian MFIs averagely generating positive ROA. This is an indication that Ethiopian MFIs generate profit in addition to their main role on poverty reduction.

Capital to asset ratio showed a positive coefficient against ROA, which is in line with prior expectations and the variable, was statistically significant. The statistically significant impact indicating that an increase in this independent variable causes to increase the financial performance (ROA) of Ethiopian MFls.

As expected, portfolio quality showed a negative coefficient and statistically significant impact on ROA and also the variable was depicting that as Ethiopian MFls hold high portfolio at risk their financial performance declines.

Management efficiency has a negative impact on ROA with strong significance coefficient which is not in line with prior expectations. This depicts that the higher the cost, the lower the financial performance of Ethiopian MFls.

The outcome of the study showed that a positive relationship between employee productivity and financial performance with strong statistical significance. This indicates that as MFIs pay better salary to their employees would improve their financial performance.

Gearing ratio showed a negative coefficient against ROA, which is in line with prior expectations and the variable was statistically insignificant; indicating that debt to equity ratio has little contribution on financial performance of Ethiopian MFIs.

Size of MFIs which is measured by natural log of total asset has a significant negative influence on financial performance of MFIs. This implies that bigger microfinance institutions of the nation, experience more significant fall in their capacity of financial performance.

As expected, age of MFIs as measured with the number of years a MFI is under operation showed a positive coefficient and statistically significant variable; implying that the more the maturity of the MFI the higher the financial performance will be.

The other variables included in the study which are the macroeconomic variables, real GDP and inflation rate were found to be statistically insignificant indicators on financial performance of MFIs in Ethiopian. This indicates that these factors have little or no impact on the financial performance of Ethiopian MFIs in this model as far all those variables were not significant even at 10 percent significance level.

In general, the findings revealed that capital to asset ratio, portfolio quality; management efficiency, employee productivity, size and age of MFIs are the major significant factors of the financial performance of the Ethiopian MFIs. But, the result of the regression model indicated that the influences of debt to equity ratio, inflation rate and real GDP on ROA of microfinance institutions in Ethiopia are insignificant for the period study period 2010 to 2019. The relationship between financial performance indicator, ROA and capital to asset ratio, employee productivity, age and GDP were found to be positive while portfolio quality, management efficiency, gearing ratio, size of microfinance and inflation rate relationship with financial performance with financial performance were negative.

5.2. Recommendations

Based on the findings of the study, the researcher has recommended certain points what he thought to be very critical if considered and implemented by the microfinance institutions accordingly and properly. Thus, the researcher forwarded the following recommendations.

- Capital to asset ratio, portfolio at risk, management efficiency, employee productivity, microfinance size and age are significant factors of financial performance of MFIs in Ethiopia. Therefore, the managements of MFIs should give great attention in properly managing these independent variables.

- The explanatory powers of microfinance-specific variables are far more important in explaining the variability in ROA for MFIs in Ethiopia than external variables. Thus, MFIs in Ethiopia should be concerned about internal structures and policies in fashioning out strategies to improve their financial performance.

- The managers and policy makers of MFIs should give high concern in the motives of MFIs that is the institutions including the two motives together. Meaning the managers and policy makers should give due attention for both eradicating poverty and financial sustainability of MFIs.

- The government should create conducive environment by availing different facilities and infrastructures for MFIs as they are main players in achieving countrywide goals.

- Enhancing the capacity and skill of employee and management through continuous trainings, experience sharing and provision of advice and consultancy are essential to make better financial performance of MFIs.

5.3. Suggestions for Further Research

Finally, this research study tried to examine the effect of internal and external factors on financial performance of MFIs in Ethiopia and it will serve as an input for further study. However, the variables included in the study are not enough to measure the financial performance of the MFIs. Thus, further researchers should conduct by including other internal and external variables such as lending methodology, number of branches, marketing strategy and unemployment rate. Having further investigation with the inclusion of the above variables might have a better role in examining other factors that affect for the financial performance of MFIs in Ethiopian.

