WOLKITE UNIVERSITY

DETERMINANT OF LOAN PORTFOLIO QUALITY; EVIDENCE FRO MICROFINANCE INSTIUTION INETHIOPIA

A senior Essay research submitted to the Department of Accounting and finance in partial fulfillment of the Requirement for the Bachelor Degree of Arts in Accounting and finance

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STATEMENT OF DECLARATION

I Kasanesh Abebe, have carried out independently a research work entitled *"Determinant of loan portfolio quality on microfinance: The case of Microfinance Institutions in Ethiopia"* in partial fulfillment of the requirement of BA Degree in Accounting and Finance with the guidance and support of the research advisor. I do hereby declare that this research paper is my original work and that it has not been submitted by any other person for an award of degree in this or any other university/institution.

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This is to certify that the paper prepared by Kassanesh Abebe, entitled: *Determinant of loan portfolio quality on microfinance: The case of Microfinance Institutions in Ethiopia* and submitted in partial fulfillment of the requirements for the Bachelor degree in Accounting and Finance complies with the regulations of the University and meets the accepted standards with respect to originality and quality. Approved by:

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ABSTRACT

This study examined determinants of loan portfolios quality, using panel data of fourteen (10) MFIs from the period 2005- 2014. The study employed one dependent variables as measurement for loan portfolios quality, namely: portfolio at risk over 90-days (PAR-90days)).This study is crucial from the fact that there is limited research on M FIs loan portfolios quality using quantitative approach in Ethiopia. Based on the fixed effect model ordinary least squares (OLS), the study finds an institution deposit loan is the only positive and significantly determinant of PAR over 90 days. Operating expense (OPPEXP) has positive and not significant while, return on asset leverage, size has a negative and not significant. Gross in national income negatively and less significantly influences P AR-90days. The study finds insignificant results on leverage. Accordingly, the findings of the study may have implications for MFIs and policy makers in that it provides hint on some important determinants of loan portfolios quality.

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ACRONYMES

AMIE .Association of microfinance institution in Ethiopia
DTL. Deposit to loan
GDP. Gross domestic product

MFIS. Microfinance institution Ethiopia
OPEX. Operating expense
ROA. Return on asset

NPLS. Non-performing loan

PAR90. Portfolio at Risk 90 days

OLS. Ordinary least squire

CHAPTER ONE

1. INTRODUCTION

In developing countries, including Ethiopia, micro financing institutions (MFIs) emerged with unique opportunity to serve poor people who do not have access to commercial banks. Microfinance involves the provision of micro-credit, savings, and other services to the poor that are excluded by the commercial banks for collateral and other reasons. Microfinance is relatively new to Ethiopia and came to existence during 1994-95 with the government's licensing and supervision of microfinance institution proclamation (Zerai and Rani, 2012). The main objective of the these institutions are they deliver micro-loans, micro-savings, micro-insurance, money transfer, leasing, etc to a large number of productive resource-poor people in the country in a cost-effective and sustainable way. The objective of microfinance institutions as development organizations are to service the financial needs of un-served or underserved markets as a means of meeting development objectives such as to create employment, reduce poverty, help to develop existing business or diversify their activities, empower women or other disadvantaged population groups, and encourage the development of new business (Bayeh, 2012).

Loans and advances are major business activities among Ethiopia microfinance and other financial institutions around the globe. It is normally seen in the quantum of credits and advances which reflects in the financial statements and annual reports of both local and multinational banks in Ghana and the increment in the quantity of advances profited to borrowers in both formal and casual parts of the economy. According to Brown, Fazzari and Petersen (2009), the allowing of loans is a noteworthy business for most widespread banks. Loan portfolio regularly shapes a more noteworthy bit of a bank's assets and a wellspring of wage for business.A large number of MFIs in Ethiopia has progressed significantly in terms of sustainability. Although the development of MFIs started very recently, however, the industry showed a remarkable growth. A survey conducted in Ethiopia of 2007, there are 27 MFIs registered under National Bank of Ethiopia (NBE) had an active loan portfolio of about birr 2.7 billion delivered to 1.7 million

active clients. At the same year they also mobilized about 951 million birr of savings. Moreover about 38% of the clients of the MFIs are females (Amaha, 2008). While the end of 2011, the total number of MFIs has risen to 31 with 433 branches and 598 sub branches. At the same year the study shows 10 – 25% of the total micro finance demand in the country. The institutions have extended total credit of 6.9 billion ETB to 2,470,611 active borrowers (Mohana and Ludego, 2013).The problem of bad loans is not common in only Ethiopia, but it is in other countries where the problem has led to the liquidation of some banks. The findings of Caprio and Klingebiel (2002) cited in Fofack (2005), showed that in Indonesia, nonperforming loans represented about 75% of total loan assets which led to the collapse of over sixty banks in 1997.A brief study of the annual reports and financial statements of banks in Ghana indicate that loan portfolio quality is seriously affecting most banks hence necessitating a study into the problem. In the light of the above, the issue of loan portfolio quality has raised some concerns among stakeholders of microfinance in Ethiopia. Therefore, the study will seek to find what are the determinants of loan portfolio quality specifically in microfinance institution in Ethiopia.

1.2 Statement of the problem

Despite the fact that loan portfolio quality management remains a challenge for microfinance institution, the issuing of loans and advances is critical to most microfinance performance around the globe. Interest on loans generated by these MFIs influences their financial strength and form a significant part of their asset. Unpaid loans accumulate debt which affects microfinance negatively in their operations as well as the general economy. Studies of microfinance crises all over the world have shown that poor loans (asset quality) are the key factor of bank failures. Stuart (2010) stressed that the spate of bad loans on-performing loans) was as high as 35% in Nigerian Commercial Banks between 1999 and 2009.Umoh (1994) also pointed out that increasing level of non-performing loan rates in banks‟ books, poor loan processing, undue interference in the loan granting process, inadequate or absences of loan collaterals among other things, are linked with poor and ineffective credit risk management that negatively impact on bank's loan portfolio quality. The main purpose of this study will to empirically examine if loan quality is mostly explain by microfinance -specific variables (MFIs' size, profitability and

deposit to loan ratio) and ,macroeconomic (inflation and GDP)conditions or by the combination of these two categories of determinants.

The majority of studies that investigate the determinants of problem loans try to answer the question of what explains the credit default at the firm level (Bonfim, 2009) or attempt to analyze the evolution of non-performing loans (NPLs) taken as an aggregated measure of problem loans at the bank level (Louzis et al., 2012). However, little attention has been paid to the question of what explains that a loan has a given quality or status that lies between the two extreme statuses of safe and defaulted loan. Exploring the latter question is of great importance since it may allow banks as well as regulatory and supervisory authorities to undertake the appropriate actions and policies to mitigate deterioration of the quality of banks' loan portfolios) . According to association of Ethiopian microfinance institutions performance analysis ,non-performing loans as measured by portfolios at risk over 90 days was 12 percent of total outstanding in 2003, 17 percent in 2004 and 22 percent in 2009, which was the highest rate that the MFIs had recorded. The institutions had also recorded 5 percent of outstanding loans in 2012. These figures show that a significant amount of loan portfolios of MFIs were not collected as per the agreement and then reduce the quality of loan portfolios. Having well diversified loan portfolios is inefficient unless they are secured and repaid as per the agreement. Therefore, determine and examine what drives loan portfolio quality is very essential as it helps to have healthy loans. Tray to fill this gap, this study will analyze 10 MFIs data set to use panel regression models.

1.3 Objective of the study

1.3.1 General objectives of the study

The main objective of the study is to identify the determinants of loan portfolios quality of microfinance institutions in Ethiopia.

1.3 2 Specific Objectives

In line with above stated main objective, the study aims at achieving the following specific objectives

- To examine the effect of size on loan portfolio quality of microfinance institution in Ethiopia
- To identify the effect of profitability on loan portfolio quality of microfinance institution in Ethiopia.
- To determine deposit to loan ratio on loan portfolio quality of microfinance institution in Ethiopia.
- To determine the effect of inflation on portfolio quality of microfinance institution in Ethiopia.
- To identify the effect of GDP on loan portfolio quality of microfinance institution in Ethiopia.
- To determine the effect of leverage on loan portfolio quality of microfinance institution in Ethiopia.
- To examine the effect of operating expense on portfolio quality of microfinance institution in Ethiopia

1.4 Hypotheses of the study

In order to evaluate and identify the determinants of loan portfolio quality of MFIs in Ethiopia, the following hypotheses will be test.