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Appendices

Appendix-I Regression output

Dependent Variable: ROA
Method: Panel EGLS (Cross-section random effects)
Date: 04/18/21 Time: 16:24
Sample: 2010 2019
Periods included: 10
Cross-sections included: 19
Total panel (balanced) observations: 190
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.241134	0.103791	2.323259	0.0213
CAR	0.121700	0.062494	1.947398	0.0530
PAR	-0.336693	0.108924	-3.091078	0.0023
MGE	-0.145599	0.012254	-11.88186	0.0000
EMP	0.008513	0.001955	4.354422	0.0000
GR	-0.002605	0.005903	-0.441307	0.6595
SIZE	-0.014170	0.006939	-2.041919	0.0426
AGE	0.005317	0.002669	1.992187	0.0479
GDP	0.049232	0.480998	0.102354	0.9186
INFL	-0.045279	0.056859	-0.796347	0.4269

Effects Specification

	S.D.	Rho
Cross-section random	0.047490	0.4357
Idiosyncratic random	0.054046	0.5643

Weighted Statistics

R-squared	0.588882	Mean dependent var	0.035920
Adjusted R-squared	0.568326	S.D. dependent var	0.083141
S.E. of regression	0.054625	Sum squared resid	0.537109
F-statistic	28.64785	Durbin-Watson stat	0.988212
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.646771	Mean dependent var	0.106076
Sum squared resid	1.002654	Durbin-Watson stat	0.529372

Appendix-II Heteroskedasticity Test: ARCH

Heteroskedasticity Test: ARCH

F-statistic	0.769379	Prob. F(1,186)	0.3815
Obs*R-squared	0.774448	Prob. Chi-Square(1)	0.3788

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 04/19/21 Time: 05:37

Sample (adjusted): 3 190

Included observations: 188 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.002235	0.000394	5.671873	0.0000
RESID^2(-1)	0.064162	0.073149	0.877142	0.3815

R-squared	0.004119	Mean dependent var	0.002388
Adjusted R-squared	-0.001235	S.D. dependent var	0.004843
S.E. of regression	0.004846	Akaike info criterion	-7.810710
Sum squared resid	0.004368	Schwarz criterion	-7.776280
Log likelihood	736.2068	Hannan-Quinn criter.	-7.796760
F-statistic	0.769379	Durbin-Watson stat	1.996770
Prob(F-statistic)	0.381541		

Appendix-III autocorrelation test: Breusch-Godfrey

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.872231	Prob. F(8,170)	0.0673
Obs*R-squared	15.30353	Prob. Chi-Square(8)	0.0535

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 04/17/21 Time: 16:05
Sample: 2 190
Included observations: 189
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.045034	0.065142	0.691324	0.4903
CAR	-0.017991	0.040607	-0.443059	0.6583
PAR	-0.037469	0.089502	-0.418642	0.6760
MGE	-0.005090	0.010866	-0.468435	0.6401
EMP	0.001133	0.001418	0.799270	0.4252
GR	-0.001410	0.004202	-0.335448	0.7377
SIZE	-0.001108	0.002817	-0.393439	0.6945
AGE	-0.000106	0.001519	-0.069625	0.9446
GDP	-0.107287	0.392764	-0.273158	0.7851
INFL	-0.010832	0.049909	-0.217037	0.8284
LAGROA	-0.082238	0.045089	-1.823898	0.0699
RESID(-1)	0.253060	0.085275	2.967576	0.0034
RESID(-2)	0.111791	0.079951	1.398236	0.1639
RESID(-3)	0.044956	0.079167	0.567866	0.5709
RESID(-4)	0.075057	0.078168	0.960208	0.3383
RESID(-5)	0.039988	0.078807	0.507421	0.6125
RESID(-6)	-0.039223	0.078607	-0.498976	0.6184
RESID(-7)	-0.059472	0.078600	-0.756644	0.4503
RESID(-8)	-0.007120	0.077532	-0.091839	0.9269

R-squared	0.080971	Mean dependent var	-1.01E-17
Adjusted R-squared	-0.016338	S.D. dependent var	0.048885
S.E. of regression	0.049282	Akaike info criterion	-3.087389
Sum squared resid	0.412889	Schwarz criterion	-2.761499

Log likelihood	310.7582	Hannan-Quinn criter.	-2.955363
F-statistic	0.832103	Durbin-Watson stat	1.989871
Prob(F-statistic)	0.660674		

Appendix-IV Tests for multicollinearity

	CAR	PAR	MGE	EMP	GR	SIZE	AGE	GDP	INFL
CAR	1								
PAR	0.11479561	1							
MGE	0.13876370	0.2158937	1						
EMP	0.13170740	-0.1225177	0.3453717	1					
GR	0.72827569	-0.0232180	0.0190508	0.1861175	1				
SIZE	0.39968326	-0.2499408	0.2757899	0.0841574	0.5786662	1			
AGE	0.43208165	-0.0486328	0.1786609	0.1552199	0.4364276	0.5367565	1		
GDP	0.19801679	0.0333461	0.0202721	0.2416486	0.1840002	0.2213204	0.49952627	1	
INFL	0.01078411	-0.0524766	0.0174579	0.0549905	0.0534989	0.0815571	0.19635874	-0.2219155	1

Appendix-V Model Specification Test: Hausman Test

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	9	1.0000

Cross-section test variance is invalid. Hausman statistic set to zero.