HP1: There is a significant positive/ negative relationship between the size of MFIs and the MFIs loan portfolios quality.

HP2: There is a significant positive relationship between GDP and MFIs loan portfolios quality.

HP3: There is a significant positive/ negative relationship between deposit to loan ratio and loan portfolios quality

Hp4: There is a significant negative relationship between profitability and loan portfolio quality ofMFIs'.

HP5: There is a significant negative relationship between operating expense of MFIs and MFIs loan portfolios quality.

HP6: There is a significant negative relationship between leverage and MFIs loan portfolios quality.

1.5 Significance of the study

The significant of the study lies in the fact that, it would help the researcher to acquaint himself with loan portfolio quality management practices which pertains to the microfinance thereby broadening his knowledge in that field of study. It will also help Ethiopian microfinance to identify their problems and opportunities with regards to loan portfolio management practices and improve upon them. Furthermore, it will serve as a source document to future researchers who may wish to research into a similar topic. The microfinance institution a regulatory body will be interested in this study as it will enable it to draw regulations regarding loan portfolio management practices among the various microfinance institutions in Ethiopia. The boards of directors as well as top level management can use this study to draw strategic policies for their MFIs. Thus through the above, the study would contribute significantly to the development of the microfinance industry which plays a pivotal role in the development of the economy. This is because the study also seeks to identify the effect of loan portfolio quality on the microfinance institution in Ethiopia.

1.6 Scope of the study

The scope of this study was limited to the determinant of loan portfolio quality sample ten micro finance over the period of ten years, 2005 to 20014.Even if there are so many factors that determine MFIs loan portfolio quality both specific and macroeconomic level, but this study is limited only to. MFI specific factors such as, loan deposit ratio, size, leverage, operating expense of MFIs and profitability and macroeconomic factor GDP are including on this study.

1.7. Limitation of the study

As with any other study, this study is subject to some limitations. First, the sample of MFIs was selected based on availability of data for the observation periods. This may introduce bias inherent with non- probability sampling method. The unavailability of yearly annual report for the current three year 2015.2018 forced the researcher to exclude data's for this time period. Moreover, lack of sufficient relevant and up to date published literatures mainly in the context of Ethiopia regarding MFIs loan portfolio quality and absence of full information displayed on websites is the major constraints during the study

1.8 Organization of the study

This research was organized into five chapters; chapter one including introduction, statement of the problem, objectives of the study, hypothesis, significance and scope of the study. Following on this, chapter tow consists of theoretical and empirical literature on determinants of loan portfolio quality .chapter three is was focused on methodology of the studies and chapter four about data analysis and presentation followed by chapter five conclusion and recommendation.

CHAPTER TWO

2 REVIEWS OF RELATED LITERATURE

2.1 Theoretical Review

2.1.1 Concepts and Definition of MFIs

The definition of Microfinance anticipated by different scholars and organizations are to some extent different from one another. However, the basic concepts of the descriptions are similar. Let's start from the terms microfinance and microcredit are often used interchangeably, it is important to define each term separately and thereby see what they cover. Microfinance is the practice of providing a variety of financial services that target low-income and poor clients whereas microcredit is one of the financial services namely the loans which include the act of providing loans of small amounts to the poor and other borrowers that have been ignored by commercial banks Accordingly, microcredit is just one type of service under microfinance. Robinson (2001) define microfinance as all types of financial inter mediation services (savings, credit, funds transfer, insurance, pension remittances, etc.) offered to low-income households and enterprises in both urban and rural areas, including employees in the public and private sectors and those who are self-employed. Churchill & Frankiewicz (2006) articulate microfinance as commonly associated with small, working capital loans that are invested in microenterprises or income-generating activities. Hossain & Knight (2008) also defined microfinance as the supply of loans, savings, and other basic financial services to the poor and they noted that microcredit, a central theme of microfinance, is broadly recognized as the practice of offering small, collateral-free loans to members of cooperatives who otherwise would not have access to the capital necessary to begin small businesses.

Dejene (1998) as well defined Microfinance Institution (MFI) in terms of the following features: targeting the poor mainly the poor women; promoting small businesses; building capacity of the poor; encompassing small loans without collaterals; merging credit with savings; and charging commercial interest rates and also they are often innovative and flexible in their design and implementation.

2.1.2. Characteristics of Microfinance

Microfinance came into being from the appreciation that micro-entrepreneurs and some poorer clients can be 'bankable', that is, they can repay, both the principal and interest, on time and also make savings, provided financial services are tailored to suit their needs. Microfinance as a discipline has created financial products and services that together have enabled low-income people to become clients of a banking intermediary. The characteristics of microfinance products include (Murray.U&Boros.R, pp. 10-11, 2002). Little amounts of loans and savings, Short- terms loan (usually up to the term of one year). Payment schedules attribute frequent installments (or frequent deposits), Installments made up from both principal and interest, which amortized in course of time, Higher interest rates on credit (higher than commercial bank rates but lower than loan shark rates), which reflect the labor-intensive work associated with making small loans and allowing the microfinance intermediary to become sustainable over time.

2.2 Loan Portfolio Quality

Portfolio theory is the most frequently applied to analyses of financial assets. Markowitz approach of 1959 applies on a commercial banks' credit portfolio. Black and Scholes(1973), provided banks with a strategy on how to diversify their loans and investments. Before this, banks had no real investment strategy and their only option was to obtain as much collateral as possible and make default unattractive option. The principle behind the Black-Scholes model is to diversify your equity so that your lowest risk bond produces the same risk as your highest risk investment. When your investment has reached this equilibrium, then risk minimization has been achieved. Banks portfolio is managed in such a way that banks get the capital to purchase debt from other institutions within the bank, such as what it takes in from deposits, fees on the various

services it renders, and even from outside sources. The firm must manage this portfolio in such a way that return is high, while risk is kept to a minimum. The debt the bank has acquired has value. The value contributed by the rest of the bank should be equal to the excess of the market value of its borrowing.

2.3. Portfolio Theory

2.3.1. Risks in Portfolio

Maintaining quality portfolio is not that simple as it is exposed to different risk. A MFI must balance many different types of risk within its portfolio. Common risks include (Nara Hari.D, 2007): Credit risk: This risk originates due to client's unwillingness or inability to repay their loans. Credit risk results in a deterioration of the MFI's portfolio, reduced revenues, and increased operating expenses. Interest rate risk: Any changes in the level of market interest rates during the term of a loan relates to interest rate risk. This risk originates from the mismatch of the maturities of the MFI's assets and liabilities. Liquidity risk: A MFI's difficulty in obtaining needed cash at a reasonable cost. The largest source of risk for any financial institution resides in its loan portfolio. The loan portfolio is by for a largest asset of the microfinance institution (MFI).

2.3.2. Markowitz's portfolio theory

The cornerstone of Markowitz's seminal 1952 theory, for which he was awarded a2 Nobel Prize in Economics in 1990, is the ability of investors to diversify away unsystematic risk by holding portfolios consisting of a number of different shares. Markowitz's starting point is to construct what is known as the envelope curve. This represents the set of portfolio choices available to investors when investing in different combinations of risky assets (Brealey, 2003):

The Basics of Modern Portfolio Theory

The primary rule of MPT is the following dictum: For every level of expected risk, a portfolio can be constructed to achieve the highest expected return or, alternatively, for any given level of

expected return, a portfolio can be constructed to have the lowest expected risk. Portfolios having these characteristics lie on or quite close to the Efficient Frontier. Under MPT an Efficient Frontier is constructed in expected risk/return space, where return is the expected return of the portfolio and risk is measured by the standard deviation or volatility of the portfolio.

Forecasting Returns.

The expected return of any portfolio can be forecast in a relatively straightforward manner: it is the weighted average of the expected returns of the assets in the portfolio, with the weights being the proportions of the individual assets' market values relative to the market value of the total portfolio.

Forecasting Risk.

The risk (standard deviation) of a portfolio, however, is not the weighted average of the expected standard deviations of the constituent assets. Risk goes beyond the individual standard deviations to encompass the inter-asset correlations or how each asset moves with every other asset in the portfolio. Because the portfolio is the appropriate level of analysis under the Rule, estimating the expected returns, standard deviations, and correlations for every asset in the portfolio are all reasonable duties of the fiduciary

2.4. Terms and Definitions

According to Ledgerwood (1999), the performance of MFI is measured in many parameters.

This includes: Portfolio Quality indicators: Portfolio quality ratios provide information on the percentage of non-earning assets, which in turn decrease the revenue and liquidity position of MFIs. Some of the measures used include the repayment rates, arrears rate, Portfolio at risk, delinquent borrowers, loan loss reserve ratio, and loan loss ratio.

Productivity ratio: Productivity refers to the volume of business that is generated (output) for a given resource or asset (input). Common measures of productivity include the number of active loans per credit officer, and average portfolio outstanding per credit officer.

Profitability in dicators: These indicators measure the MFI net income in relation to the structure of its balance sheet. Common measures include Return on Equity, Return on Assets, and Return on Business.

Leverage ratio: Leverage refers to the extent to which a MFI borrows money relative to its amount of equity. In other words, it answers the question of how many additional dollars can be mobilized from commercial sources for every dollar worth of funds owned by the MFI. The most widely used measure of leverage is the debt equity ratio.

Gross loan portfolio:- The outstanding principal balance of all of an MFI's outstanding loans, including current, delinquent, and restructured loans, but not loans that have been written off. It does not include interest receivable. Portfolio a t risk: - The value of all loans outstanding that have one or more installments of

Principal past due more than a certain number of days. This item includes the entire unpaid principal balance, including both past-due and future installments, but not accrued interest. it also does not include loans that have been restructured or rescheduled. Portfolio at risk (PAR) is usually divided into categories according to the amount of time passed since the first missing principal installment.

Number of loans outstanding: - The numbers of loans that have been neither fully repaid nor written off and thus comprise part of the gross loan portfolio. For MFIs using a group-lending methodology, this term includes every individual who is responsible for repaying a portion of a group loan.

Value of loans written off: - The value of loans that have been recognized for accounting purposes as uncollectible. The process of recognizing an uncollectible loan is called a write-off or a charge-off. A write-off is an accounting procedure that removes the outstanding balance of the loan from the gross loan portfolio and from the loan-loss allowance. Thus the write-off does not affect the balance of the net loan portfolio, total assets, or any equity account, unless the loan-loss reserve was insufficient to cover the amount written off.

Loan Loss Rate:-We can carry out such a historical analysis of loan portfolio performance by calculating the loan loss rate. The loan loss rate refers to the amount of loans that has actually been written off during a specific period of time. These are explicit losses that an institution has acknowledged because there is no possibility to recover or enforce the loan.

Number of active borrowers: - The numbers of individuals who currently have an outstanding loan balance with the MFI or are primarily responsible for repaying any portion of the gross loan

portfolio. This number should be based on the number of individual borrowers rather than the number of groups.

Number of active clients:-The number of individuals who are active borrowers, depositors, or both. Individuals who have multiple loans or accounts with an MFI should be counted as a single

The loan portfolio is the primary income generating asset for an MFI1 and it is most commonly subject to material misstatements. Most MFI failures stem from the deterioration in the quality of the loan portfolio (Graham A, P.6, 2006).

2.5 EMPIRICAL REVIEW

A number of researches have examined the effect of loan portfolio quality on the performance of banks in a number of countries. The results varied from one research to another as follows. Khalid (2012) examined the impact of asset quality on profitability of private banks in India, of which a multiple regression model was employed to examine if bank asset quality and operating performance are positively correlated. The results showed that a bad asset ratio is negatively associated with banking operating performance, after controlling for the effects of operating scale, traditional banking business concentration and the idle fund ratio. The results further supported the hypothesis that the higher the quality of the loan processing activities before loan approval, the lower the non-value-added activities that is required to process problematic loans, and thus the higher the banking operating performance will be.Ezeoha (2011) investigated Banking consolidation, credit crisis and asset quality in a fragile banking system in Nigeria. The paper made use of panel data from 19 out of a total of 25 banks operating in Nigeria. A multivariate constant coefficient regression model was adopted as the estimation technique. The study reveals that deterioration in asset quality and increased credit crisis in the Nigerian banking industry between the periods 2004 and 2008 were exacerbated by the inability of banks to optimally use their huge asset capacity to enhance their earnings profiles. The findings showed that excess liquidity syndrome and relatively huge capital bases fueled reckless lending by banks; and that increase in the level of unsecured credits in banks' portfolios ironically helped to mitigate the level of Non-Performing Loans within the studied period.

Anne Norgaard (2011) examined the factors that determine profitability of MFIs and the relationship between profitability and yield on gross profitability. The data used in the study was found through mix market and a sample of 879 MFIs was processed and analyzed to test two profitability models with return on assets and profit margins as the dependent variables. The study findings revealed that factors that statistically influenced profitability positively was the capital asset ratio, age (new) and gross loan portfolio, factors with a statistical negative influence were legal status (credit union), cost per borrower, and two other variables showed statistically significant but with opposite influences: operating expense over loan portfolio which had a positive influence, and a number of active borrowers, with a negative influence. Bayeh (2012), examined factors affecting financial sustainability of microfinance institutions in Ethiopia. The study followed a quantitative research approach using a balanced panel data set of 126 observations from 14 MFIs over period 2002-2010. The study revealed that microfinance breadth of outreach, depth of outreach, dependency ratio and cost per borrower affect the financial sustainability of microfinance institutions in Ethiopia; however the study revealed that capital structure and staff productivity has insignificant impact on financial sustainability. Obsa (2012) examined the determinants of loan portfolios quality of MFIs in Ethiopia using a sample of 15 MFIs during 2003 to 2009 period. The results showed that a significant negative relationship between an institution size and LLP and PAR-30 days. Loan ratio (outstanding loans to total assets) positively and significantly impacts PAR-30 days and WOR. The coefficient for the ratio of women borrower reveals a significant negative impact on LLP and WOR; the estimates also show a significant inverse relation between changes in total loan and the three indicators of MFIs loan portfolio risk: LLP, PAR -30 days and WOR. Operating expense ratio, the measure of efficiency is positively related to WOR .The study did not observe any significant relationship between macroeconomic factors (changes in gross national income per capital and Inflation) and MFIs portfolio risks indicators: LLP, PAR-30 days and WOR. More currently Tilahun (2013) investigate the determinants of financial sustainability of MFIs in east Africa were poverty is a serious problem and the regression results revealed that MFIs financial sustainability is positively and significantly driven by loans intensity and size.

2.6 Identification of Knowledge gap

The review of the literature reveals the existence of knowledge gap in respect to the determinant of loan portfolio quality, particularly in the context of Ethiopia. Even though the renewed and increased interest in the issues of loan portfolio in the African continent, relevant empirical studies are still quite few. Scholars in the developed economies produced comparatively sizable literature on loan portfolio. But the literature of loan portfolio in developing nations and specifically on Africa is far behind from being adequate. Studies conducted by Pranowo et al (2010), Andualem (2011), Florence M & Abuga N (2013), Yohannes (2014) , Ephrem (2015) and Kinyariro et al., (2016), investigated the determinants of loan portfolio firms in developing countries. However, to the best knowledge of the researcher there is little study has been focusing on loan portfolio of MFIs in Ethiopia.This study will intended to identify major determinants of loan portfolios quality which are not included in previous studies (for example, Obsa,2012). He used three variables as proxies for loan portfolios quality (loan loss rate, portfolios at risk over 30 days and write off ratio).Independent variables: deposits to loans, voluntary saving and return on equity were overlooked in prior studies. Running the regression by including these variables would enhance the finding and fill the problem of missing important variables in previous studies. In an attempt to fill this gap, the study intends to examine the determinants of microfinance institutions (MFIs) loan portfolios quality, portfolio at risk over 90 days (PAR-90. In general, the lack of sufficient research on the determinants of microfinance loan portfolios quality in the context of Ethiopia and the existence of knowledge gap in the area initiate this study..

CHAPTER THREE

3. RESEARCH DESIGN AND METHODOLOGY

This chapter sets to explain the research design, target population, sampling size and sampling method, methods of data collection and data source, data analysis and techniques and also operational definition of variables and model specifications are present.