Appendix-VI Ratio Data

MFI	Year	ROA	CAR	PAR	MGE	EMP	GR	SIZE	AGE	GDP	INFL
ACSI	2010	0.059603	0.327263	0.035	0.405402	3.855775	1.79877893	14.56	13	0.1057	0.028
ACSI	2011	0.065514	0.278903	0.0146	0.415861	3.881172	2.585476903	15.00	14	0.114	0.181
ACSI	2012	0.07103	0.27944	0.01	0.390313	4.274064	2.578583705	15.29	15	0.087	0.341
ACSI	2013	0.06266	0.266717	0.059	0.440205	4.131398	2.749295273	15.59	16	0.0994	0.135
ACSI	2014	0.055143	0.239995	0.0075	0.457694	5.77328	3.166759087	15.95	17	0.103	0.081
ACSI	2015	0.053066	0.230172	0.0047	0.483197	5.445015	3.34457443	16.28	18	0.1041	0.077
ACSI	2016	0.051605	0.22738	0.008	0.540705	4.383718	3.397922069	16.54	19	0.08	0.097
ACSI	2017	0.054995	0.233726	0.005	0.533088	3.594022	3.278522084	16.78	20	0.1021	0.072
ACSI	2018	0.04577	0.215014	0.02	0.570666	3.651324	3.650859562	17.11	21	0.077	0.131
ACSI	2019	0.038158	0.214933	0.04	0.691484	3.52666	3.652611675	17.30	22	0.0836	0.0972
DCSI	2010	0.020533	0.306009	0.067	0.535184	6.149364	3.203608378	14.45	13	0.1057	0.028
DCSI	2011	0.018666	0.240291	0.0216	0.58073	4.932107	3.161619317	14.81	14	0.114	0.181
DCSI	2012	0.025221	0.246019	0.045	0.680393	3.849051	3.064726061	14.91	15	0.087	0.341
DCSI	2013	0.01555	0.221847	0.1137	0.78347	3.443074	3.507609547	15.09	16	0.0994	0.135
DCSI	2014	0.026007	0.215028	0.0426	0.707111	4.433735	3.650546368	15.25	17	0.103	0.081
DCSI	2015	0.026527	0.224565	0.0683	0.707124	4.214578	3.453050877	15.34	18	0.1041	0.077
DCSI	2016	0.000891	0.215141	0.01	0.992621	3.24111	3.648117823	15.39	19	0.08	0.097
DCSI	2017	-0.01798	0.127118	0.005	1.368898	1.78815	6.866703222	15.77	20	0.1021	0.072
DCSI	2018	0.032861	0.145088	0.02	0.717365	3.571142	5.892377068	15.89	21	0.077	0.131
DCSI	2019	0.023657	0.1364	0.05	0.738216	4.024413	6.331364085	16.38	22	0.0836	0.0972
OCSSCO	2010	0.100305	0.241565	0.046	0.406387	9.187975	3.139665762	14.14	13	0.1057	0.028
OCSSCO	2011	0.131371	0.263398	0.0352	0.376736	9.929994	2.796538046	14.34	14	0.114	0.181
OCSSCO	2012	0.150347	0.27119	0.032	0.340126	8.602259	2.687452138	14.56	15	0.087	0.341
OCSSCO	2013	0.148203	0.250757	0.0287	0.384881	8.114703	2.987930246	14.88	16	0.0994	0.135
OCSSCO	2014	0.12935	0.195602	0.0362	0.404725	5.816939	4.112427432	15.33	17	0.103	0.081
OCSSCO	2015	0.184152	0.255178	0.0531	0.360217	6.860791	2.918835505	15.37	18	0.1041	0.077
OCSSCO	2016	0.223319	0.293212	0.002	0.633016	3.410605	2.410498356	15.46	19	0.08	0.097
OCSSCO	2017	0.177533	0.219401	0.01	0.26537	6.999892	3.557855747	15.97	20	0.1021	0.072
OCSSCO	2018	0.166514	0.19599	0.03	0.289098	7.704684	4.102314063	16.32	21	0.077	0.131
OCSSCO	2019	0.045298	0.182863	0.07	0.624779	3.717607	4.46856562	16.43	22	0.0836	0.0972
OMO	2010	0.00301	0.27338	0.066	0.999696	3.076574	2.657917937	13.36	13	0.1057	0.028