3.1. Research Approach

The intent of this chapter is to provide brief outline of the broad objective of the study and hypotheses, the underlying principle of research methodology and the choice of the appropriate research method for the study. Depending on the research problem carried out research method can be qualitative, quantitative or mixed. Creswell (2009) defined quantitative research as a formal, objective and systematic process in which numerical data are utilized to obtain information. For this study quantitative research was employed to achieve the objective

3.2 Research Design

Research design is defined as "plans and procedures for research that span the decisions from broad assumptions to detailed planning regarding methods of data collection and analysis" (Creswell, 2009, p. 3).

The study with the aims of examining determinants of loan portfolio quality of microfinance institutions in Ethiopia was used the quantitative research approach by using panel explanatory research design to realize stated objectives. The advantage of using panel data is that, it controls for individual heterogeneity, less co-linearity variables and tracks trends in the data something which simple time-series and cross-sectional data cannot provide (Brooks,2008). By studying the repeated cross section of observations, panel data are better suited to study the dynamics of change, panel data can better detect and measure effects that simply cannot be observed in pure cross-section or pure time series data, by making data available for several thousand units, panel data can minimize the bias that might result if we aggregate individuals or firms into broad aggregates. The study employed quantitative research approach which tends to assume that there

is a cause and effect relationship between known variables of interest. In line with this, quantitative research tests the theoretically established relationship between variables using sample data with the intention of statistically generalizing for the population under investigation. Therefore Ordinary least square (OLS) method particularly multiple regression models will use to examine the significant determinants of loan portfolio quality of MFIs in Ethiopia. To measure the loan portfolio quality of MFIs in Ethiopia, portfolio at risk greater than 90 days was applies as the dependent variable.

3.3. Target Population

The research is focus on the population of all MFIs' registered by NBE. As per NBE (2014/15) annual report 34 microfinance institutions are operating in Ethiopia.

3.4. Sample size and Sampling method

A sample of a subject was taken from the total population to make inference about the population, because it is time consuming and expensive to collect data about every individual institutions in the population. However, where the selected sample can reliably represent the population, the sample can still be used to make inferences about the population (Collis and Hossey, 2003cited in Yonas, 2012). The study is using purposive sampling method to select a sample of ten MFIs.

The criteria for choosing among the MFIs are based on the availability of full year audited data for the time period of 10 years (2005-20114). Therefore, based on the sample size and the time coverage, the sample consists of 100 observations. The study where collect secondary data of the respective MFIs from Association of Ethiopian Micro finance Institutions (AEMFI).

3.5. Methods of Data collection and Data source

To comply with the research objectives, the researcher mainly used secondary sources of data. The secondary data of the respective MFIs' was collected from Association of Ethiopian Micro finance Institutions (AEMFI) The method adopted to collect the necessary data consists of

structured document reviews. Accordingly, the data related to a documentary analysis which is necessary to undertake this study is gathered from the financial statements of ten MFIs' for ten consecutive years (2005-2014) and the data was the audited financial statements particularly balance sheet and income statement.

3.6. Data Analysis and Technique

The collected panel data were analyzed and interpret by using descriptive statistic, correlation analysis and multiple regression estimation method. Data was analyze on the basis of descriptive statistics. Descriptive analysis involves tabulation of data and description of data collected from the sample on a given research (Sekaran, U. & Bougie, R, 2011). Arithmetic mean, median, maximum, minimum and the standard deviation are some of the main descriptive statistics apply in data analysis.

3.7. Description and Measurement of Variables

This section explains the variables used as dependent and independent (explanatory) variables in the study. The definitions or measurements will be used for these variables are explains the fallowing paragraph.

3.7.1. Dependent variables

The literature suggests indicators of portfolio quality (Gonzalez, 2007) i.e., portfolio at risk over 30 days, portfolio at risk over 90 days, loan loss provision ,write –off ratio and loan loss rate. The first two variables are assumed to measure portfolio at risk and the later three variables are deemed to measure default risk. Following this scenario, the study employed PAR-90 Days proxies for portfolio quality.

Portfolio at risk at 90 days (PAR);It is computed by dividing the outstanding balance of all loans with arrears over 30 days and all refinanced (restructured) loans, by the outstanding gross portfolio as of a certain date (Bulletin, 8, 2012). Since the ratio is often used to measure loans affected by arrears of more than 60, 90, 120 and 180 days, the number of days must be clearly stated (for example PAR -30 days). It shows the portion of the portfolio that is “contaminated” by arrears and therefore at risk of not being repaid. As Jackle (2013) noted that PAR over 30 days is statistically significant driven by its own past trend, size of gross loan portfolio and how

it grows, operational self- sufficiency, loss provisioning and write- off policy, amount of female borrowers and the degree of loan monitoring on the micro side and on macro side indicators (inflation rate, the labor force participation rate and depth of financial system as important.

3.7.2. Independent Variables

Deposits to loan (DTL)

In this study, deposits to loans ratio is computed by dividing voluntary savings over the adjusted gross loan portfolio. The deposits to loans ratio is an important indicator for MFIs that mobilize deposits. For deposit- taking institutions, the deposits to loan ratio measures the portion of the MFIs portfolio funded by deposit (Association of Ethiopian Microfinance Institution Performance, 8, 2012)

Size of MFI

In this study, firm size is defined as natural logarithm of total assets, the proxy for firm size. The size of MFIs implies possession of more resources, which are used to reach more poor people as well as enable the institution to be self- dependent. The empirical evidences have also shown the presence of positive impact on the size of MFIs in firm performance measured by differ aspects. The study by Letenah (2009), reported a positive impact of size on the profitability and sustainability of MFIs in Ethiopia. The results were in line with the results by Coleman (2007) that indicates firm size has a positive impact on yield on gross loan MFIs. In other studies by Ruerd and Schers (2007), Elizabeze (2009) and Crasmus (2013) size of MFIs is reversely related to the financial performance. Therefore, the researcher supposes that the MFI size will be positively/ negatively correlated with loan portfolios quality

Return on asset (ROA)

It is the net operating income less taxes as a percentage of total equity. The ratio indicates MFIs ability to build equity, which includes not only the return on the portfolio, but also all other revenue generated from investments in other operating activities.

Gross national product (GDP)

GNI per capita is gross national income divided by midyear population. John (2008) finding revealed that there is no significant relationship between GDP and performance of MFIs. This finding was in line with the finding by Obsa (2012) that the study did not observe any significant relationship between GNI per capita and MFIs portfolio risks indicators: LLP, PAR-30days and WOR.

Operating expense ratio (OPPEXP)

The operating expense ratio is calculated by dividing all expenses related to the operation of MFI (including all the administrative and salary expenses, depreciation and board fees) by the average gross portfolio. Interest and provision expenses are not included. The ratio provides the best indicator of the overall efficiency of a lending institution. For this reason, the ratio is commonly referred to as the efficiency ratio. It measures the institutional cost of delivering loan services. Gonzaalez (2007) revealed that operating expense ratio have a negative significant relationship with MFI loan portfolio quality as measured by portfolio quality at risk over- 30 days and writeoff ratio. In other study by Anne Norgaard (2011), operating expense positively influence profitability. In light of these findings, the researcher supposes that operating expense will negatively affect MFIs loan portfolios quality.

Leverage (Debt to equity ratio)

The debt to equity ratio is calculated by dividing total liabilities to total equity. Total liabilities include everything the MFI owes to others, including deposits, borrowings, accounts payable and other liability accounts. Total equity is total assets less total liabilities. The debt to equity ratio is the simplest and best- known measure of capital adequacy because it measures the overall leverage of the institution. The debt to equity ratio is of particular on which MFI borrowers also influence how much debt it can safely assure. Abdelghany (2005) finds that highly leverage firms more likely to face portfolio risk as measured by loan loss provision

3. 8 Model Specification

This section covers the operational multiple regression model that are used in the study. The multiple regression model used for this study to determine the factors that determine the loan portfolio quality of MFIs in Ethiopia is explained as follows. The model is adopted from different studies conducted on the same area.

$$LPQ = C + \beta 1ROAit + \beta 2LDRit + \beta 3GDPit + \beta 4LnATit + \beta 5OPEXit + \beta 6LEVit + \varepsilon it$$

Where:

β1, β2, β3, β4, and β5 are coefficients of independent variables

LPQ is a dependent variable

εit;, error term

C: stands for the intercept term which varies across MFIs but constant over time

ROAit: profitability of MFI i at time t

LDRit: Loan deposit ratio of MFI i at time t

GDPit: growth rate of MFI i at ti

LnAT: size of MFI at t

OPE; operating expense at it

LEV; leverage at ti

CHAPTER FOUR

4. DATA ANALYSIS AND DISCUSSION

This chapter deals with the results of study which include descriptive statistics of variables, correlation results for dependent and explanatory variables, model specification tests (tests for the Classical Linear Regression Model assumptions), and finally presentation of panel data regression analysis and discussion of results.