OMO	2011	0.014405	0.244695	0.1516	0.903455	3.07669	3.086712522	13.51	14	0.114	0.181
OMO	2012	0.025721	0.17809	0.094	0.905916	2.074996	4.615142652	14.10	15	0.087	0.341
OMO	2013	0.028739	0.172123	0.0645	0.709747	2.796675	4.809783819	14.44	16	0.0994	0.135
OMO	2014	0.024693	0.146305	0.042	0.720622	2.628262	5.835020663	14.81	17	0.103	0.081
OMO	2015	0.031599	0.145933	0.0359	0.672212	3.064288	5.852446106	15.09	18	0.1041	0.077
OMO	2016	0.024888	0.115649	0.012	0.745377	2.771186	7.646877877	15.27	19	0.08	0.097
OMO	2017	0.021288	0.07761	0.013	0.765432	2.750198	11.88495135	15.57	20	0.1021	0.072
OMO	2018	0.017679	0.106429	0.02	0.790829	2.531294	8.395925395	15.97	21	0.077	0.131
OMO	2019	0.03528	0.192286	0.02	0.658716	2.680618	4.200594515	16.01	22	0.0836	0.0972
SFPI	2010	0.440211	0.448152	0.032	0.13806	16.64385	1.231391674	11.02	13	0.1057	0.028
SFPI	2011	0.454508	0.461479	0.0599	0.214574	9.798654	1.16694832	11.15	14	0.114	0.181
SFPI	2012	0.421475	0.426716	0.027	0.246106	9.186912	1.343477483	11.44	15	0.087	0.341
SFPI	2013	0.354787	0.360074	0.0236	0.264043	9.226868	1.777205859	11.86	16	0.0994	0.135
SFPI	2014	0.380157	0.384691	0.0306	0.254196	8.776269	1.599490058	12.01	17	0.103	0.081
SFPI	2015	0.332887	0.336226	0.0238	0.273623	7.273513	1.974187825	12.32	18	0.1041	0.077
SFPI	2016	0.332807	0.342368	0.03	0.314416	5.633221	1.920834395	12.43	19	0.08	0.097
SFPI	2017	0.332269	0.340528	0.018	0.302194	6.054257	1.936615477	12.58	20	0.1021	0.072
SFPI	2018	0.036359	0.324323	0.04	0.804784	2.476184	2.083346477	12.75	21	0.077	0.131
SFPI	2019	0.028822	0.194582	0.03	0.854279	2.596942	4.139225197	12.93	22	0.0836	0.0972
Gasha	2010	0.01594	0.038392	0.135	0.936501	5.367297	1.408532234	9.81	12	0.1057	0.028
Gasha	2011	0.073162	0.17089	0.1106	0.720159	6.042783	1.335802084	9.95	13	0.114	0.181
Gasha	2012	0.008887	0.022544	0.0186	0.941426	7.090128	1.536776896	10.05	14	0.087	0.341
Gasha	2013	0.004633	0.013525	0.021	0.952264	8.672351	2.020443021	10	15	0.0994	0.135
Gasha	2014	-0.0073	-0.02482	0.046	1.035222	5.809562	2.40041394	10.39	16	0.103	0.081
Gasha	2015	0.031641	0.112292	0.081	0.859683	4.963871	2.548903855	10.57	17	0.1041	0.077
Gasha	2016	0.052277	0.177585	0.121	0.799437	4.579216	2.396982338	10.71	18	0.08	0.097
Gasha	2017	0.037307	0.122262	0.156	0.839535	3.742384	2.277170543	10.87	19	0.1021	0.072
Gasha	2018	0.028816	0.099328	0.26	0.87656	2.933597	2.447030737	11.02	20	0.077	0.131
Gasha	2019	0.036298	0.126645	0.24	0.852762	2.652797	2.488990426	11.16	21	0.0836	0.0972
Vision	2010	-0.02302	0.472236	0.0694	1.130441	3.987264	1.117586743	11.70	12	0.1057	0.028
Vision	2011	-0.04556	0.480915	0.0211	1.211336	4.378541	1.07937167	11.84	13	0.114	0.181
Vision	2012	-0.012	0.476546	0.014	1.067098	4.568972	1.098435986	12.45	14	0.087	0.341
Vision	2013	0.054755	0.484797	0.0092	0.753042	3.875639	1.062716917	12.86	15	0.0994	0.135