4.1. Descriptive Statistics of variables

In this section the study present the results based on the descriptive statistics for both dependent variable and independent variables. Table 4.1 provides a summary of the descriptive statistics of the dependent and independent variables.

*Table 4. 1****.Descriptive statistics of dependent and explanatory variables***

	PAR90	ROA	DTL	OPEX	LEV	SIZE	GDP
Mean	0.026124	0.026389	0.35578	0.090773	4.323958	8.281921	0.170837
Median	0.01915	0.03	0.29	0.075	2.195	8.196894	0.191
Maximum	0.25	1.2	4.556	0.304	167	9.927381	0.341
Minimum	0	-1.494	0	0.0188	-0.14	-0.61261	-0.093
Std. Dev.	0.033621	0.198116	0.467232	0.059444	16.58809	1.197977	0.123585
Observations	100	100	100	100	100	100	100

Source: E-views 7 output from MFIs financial statement

The mean of *PAR-90 days* is 0.026, whereas the minimum, maximum and standard deviation are 0, percent, 25 percent and 3.33 respectively. The mean shows that on average, the sampled

microfinance institutions had recorded 2.6 percent of portfolio at risk over 90 days over 2005 to 2014.The sampled microfinance institutions have birr 8.28 average total assets and birr 1.19 standard deviation. It implies that existence of significant gap of total assets among microfinance institutions over observation periods. The maximum total asset is birr 9.92 and the minimum is birr -0.612. The maximum value of operating expenses as deflated by total asset *is 30.4* percent and the minimum value is 18.8 percent. Its mean value and standard deviation are 9 percent and 5.9 respectively.

The deposits to loans ration (*DTL*) mean value is 35.5 percent whereas the minimum and the maximum are 0 and 0.45 percent, respectively. Leverage (debt to equity) has 4.323 mean, -0.14 minimum value and 167 maximum value. The maximum value indicates highly leverage microfinance institution and the minimum value shows low leverage. On average, the sampled microfinance institutions are not highly leveraged.

The mean value of real GDP growth rate was 17% indicating the average real growth rate of the country‘s economy over the past 10 years. The maximum growth of the economy was recorded in the year 2008 (i.e. 34.1%) and the minimum was in the year 2010 (i.e. -9.3%) with little dispersion towards the average over the period under study with the standard deviation of 12%. The mean, minimum and maximum values of ROA are 2.6 %, -1.49% and 102 % in the period under consideration

4.2. Correlation Analysis

According to Brooks (2008), correlation between two variables measures the degree of linear association between them. Pearson product moment of correlation coefficient was used to find the association of the independent variables with the dependent variable. Values of the correlation coefficient are always ranged between positive one and negative one. A correlation coefficient of positive one indicates that a perfect positive association between the two variables; while a correlation coefficient of negative one indicates that a perfect negative association between the two variables. A correlation coefficient of zero, on the other hand, indicates that there is no linear relationship between the two variables.

Table 4. 2 ***Correlation matrix among dependent and independent variables.***

	PAR90	ROA	DTL	OPEX	LEV	SIZE	GDP
PAR90	1	-0.57425	0.672541	-0.1456	-0.07766	-0.41544	-0.10761
ROA	-0.57425	1	-0.67374	0.049474	0.022043	0.567737	-0.07201
DTL	0.672541	-0.67374	1	-0.27466	-0.03047	-0.48916	-0.05348
OPEX	-0.1456	0.049474	-0.27466	1	0.005887	-0.43911	0.083338
LEV	-0.07766	0.022043	-0.03047	0.005887	1	-0.01775	-0.19802
SIZE	-0.41544	0.567737	-0.48916	-0.43911	-0.01775	1	-0.1259
GDP	-0.10761	-0.07201	-0.05348	0.083338	-0.19802	-0.1259	1

Source: E-views 7 output from MFIs financial statement

By taking a correlation result which is presented above from 2005 up to 2014 the study period the independent variables to dependent variable which is PAR>90 day. The result indicated in the table above ROA, OPEX,LEV,SIZE and GDP had negative correlation to PAR>90 days with coefficient of correlation -0.57425, -0.1456 ,-0.07766,-0.41544 and -0.10761 respectively.DTL MFIs had positive correlation to PAR>90 days with correlation coefficient of 0.672541. Hence, the results have to be interpreted in reverse: positive sign of the coefficient means negative linear relationship with loan portfolio quality and conversely.

4.3. Tests for the Classical Linear Regression Model (CLRM) Assumptions

To make the data ready for analysis and to get reliable output from the research, different tests was done. From those different tests, the five most critical assumptions related to classical linear regression model (CLRM) are the most

critical on econometric analysis. Accordingly, the tests of CLRM assumptions are presented below.

4.3.1 Test for average value of the error term is zero (E (ut) = 0) assumption

The first assumption required is that the average value of the errors is zero. In fact, if a constant term is included in the regression equation, this assumption will never be violated. Therefore, since the constant term was included in the regression equation, the average value of the error term in this study is expected to be zero.

4.3.2 .Test for homoscedasticity assumption (Var (ut) = σ2)

The assumption of homoscedasticity assumes that, het variance of the errors is constant. If the errors do not have a constant variance, they are said to be heteroscedasticity (Brooks, 2008). To test this assumption both white test were used to check either heteroscedasticity problem present or not. So that, the following table 4.3 present test of heteroscedasticity.

Table 4. 3 Heteroscedasticity Test whites

Heteroscedasticity Test: White

F-statistic	1.331233	Prob. F(27,50)	0.1878
Obs*R-squared	32.62123	Prob. Chi-Square(27)	0.2099
Scaled explained SS	20.30744	Prob. Chi-Square(27)	0.8176

Source; Computed from Eviews result

4.3.3. Test for Autocorrelation

The other assumption of regression model assumes that there is no pattern in the errors or disturbance terms i.e. the covariance between the error terms over time or cross- sectional is zero (Brook, 2008, p 139) this is called autocorrelation. One ways that autocorrelation is detected is

using Durbin Watson (DW) test, the first order auto correlation test, that is the relationship between error term and its immediate previous value. Accordingly to say that there is no autoc

Correlation, the DW test statistic should be closer to 2.

Table 4. 4 Derbin waston teset rejection and non-rejection

. Durbin Watson test rejection and non -Rejection region

Reject Ho: Positive **Autocorrelation**	Inconclusive	Do not reject Ho: **No Autocorrelation**	Inconclusive	Reject Ho: Negative **Autocorrelation**

0 ***DL*** ***Du*** ***2*** **4-*Du*** **4-*dL***

The study used the dL and dU values for 100 observations as approximation of 100 observations. As per the DW table for 100 observations with 6 variables at 1% level of significance, the dL and dU values are 1.378 and 1.717 respectively. Based on Eviews 7 result the DW values for PAR >90 DAYS for 100 observations was 1.5353 The DW value lies between 1.378 and 2.283. Hence, there was no evidence of autocorrelation.

4.3.4. Test for absence of series multicollinearity assumption

Multicollinearity is an assumption of a linear relationship between explanatory variables that creates biased regression model. This problem occurs when the explanatory variables are highly correlated with each other (Brook, 2008). Kennedy (2008) noted that the problem of correlation between explanatory variables exists when coefficient of correlation among the variables are greater than 0.70. As illustrated below in table 4.5, frequency of return on asset in microfinance

institutions has a correlation coefficient of 0.567737 which is relatively higher than the other variables coefficients; still it is less than 0.70. It can be said that the problem of serious multicollinearity had not existent.