Vision	2014	0.083853	0.520148	0.0448	0.681123	2.856716	0.922531469	12.98	16	0.103	0.081
Vision	2015	0.145988	0.545189	0.0223	0.534684	3.309756	0.834224762	13.12	17	0.1041	0.077
Vision	2016	0.209816	0.536516	0.047	0.46715	1.894531	0.86387585	13.33	18	0.08	0.097
Vision	2017	0.253958	0.512642	0.027	0.380321	3.693214	0.950678585	13.56	19	0.1021	0.072
Vision	2018	0.229175	0.396725	0.03	0.406461	2.985426	1.520637339	14.00	20	0.077	0.131
Vision	2019	0.070726	0.357283	0.05	0.68957	3.083115	1.798898887	14.40	21	0.0836	0.0972
Sidama	2010	0.006046	0.310604	0.17	0.958281	3.783564	2.219543013	10.50	12	0.1057	0.028
Sidama	2011	0.018689	0.284944	0.1253	0.89865	2.968513	2.509469066	10.79	13	0.114	0.181
Sidama	2012	0.044112	0.26429	0.051	0.781426	2.783098	2.783724269	11.05	14	0.087	0.341
Sidama	2013	0.03441	0.201562	0.0345	0.812819	3.938792	3.96124878	11.53	15	0.0994	0.135
Sidama	2014	0.050736	0.331475	0.0455	0.763067	3.876021	2.016815422	11.70	16	0.103	0.081
Sidama	2015	0.047619	0.339725	0.0375	0.783318	2.31968	1.943562991	11.82	17	0.1041	0.077
Sidama	2016	0.048129	0.295085	0.043	0.726896	2.714601	2.388853501	12.14	18	0.08	0.097
Sidama	2017	0.070283	0.328782	0.052	0.660538	1.980318	2.041523933	12.34	19	0.1021	0.072
Sidama	2018	0.06969	0.35291	0.021	0.627638	2.250657	1.833581659	12.65	20	0.077	0.131
Sidama	2019	0.056575	0.389288	0.014	0.691854	3.226905	1.568790997	12.85	21	0.0836	0.0972
AVFS	2010	0.110865	0.55631	0.036	0.671047	2.837651	0.797559361	9.89	12	0.1057	0.028
AVFS	2011	0.112179	0.553468	0.0739	0.675383	3.352925	0.806789495	9.96	13	0.114	0.181
AVFS	2012	0.076371	0.44496	0.01	0.711756	2.526075	1.247381755	10.13	14	0.087	0.341
AVFS	2013	0.043324	0.416197	0.0437	0.894922	2.172724	1.402710606	10.15	15	0.0994	0.135
AVFS	2014	0.04205	0.399425	0.026	0.837684	2.189093	1.503600699	10.20	16	0.103	0.081
AVFS	2015	0.014146	0.416397	0.0211	0.939998	1.913902	1.401546031	10.19	17	0.1041	0.077
AVFS	2016	-0.07069	0.534784	0.043	1.2809	1.623584	0.869914472	9.98	18	0.08	0.097
AVFS	2017	0.033574	0.533927	0.054	0.866376	2.035504	0.872913536	9.96	19	0.1021	0.072
AVFS	2018	0.014146	0.416397	0.1	0.939998	1.913902	1.401546031	10.19	20	0.077	0.131
AVFS	2019	-0.14875	0.217367	0.09	1.71999	1.235416	3.60050577	9.98	21	0.0836	0.0972
Bus.Gon	2010	0.195871	0.494498	0.016	0.443729	9.146973	1.02225443	11.00	11	0.1057	0.028
Bus.Gon	2011	0.265915	0.526225	0.0068	0.388682	9.010354	0.900326185	11.33	12	0.114	0.181
Bus.Gon	2012	0.22953	0.464963	0.006	0.396715	8.617892	1.150708117	11.73	13	0.087	0.341
Bus.Gon	2013	0.228743	0.392249	0.0051	0.386337	7.921792	1.549401633	12.16	14	0.0994	0.135
Bus.Gon	2014	0.239449	0.37111	0.0047	0.356225	7.391501	1.694616485	12.47	15	0.103	0.081
Bus.Gon	2015	0.245134	0.355975	0.0115	0.347068	5.957406	1.80918678	12.73	16	0.1041	0.077