Table 4. 5 ***correlation matrix between explanatory variable***

	PAR90	ROA	DTL	OPEX	LEV	SIZE	GDP
PAR90	1	-0.57425	0.672541	-0.1456	-0.07766	-0.41544	-0.10761
ROA	-0.57425	1	-0.67374	0.049474	0.022043	0.567737	-0.07201
DTL	0.672541	-0.67374	1	-0.27466	-0.03047	-0.48916	-0.05348
OPEX	-0.1456	0.049474	-0.27466	1	0.005887	-0.43911	0.083338
LEV	-0.07766	0.022043	-0.03047	0.005887	1	-0.01775	-0.19802
SIZE	-0.41544	0.567737	-0.48916	-0.43911	-0.01775	1	-0.1259
GDP	-0.10761	-0.07201	-0.05348	0.083338	-0.19802	-0.1259	1

Source: E-views 7 output from MFIs financial statement

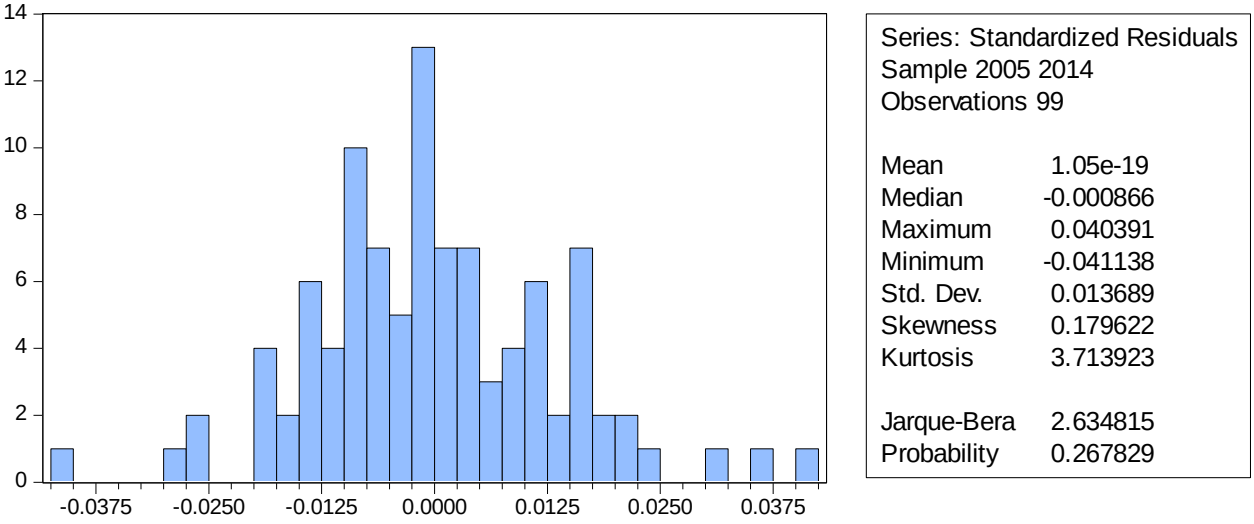
4.3.5 Normality test

Normality, the most fundamental assumption in data analysis, refers to the shape of data distribution for an individual metric variable. Normality is tested using graphical and statistical tests.

As shown in the graph 4.2 below kurtosis approaches to 3 (i.e. 3.7), and the Bera-Jarque statistic p-value was not significant even at 5% significance level as per the P values shown in the histogram below, has a P-value of 0.26 Hence, the null hypothesis that is the error term is normally distributed should not be rejected and it seems that the error term in all of the cases

follows the normal distribution. So, the residuals are normally distributed in this study, concluded that there is no the problem of normality on models.

Figure 4.2 Graphical Test of Normality Using Histogram



4.4. Model Selection; Fixed Effect versus Random Effect Models

As noted in Brooks (2008), there are two panel data estimator approaches that can be employed in financial research: fixed effects model and random effects model. The fixed effect regression model i s t he model to use when researcher wants to control for variables that differ between cases but are constant over time. It allows using the changes in the variables over time to estimate the effects of the independent variables on de pendent variables (Li Yuqi, 2007). It allows using the variation between cases to estimate the effect of the omitted independent variables on de pendent variable. In contrast, if have reasons to believe that some omitted variables may be constant over time but vary between cases and others may be fixed between cases but overtime, then can include both types by using random effects (Li Yuqi 2007).

For choosing the best way for da ta analysis running the Hausman test distinguishes the appropriate model. The Hausman test checks a more efficient model against a less efficient but

consistent model to make sure that the more efficient model also gives consistent results (Li Yuqi, 2007).

According to Brooks (2008), if the p-value for Hausman test is less than 5%, this shows the fixed effects model is appropriate than random effects model. According to Table 4.7 below, the Hausman specification tests shows that the model has a p value of (0.0082). This indicates that The fixed effect model is preferred. Therefore, in this study fixed effect model was used to test the effect of capital structure on MFIs profitability.

Table 4. 6Hausman test for Fixed, Random Effe*ct*

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	17.316222	6	0.0082*

Source; Computed from Eviews resul

**Statistically significant in 1%*

4.5. Result of regression analysis

4.5.1 Regression analysis between dependent and explanatory variables

As shown in chapter three, the model used to find out and explain the association between the dependent variable and the independent variables was:

$$\mathbf{LPQ = C + \beta 1PRit + \beta 2LDRit + \beta 3GDPit + \beta 4LnATit + \beta 5OPEXit + \beta 6LEVit + \varepsilon it}$$

Where:

ROAit: profitability of MFI i at time t

LDRit: Loan deposit ratio of MFI i at time t

GDPit: growth rate of MFI i at ti

LnAT: size of MFI at t

OPE; operating expense at it

LEV; leverage at ti

Under the following fixed effect regression output the beta coefficient shows positive and negative values. Beta coefficient indicates the level of influence of independent variables over dependent variable. The P-value indicates at what percentage or precession level of each variable is significant. R_2 values indicate the explanatory power of the independent variables over dependent variable. Therefore, the next part discusses the output of fixed effect model in detail.

As the below table 4.7 shows, the fixed effect panel data regression model was implemented to identify the relationship between the dependent variable and the independent variables.

Table4. 7 **Results of the fixed effect panel data regression analysis**

Dependent Variable: PAR90
Method: Panel Least Squares
Date: 05/17/19 Time: 08:02
Sample: 2005 2014
Periods included: 10
Cross-sections included: 10
Total panel (balanced) observations: 100

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.063806	0.043598	1.463522	0.1471
ROA	-0.016010	0.020581	-0.777872	0.4388

DTL	0.034481	0.009570	3.602831	0.0005
OPEX	0.039500	0.096312	0.410120	0.6828
LEV	-0.000204	0.000156	-1.304855	0.1955
SIZE	-0.005503	0.004679	-1.175938	0.2429
GDP	-0.038967	0.021286	-1.830680	0.0707

Effects Specification			
Cross-section fixed (dummy variables)			
R-squared	0.570525	Mean dependent var	0.026124
Adjusted R-squared	0.493833	S.D. dependent var	0.033621
S.E. of regression	0.023920	Akaike info criterion	-4.482545
Sum squared resid	0.048063	Schwarz criterion	-4.065718
Log likelihood	240.1273	Hannan-Quinn criter.	-4.313848
F-statistic	7.439164	Durbin-Watson stat	1.535332
Prob(F-statistic)	0.000000		

The R^2 values indicate that the explanatory power of the model and adjusted R^2 value which takes into account the loss of degrees of freedom associated with adding extra variables were inferred to see the explanatory powers of the models. As the regression result described in table

4.6, the R-squared statistics and the adjusted-R squared statistics of the model are 57.01% and 49.38% respectively. This indicates that the changes in the independent variables (return on asset, deposit to loan, operating expense, leverage, size of microfinance, and GDP) collectively explain 57.05% of the changes in the dependent variable PAR>90 days as a proxy of loan portfolio quality and the remaining 42.95% of changes was explained by other variables which are not included in the model. Thus these variables collectively, are good explanatory variables of the loan portfolio quality of microfinance institutions in Ethiopia. Prob (F-Statistic) 0.000000 indicates strong statistical significance, which enhanced the reliability and validity of the model.

The value of beta in regression model indicates that the level of each coefficient of explanatory variable influence on the dependent variable positively or negatively. Moreover the P-value of each explanatory variable indicates the percentage level of each variable is significant or not. In view of the results presented in table 4.6, DTL has positive and statistically significant

determinant of PAR >90 day a proxy of loan portfolio quality at 1% level of significance. On the other side return on asset, leverage and size of MFIs have negative and statistically not significant determinant of PAR >90 days as a proxy of loan portfolio quality at 1%. GDP has negative and statistically significant determinant of PAR >90 days as a proxy of loan portfolio quality at 10% level of significance determinant of loan portfolio quality MFIs in Ethiopia.

4.6. Discussion on Regression Results

The preceding section presents the overall results of the study, and this section discusses the general result of each explanatory variables based on fixed effect regression results indicated in the table 4.6 above.

Operating expense; the coefficient for operating expenses as measured by (operating expenses divided by total assets) shows a positive and not significant influence on portfolios at risk over 90 days. The operating expenses ratio provides is not best indicator of the overall efficiency of a lending institution and thus, it measures the institutional cost of delivering loan services. The result argues that the less efficient MFI more likely to reduce portfolios risk. Gonzalez (2007) provide also similar evidence that operating expense ratio have a negative and significant relationship with MFI loan portfolio quality as measured by portfolio quality at risk over- 30 days and write-off ratio. However, Obsa (2012) finds a positive relationship between operating expenses ratio and portfolios risk as measured by write off ratio. The study finds insignificant relationship between portfolios at risk over 90 days and operating expenses ratio.

Return on asset (ROA) has not significant and negative impact on portfolios at risk over 90 days (PAR 90days) .It depicts that a MFI with higher return on asset ratio more tends to have lower portfolios risk. Since the return on asset is a proxy for profitability, therefore, a profitable MFI has capacity to reduce loan risks via hiring qualified employees, using the available technology, in designing an effective control over loan products and continuously follow up its clients. A portfolio at risk over 90 days (PAR 90 days) is also adversely related to return on asset but it is not statistically.

Deposit to loan; The positive and significant coefficient on gross loan portfolios to total asset (GLP/TA) with loan portfolio at risk over 90 days argues that MFI with more diversified loan portfolios is lower likely to have portfolios risk. A MFI with high proportion of loan portfolio to its total loan is more likely to have lower loan portfolio risk because the magnitude of loans default decreases with the size of diversified portfolios.

Economic Growth (GDP): is the most commonly used macroeconomic indicators, as it is a measure of total economic activity within an economy and the study used real GDP growth as a proxy of the macroeconomic environment. The coefficient value of GDP was -0.03 with a pvalue 0.07 this indicated that a growth rate of GDP had negative relationship and statistically significant determinant at 10%signifcant level on loan portfolio of MFIs in Ethiopia. Therefore, this study found that real GDP growth is negatively affect the MFIs financial health in Ethiopia. This result is consistent with the results identified by Shaut and Mill (2011) and inconsistent with Sainz-Fernandez et al. (2015

Size; as the study measured size by taking the natural logarithm of total assets of the MFIs, the coefficient was negative (-0.0055) and was statically insignificant to be encompassed as a significant variable in this study. The result is opposite to prior expectations and also with relative market power theory and scale efficiency theory; this indicates that Ethiopian MFIs has not yet well exploited the benefit of economies of scale. The result is similar with Sima (2013) and opposite to Melkamu (2012), Muriu (2011), Letenah (2009) and Cull et al. (2007). Accordingly, the hypothesis which says, there is a significant relationship between size and profitability of MFIs is rejected. Off course, the real practice in Ethiopia shows that the large MFIs constitute the largest portion of the market share from the industry; this study found that size was not a key determinant of portfolio quality of Ethiopian MFIs.

Leverage; The negative and insignificant coefficient on gross loan portfolios to total asset (with loan portfolio at risk over 90 days argues that MFI with more diversified loan portfolios is lower likely to have portfolios risk. A MFI with high proportion of leverage portfolio to its total loan is more likely to have lower loan portfolio risk because the magnitude of leverage default decreases with the leveraged of diversified portfolios

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

This chapter presents conclusions and recommendations based on the analysis made in previous chapter.

5.1 Conclusions

The main objective of this study was to examine the internal and external factors that demine loan portfolio quality of Ethiopian MFIs. Even though previous studies in relation to MFIs loan portfolio quality are scant, the study reviewed the available studies and used commercial banking theories as a base ground, presuming they are also workable for MFIs. Loan is anticipated to be highly dependent on internal (firm specific) factors, external factors can also contribute to the determine loan quality of a given firm. The internal factors include, deposit to loan, operating expense, return on asset, size and leverage, variables are used under this study. External factors include macro-economic conditions like GDP where used.

To accomplish the stated objective of the study, quantitative research method was adopted. The data for the study were gathered from performance analysis report annual bulletins by AEMFI and MFIs for the internal factors and industrial factor for the selected 10 MFIs; and the macroeconomic factors were extracted from the annual reports of NBE. As per the collected quantitative data, multiple regression analysis was run to test the different hypotheses formulated in the study. The empirical findings of the study provided the following conclusions.

This study examines determinants of MFIs loan portfolio quality as measured by Portfolio at risk over 90-days using 10 years' data of 10 Ethiopian microfinance institutions over the period 2005

to 2014. Based on the fixed effect model ordinary least squares (OLS) the study finds an institution size (LnTA) is negatively and not significantly influences portfolios at risk over 90 days (PAR-90 days),. It implies that large MFIs can operate at low costs due to scale and scope of economies advantages, possess a larger pool of qualified human capital and have a greater chance for strategic diversification. The result suggests that MFIs with long operating life have more portfolios risks. This might be because of lack of strong procedures in screening, monitoring and collection of loan portfolios.

Deposit to loan ratio (DLT) positively and significantly influences portfolios at risk over 90 days (PAR 90 days). High ratio of deposit to loan implies liability to the institution. In other ways, an institution with high deposits volume would have more capacity to provide financial services. The negative and not significant coefficient on leverage loan portfolios with loan and PAR over 90 days of ratio argues the MFI with more diversified loan portfolios would less likely to have portfolios risk. Return on asset (ROA) has not significant and negative impact portfolios at risk over 90 days (PAR 90 days) .It depicts that a MFI with higher return on asset ratio more tends to have lower portfolios risk. Macroeconomic variables, changes in gross national income per capital found that negatively and significantly affects portfolios at risk over 90 days (PAR 90 days) only. This argues as gross national income increases, the risk of loan portfolios declines.

5.2. RECOMMENDATION

The major objective of microfinance institutions is the provision of financial service to the poor people who have no financial service access from banks and cannot provide qualified collateral to get loans. Particularly the institutions empower women entrepreneurs in group by providing loans to them. To do so, the loan portfolios should be secured in order to reach more number of low income group societies in financial services. Unless the loans paid on the maturity or contract date, the institution could not make loan available to others. Accordingly, the

institutions may face default risks. With this fact in mind, the researcher forwards the following recommendations based on the findings.

First, natural logarithm of the total assets found as important not determinant portfolio quality of MFIs. The result shows that larger MFIs have less capacity to reduce the risk.

Therefore, the study recommends that the microfinance institutions should give considerable attention to their loan products as total assets increase to get the advantage of size to reduce the risk. The operating expenses ratio the proxy for efficiency appeared as important determinant. The lower ratio implies more efficiency and vice versa, but the regression result shows a positive sign means as the ratio gets up, the portfolios risk will rise. With this regard, the study recommends that the institution should take into attention to reduce operating expenses and see its effects on loan portfolios quality.

Second, the study found the strong effect of deposit to loan ratio and gross loan portfolios to total asset on loan portfolios quality. Deposit to loan ratio shows positive coefficient suggesting that as the ratio increases, the risk would also increase. Therefore, the MFIs should due enough emphasis while setting the amount and interval period for involuntary savings by borrowers. Gross loan portfolios to total assets reflect assets diversified which recommended in reducing loan risk. This is the advisable device in portfolios management so that MFIs could have a diversified their loan products which would significantly reduce risks.

The coefficient on the return on asset is also hope giving to increase portfolios quality. Therefore, working more to increase return on asset ratio assists to reduce portfolios risk. Overall, macroeconomic variables were not found as major determinants but MFI should not ignore them.

There are important determinant variables suggested in literature but not included in the models of the study, for example, method of lending (group lending, individual lending), management related factors (internal control over loan products), technology, etc. Therefore, further study would use these variables and see their effects on portfolios quality.