Bus.Gon	2016	0.283312	0.411673	0.012	0.741993	3.100482	1.429113596	12.76	17	0.08	0.097
Bus.Gon	2017	0.068131	0.425902	0.013	0.674196	2.985624	1.347955578	12.90	18	0.1021	0.072
Bus.Gon	2018	0.047933	0.348911	0.02	0.760029	2.810963	1.866061037	13.25	19	0.077	0.131
Bus.Gon	2019	0.044308	0.291444	0.02	0.759697	2.754698	2.431183319	13.56	20	0.0836	0.0972
PEACE	2010	0.346325	0.370644	0.004	0.298723	10.17834	1.698015364	10.88	11	0.1057	0.028
PEACE	2011	0.415233	0.437881	0.0034	0.244245	9.516783	1.283734398	10.95	12	0.114	0.181
PEACE	2012	0.431662	0.451663	0	0.238698	9.057922	1.214042603	11.07	13	0.087	0.341
PEACE	2013	0.408506	0.423888	0.0014	0.250887	9.134807	1.359110423	11.34	14	0.0994	0.135
PEACE	2014	0.422995	0.436384	0.0017	0.25371	8.250098	1.291555594	11.47	15	0.103	0.081
PEACE	2015	0.423704	0.435931	0.0021	0.275628	6.203653	1.293940212	11.56	16	0.1041	0.077
PEACE	2016	0.223157	0.439958	0.007	0.621881	5.378075	1.272927073	11.66	17	0.08	0.097
PEACE	2017	0.244026	0.426659	0.005	0.405277	3.478544	1.343775576	11.83	18	0.1021	0.072
PEACE	2018	0.206994	0.333637	0.003	0.447189	3.672679	1.997273086	12.19	19	0.077	0.131
PEACE	2019	0.058128	0.301339	0.06	0.754741	2.649321	2.318521309	12.52	20	0.0836	0.0972
ADCSI	2010	0.032857	0.648341	0.046	0.582486	5.039967	0.542399385	13.18	10	0.1057	0.028
ADCSI	2011	0.029271	0.490986	0.0378	0.625425	4.585809	1.036719449	13.55	11	0.114	0.181
ADCSI	2012	0.030377	0.382209	0.025	0.581354	4.499544	1.616369368	14.01	12	0.087	0.341
ADCSI	2013	0.077254	0.406056	0.0296	0.414104	4.320452	1.462712868	14.24	13	0.0994	0.135
ADCSI	2014	0.080786	0.381997	0.0299	0.421002	4.160937	1.617823206	14.60	14	0.103	0.081
ADCSI	2015	0.097205	0.384519	0.0422	0.422418	3.824564	1.600654196	14.82	15	0.1041	0.077
ADCSI	2016	0.138802	0.391841	0.035	0.336134	3.608971	1.552056921	14.92	16	0.08	0.097
ADCSI	2017	0.165605	0.331501	0.01	0.295721	3.134258	2.016583092	15.08	17	0.1021	0.072
ADCSI	2018	0.188133	0.349461	0.03	0.253747	5.176327	1.861552456	15.19	18	0.077	0.131
ADCSI	2019	0.050776	0.329662	0.04	0.447341	5.820502	2.033412988	15.51	19	0.0836	0.0972
Meklit	2010	0.129227	0.226161	0.238	0.597663	5.903305	3.421636591	10.12	10	0.1057	0.028
Meklit	2011	0.18595	0.275713	0.2123	0.49471	6.534664	2.626915966	10.23	11	0.114	0.181
Meklit	2012	0.094749	0.335234	0.102	0.636993	3.945229	1.983003041	10.39	12	0.087	0.341
Meklit	2013	0.287897	0.343658	0.0414	0.316337	6.282762	1.909865637	10.71	13	0.0994	0.135
Meklit	2014	0.330489	0.413265	0.0321	0.299006	6.359547	1.492100318	10.90	14	0.103	0.081
Meklit	2015	0.351403	0.411185	0.0421	0.32611	6.139331	1.431993212	11.07	15	0.1041	0.077
Meklit	2016	0.36366	0.416594	0.029	0.330929	5.863427	1.400410723	11.24	16	0.08	0.097
Meklit	2017	0.300499	0.422931	0.024	0.447973	5.296124	1.364446669	11.43	17	0.1021	0.072
Meklit	2018	0.272925	0.422994	0.04	0.410557	4.986421	1.364102367	11.72	18	0.077	0.131

Meklit	2019	0.065201	0.41249	0.16	0.680111	4.913296	1.424297219	12.14	19	0.0836	0.0972
Wasasa	2010	0.16707	0.313694	0.04	0.295684	14.40917	2.187823891	11.46	10	0.1057	0.028
Wasasa	2011	0.188631	0.346658	0.0225	0.349745	9.001409	1.884691085	11.76	11	0.114	0.181
Wasasa	2012	0.173779	0.414874	0.013	0.316838	8.543891	1.410372648	12.31	12	0.087	0.341
Wasasa	2013	0.21722	0.317824	0.059	0.347523	6.752105	2.146389664	12.38	13	0.0994	0.135
Wasasa	2014	0.207102	0.296578	0.001	0.387218	5.423178	2.371792328	12.64	14	0.103	0.081
Wasasa	2015	0.169622	0.234793	0.076	0.381946	4.298632	3.259074537	13.05	15	0.1041	0.077
Wasasa	2016	0.169946	0.22861	0.009	0.4254	3.641903	3.374266455	13.23	16	0.08	0.097
Wasasa	2017	0.206325	0.269015	0.017	0.416516	3.579424	2.717263407	13.21	17	0.1021	0.072
Wasasa	2018	0.230623	0.293322	0.02	0.379085	2.790878	2.409226848	13.24	18	0.077	0.131
Wasasa	2019	0.02482	0.268172	0.01	0.819029	2.722474	2.728956739	13.59	19	0.0836	0.0972
Eshet	2010	0.070823	0.654497	0.12	0.708888	7.021913	0.52788807	10.72	10	0.1057	0.028
Eshet	2011	0.066541	0.639164	0.1283	0.731179	11.64948	0.564540376	10.74	11	0.114	0.181
Eshet	2012	0.123926	0.618378	0.046	0.613654	11.21444	0.617135869	10.92	12	0.087	0.341
Eshet	2013	0.142282	0.544262	0.0162	0.582969	18.30826	0.83735095	11.09	13	0.0994	0.135
Eshet	2014	0.166022	0.48624	0.0146	0.554815	17.34495	1.05660102	11.10	14	0.103	0.081
Eshet	2015	0.193235	0.51993	0.0221	0.556352	12.39238	0.92333943	11.01	15	0.1041	0.077
Eshet	2016	0.101387	0.354567	0.039	0.777786	5.755727	1.820339585	10.95	16	0.08	0.097
Eshet	2017	0.077373	0.340066	0.0395	0.793113	3.693239	1.940596771	10.97	17	0.1021	0.072
Eshet	2018	0.058646	0.346254	0.041	0.841665	1.749141	1.888046301	10.95	18	0.077	0.131
Eshet	2019	0.00139	0.269736	0.1136	0.994914	0.172794	2.707320337	11.18	19	0.0836	0.0972
Ben.Gum	2010	-0.03954	0.481388	0.11	1.202433	7.158617	1.002149815	11	9	0.1057	0.028
Ben.Gum	2011	-0.02543	0.358553	0.0409	1.105251	8.157195	1.788989991	11.46	10	0.114	0.181
Ben.Gum	2012	0.004338	0.24735	0.041	0.958886	3.709194	3.042849741	11.85	11	0.087	0.341
Ben.Gum	2013	0.045475	0.362609	0.0092	0.739537	4.404872	1.757785849	11.65	12	0.0994	0.135
Ben.Gum	2014	0.017547	0.312502	0.0448	0.88047	4.24354	2.199977607	11.89	13	0.103	0.081
Ben.Gum	2015	0.013694	0.294321	0.0223	0.908389	3.268483	2.397656827	11.98	14	0.1041	0.077
Ben.Gum	2016	0.003928	0.266036	0.06	0.97312	3.124228	2.758895732	12.08	15	0.08	0.097
Ben.Gum	2017	0.029336	0.308088	0.083	0.803123	4.179989	2.245820891	12.49	16	0.1021	0.072
Ben.Gum	2018	0.036604	0.264789	0.091	0.65167	2.81649	2.776586963	12.79	17	0.077	0.131
Ben.Gum	2019	0.028346	0.246741	0.114	0.741978	3.480537	3.052830872	12.98	18	0.0836	0.0972