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APPENDEX

Audited financial data of MFIS

NO	year	par90	SIZE	opex	LEV	DTL	ROA	GDP
1	2005	0.074	7.127924	0.165	0.011	0.192	-0.051	0.173
1	2006	0.006	7.416982	0.151	0.011	0.179	-0.016	0.201
1	2007	0.017	7.582469	0.113	1.2	0.271	0.03	0.256
1	2008	0.02	7.726221	0.08	1.97	0.19	0.06	0.341
1	2009	0.01	7.926554	0.06	2.2	0.33	0.08	0.191
1	2010	0.044	7.978466	0.04	2.19	0.29	0.03	-0.093
1	2011	0.0222	8.106045	0.0713	0.0188	0.28	0.064	0.051
1	2012	0.012	8.283301	0.077	2.08	0.25	0.075	0.329
1	2013	0.0045	8.378071	0.09	2.15	0.36	0.06	0.087
1	2014	0.0057	8.490424	0.094	2.372	0.32	0.05	0.147
2	2005	0.021	7.50364	0.195	1.5	0.154	-0.021	0.193
2	2006	0.018	7.728825	0.177	1.1	0.132	0.011	0.201
2	2007	0.01	7.859479	0.199	1.7	0.124	-0.078	0.256
2	2008	0.02	7.968501	0.17	1.25	0.11	0	0.341
2	2009	0.04	8.031206	0.2	1.3	0.23	-0.02	0.191
2	2010	0.082	8.081376	0.19	0.77	0.25	-0.01	-0.093
2	2011	0.0173	8.142165	0.1675	1.08	0.16	-0.026	0.051
2	2012	0.008	6.404834	0.16	1.1	0.31	0.013	0.329
2	2013	0.045	7.54266	0.17	1.2	0.32	0.014	0.087
2	2014	0.004	6.56686	0.18	1	0.42	0.05	0.147
3	2005	0.007	8.151553	0.041	4	0.197	0.005	0.193
3	2006	0.023	8.242234	0.041	4	0.136	-0.065	0.201
3	2007	0.25	-0.61261	0.047	-0.14	4.556	-1.494	0.256
3	2008	0.02	8.465449	0.04	0.43	0.1	0.04	0.341
3	2009	0.04	8.585466	0.03	0.4	0.27	0.03	0.191
3	2010	0.03	8.724389	0.03	0.54	0.26	0.04	-0.093
3	2011	0.0264	8.882626	0.0338	1.03	0.29	0.031	0.051
3	2012	0.025	9.083503	0.045	1.6	0.53	0.034	0.329
3	2013	0.0298	9.183117	0.04	1.64	0.76	0.03	0.087
3	2014	0.0294	9.340286	0.032	2.902	0.743	0.08	0.147
4	2005	0.006	8.074388	0.103	9.9	0.272	-0.02	0.193

4	2006	0.019	8.14547	0.083	9.1	0.261	-0.005	0.201
4	2007	0.015	8.394748	0.086	7.1	0.244	-0.013	0.256
4	2008	0.05	8.670329	0.04	11.15	0.12	0.02	0.341
4	2009	0.03	8.70846	0.02	9.4	0.35	0.02	0.191
4	2010	0.066	8.80151	0.05	2.66	0.39	0	-0.0193
4	2011	0.1435	8.867523	0.0512	3.09	0.45	0.014	0.051
4	2012	0.087	9.122216	0.082	4.62	0.53	0.026	0.329
4	2013	0.0173	9.288773	0.07	4.33	0.58	0.03	0.087
4	2014	0.0074	9.433063	0.079	5.835	0.57	0.02	0.147
5	2005	0.002	7.011894	0.304	5	0	-0.085	0.193
5	2006	0.009	7.182172	0.233	5	0	-0.013	0.201
5	2007	0.007	7.45821	0.252	1.3	0	-0.008	0.256
5	2008	0.01	7.635457	0.18	1.22	0	0.07	0.341
5	2009	0.01	7.779146	0.15	1	0.18	0.07	0.191
5	2010	0.014	7.779146	0.16	1.02	0.18	0.07	-0.093
5	2011	0.0059	7.922216	0.1259	0.9	0.16	0.141	0.051
5	2012	0.004	8.093422	0.159	0.0115	0.18	0.23	0.329
5	2013	0.0026	8.28104	0.11	0.0155	0.2	0.07	0.087
5	2014	0.008	7.53867	0.139	1.695	0.346	1.2	0.147
6	2005	0.007	8.772789	0.062	2.1	0.326	0.043	0.193
6	2006	0.005	8.925866	0.05	2.3	0.321	0.045	0.201
6	2007	0.004	9.106247	0.046	2.7	0.35	0.041	0.256
6	2008	0.01	9.294153	0.03	2.2	0.31	0.08	0.341
6	2009	0.03	9.368846	0.04	2.8	0.6	0.06	0.191
6	2010	0.031	9.403673	0.02	2.6	0.6	0.04	-0.093
6	2011	0.014	9.515767	0.0481	2.59	0.7	0.066	0.051
6	2012	0.008	9.641672	0.039	2.58	0.6	0.071	0.329
6	2013	0.006	9.769026	0.04	2.75	0.57	0.06	0.087
6	2014	0.0048	9.927381	0.04	3.167	0.832	0.06	0.147
7	2005	0.029	7.267172	0.135	8	0.048	-0.034	0.193
7	2006	0.02	7.412794	0.127	9	0.043	-0.027	0.201
7	2007	0.013	7.52637	0.125	1.8	0.045	-0.093	0.256
7	2008	0.03	7.634492	0.12	1.17	0.05	0.03	0.341
7	2009	0.03	7.729191	0.16	1.3	0.47	0.01	0.191
7	2010	0.024	7.787862	0.07	1.23	0.44	0.07	-0.093
7	2011	0.0522	7.84438	0.1309	1.16	0.43	0.068	0.051
7	2012	0.023	7.968483	0.122	1.34	0.37	0.076	0.329
7	2013	0.0193	8.149171	0.09	1.78	0.28	0.08	0.087
7	2014	0.0013	7.983141	0.093	1.292	0.339	0.05	0.147
8	2005	0.046	8.265985	0.075	9	0.063	0.011	0.193

8	2006	0.002	8.408491	0.064	1.3	0.053	0.004	0.201
8	2007	0.003	8.706947	0.06	2.5	0.068	0.007	0.256
8	2008	0.03	8.893442	0.04	3.48	0.11	0.04	0.341
8	2009	0.03	8.954794	0.05	3.1	0.49	0.03	0.191
8	2010	0.017	9.142436	0.05	3.14	0.42	0.03	-0.093
8	2011	0.0352	9.22814	0.0502	2.8	0.51	0.054	0.051
8	2012	0.032	9.344196	0.045	2.47	0.58	0.065	0.329
8	2013	0.0277	9.462682	0.05	3.13	0.56	0.04	0.087
8	2014	0.0349	9.659582	0.059	4.112	0.606	0.0004	0.147
9	2005	0	7.287438	0.121	2.6	0.109	-0.03	0.193
9	2006	0.004	7.467415	0.081	2.7	0.11	0.059	0.201
9	2007	0.004	7.567615	0.075	2.2	0.13	0.052	0.256
9	2008	0.002	7.642305	0.08	1.92	0.15	0.07	0.341
9	2009	0.02	7.691458	0.05	2.1	0.26	0.02	0.191
9	2010	0.002	7.723983	0.11	167	0.29	0.07	-0.093
9	2011	0.0019	7.754852	0.1176	1.25	0.29	0.093	0.051
9	2012	0.001	7.80618	0.137	1	0.29	0.065	0.329
9	2013	0.0014	7.923252	0.12	1.35	0.33	0.04	0.087
9	2014	0.135	7.983141	0.126	1.292	0.339	0.05	0.147
10	2005	0.04	8.955147	0.028	3.3	0.236	0.034	0.193
10	2006	0.025	9.017604	0.025	3.7	0.235	0.019	0.201
10	2007	0.004	9.198141	0.029	3.9	0.248	-0.003	0.256
10	2008	0.02	9.266974	0.03	4.01	0.24	0.02	0.341
10	2009	0.05	9.318761	0.03	1.6	0.39	0.03	0.191
10	2010	0.064	9.329857	0.02	3.13	0.41	0	-0.093
10	2011	0.0357	9.432035	0.0188	3.16	0.53	0.019	0.051
10	2012	0.041	9.475816	0.044	3.06	0.61	0.025	0.329
10	2013	0.0588	9.551978	0.05	3.63	0.7	0.0155	0.087
10	2014	0.0082	9.623094	0.047	3.651	0.77	0.03	0.147