Metemamn	2010	-0.2233	0.789287	0.08	4.817761	3.072071	0.266966247	9.70	8	0.1057	0.028
Metemamn	2011	-0.20527	0.802099	0.0926	2.343011	2.416054	0.246722064	9.75	9	0.114	0.181
Metemamn	2012	-0.14898	0.612256	0.075	1.935185	2.04837	0.633303107	10.04	10	0.087	0.341
Metemamn	2013	-0.01804	0.467949	0.0398	1.110536	1.968063	1.136987119	10.67	11	0.0994	0.135
Metemamn	2014	0.061843	0.649764	0.0291	0.655251	2.096851	0.539025157	11.08	12	0.103	0.081
Metemamn	2015	0.095609	0.509222	0.0303	0.533824	3.365401	0.963778275	11.67	13	0.1041	0.077
Metemamn	2016	0.118717	0.500878	0.036	0.540881	3.151214	0.996493819	11.99	14	0.08	0.097
Metemamn	2017	0.172929	0.503879	0.041	0.502094	3.764001	0.984601578	12.07	15	0.1021	0.072
Metemamn	2018	0.193062	0.480406	0.0293	0.427388	4.824307	1.081575505	12.35	16	0.077	0.131
Metemamn	2019	0.196304	0.32805	0.048	0.401967	5.366414	2.048319253	12.72	17	0.0836	0.0972
Aggar	2010	0.056907	0.307561	0.02	1.165787	0.500249	0.363282784	10	6	0.1057	0.028
Aggar	2011	0.078161	0.349687	0.0209	0.658315	0.789931	1.859661767	10.04	7	0.114	0.181
Aggar	2012	0.084516	0.297251	0.077	0.670506	0.717332	2.364189783	10.58	8	0.087	0.341
Aggar	2013	0.090132	0.397507	0.037	0.622376	0.924055	1.515678433	11.15	9	0.0994	0.135
Aggar	2014	0.108777	0.391382	0.0545	0.455066	0.441854	1.555053208	11.54	10	0.103	0.081
Aggar	2015	0.128006	0.42264	0.0974	0.431316	0.228298	1.366084902	11.93	11	0.1041	0.077
Aggar	2016	0.120858	0.430312	0.0991	0.418467	7.694915	1.323893094	12.41	12	0.08	0.097
Aggar	2017	0.11557	0.510425	0.087	0.438498	1.195916	0.959150523	12.69	13	0.1021	0.072
Aggar	2018	0.11718	0.538926	0.112	0.614826	4.098066	0.855540818	12.92	14	0.077	0.131
Aggar	2019	0.074922	0.429682	0.0734	0.600263	2.844777	1.327301875	13.33	15	0.0836	0.0972
Harbu	2010	0.007877	0.768125	0.02	0.90422	2.410786	0.301871773	9.81	5	0.1057	0.028
Harbu	2011	0.116104	0.518147	0.0233	0.473242	2.74719	0.929946572	10.31	6	0.114	0.181
Harbu	2012	0.00617	0.33144	0.0211	0.952279	1.767556	2.017143694	10.85	7	0.087	0.341
Harbu	2013	0.007762	0.310435	0.0132	0.954987	3.037809	2.221280116	11.02	8	0.0994	0.135
Harbu	2014	0.009276	0.344835	0.0103	0.946787	2.522104	1.899928155	11.05	9	0.103	0.081
Harbu	2015	0.010169	0.379231	0.0129	1.490017	2.126293	1.636911078	11.14	10	0.1041	0.077
Harbu	2016	0.004943	0.299075	0.0151	0.978458	2.236192	2.343651899	11.39	11	0.08	0.097
Harbu	2017	0.007662	0.222369	0.011	0.943307	2.197248	3.497030147	11.78	12	0.1021	0.072
Harbu	2018	0.027902	0.193869	0.027	0.831763	3.382447	4.158138929	12.11	13	0.077	0.131
Harbu	2019	0.115287	0.168332	0.0251	0.575586	4.767906	4.940643627	12.34	14	0.0836	0.0972