

Determinants of Microfinance Profitability: The Case of Selected Micro Finance Institutions in Ethiopia

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Abstract

This study inspected the determining factors of Micro finance profitability based on a panel data set of 12 MFIs operating in the country over the period of 2007-2016. To meet the objective, a quantitative approach was used. Firm-specific as well as macroeconomic variables were involved in the study. Portfolio quality, capital adequacy, breadth of outreach, micro finance size, age and efficiency have been included as company-specific factors. While, Inflation and GDP Growth rate were considered as external or Macroeconomic factors. ROA was used as a surrogate for profitability. Based on the regression result, breadth of outreach and age were found to be significant with a positive coefficient against ROA. Inversely, MFIs' efficiency and portfolio quality were having significant negative correlation with ROA. The other firm-specific factors, size of microfinance and capital adequacy were found statistically insignificant. Moreover, the macroeconomic variables GDP and inflation were found statistically insignificant. Finally, the study suggested that Ethiopian MFIs should take measures to improve their breadth of outreach, portfolio quality, and operational efficiency.

Key Words: *Determinants of Profitability, external variables, internal variables*

1. INTRODUCTION

Micro finance has achieved tremendous success all over the world in improving the livelihoods of the poor, through the provision of micro credit. Such initiatives have been widely sponsored by various organizations viz., the World Bank, United Nations, National Governments and many charitable organizations (NGOs). By engaging in profitable banking practices amongst low income communities, the objective is to assist the active poor cope with risk and take benefit of small income generating opportunities (Banerjee and Duflo, 2009). By easing financial constraints, micro finance is capable of supporting micro and small scale investments from otherwise unrealized market activities while rewarding investment returns (Hilson and Ackah-Baido, 2010).

To facilitate the provision of micro credit services to MSMEs and with the objective of achieving the five year Growth and Transformation Plan (GTP II) to end the acute poverty in the country, the current Government promotes the operation of Microfinance through the enactment of Proclamation 40/1996. Following this proclamation, at present 35 licensed Micro finance service providers are operating across the nation; with total Assets and Equity size of US \$1.12

billion and US \$2.6 million respectively, signifying the sub-sector's immense role in the economy (NBE, 2014/2015).

According to some scholars the overriding goal of MFIs is poverty alleviation. They contend that by enabling the economically active poor to have access to financial services which is denied by the formal financial institutions, therefore, their goal should not be earning profit, they strongly contend that the poverty alleviation goal of the micro finance institutions is more crucial and therefore, must be placed on top of any other goals, due to the vital role that MFIs play in eradicating abject poverty, they should be backed by governments and NGOs in order to achieve their intended goals. Yet, on the other hand, others claim that in order for the firms to offer better and sustainable credit services for large number of poor & combat poverty, they need to be profitable and financially self-sufficient (Robinson, 2001). Supporting this notion, Muriu (2011) and Jorgensen (2012) discussed that the concept of profitability is equally applicable for micro credit institutions due to the fact that commercial MFIs could serve great number of active poor segment of the community by remaining a viable institution with their own resources rather than heavily relying on donor subsidies.

Consistent with this view, to make micro credit a viable source of finance for the larger poor, the present study intended to examine the major factors affecting the profitability of MFIs taking into account some selected MFIs operating in Ethiopia.

1.1 Statement of the Problem

In order for the MFIs to provide sustainable credit services to a large mass of economically poor citizens, they should be sustainable both operationally and financially. Usually, micro finance institutions operating in third world countries were seen as donor reliant institutions where their sustainability and outreach is dependent upon the goodwill of donors not on their own internal resources (Johnson and Rogaly, 1997). Such kind of excessive dependency on donor's aid may create hurdles on the operation of the MFIs because the aid may halt accidentally without any prior notification.

For the Micro Credit firms to achieve level of financial sustainability, they should be profitable. Profitability is a tool for attaining long term survival and capability of the micro finance firms. In the words of Muriu (2011), profitability, at the micro level, is a necessity for individual micro credit institutions to contest each other in the industry and it is inexpensive source of funds for such firms, since it is very difficult for such firms to attract outside source of funds. Profits are also a significant source of equity for the micro credit firms. It is clear that financial viability can be achieved through reinvestment of profits. Most of the time, only MFIs that are capable of generating sustainable earnings could access commercial sources of funding. At the macro level, only a lucrative micro credit is better positioned to overcome adverse events and contribute meaningfully to the stability of overall financial system (Muriu, 2011).

Indubitably, most of the available empirical evidence on profitability of the financial sector centered on the conventional banking sector. For instance, studies by (Flamini, et al., 2009; Garcia Herrero, et al., 2009; and Marccucci and Quagliarello, 2008), are some of them. However, studies on micro finance profitability are scant. Most of the available studies on the micro finance sector concentrated on their sustainability and performance, the available evidence on the determinants of profitability of MFIs is inadequate and not rife as such. Cognizant of this fact, therefore, it would be curious to investigate the factors of profitability of MFIs.

When we see the Ethiopian case, there have been numerous studies made on the operational and financial performance of micro finance sector. For example, Letenah (2009), Alemayehu (2008), and Birhanu (2007) are some of them. Melkamu (2012) and Yonas (2012) also have attempted to identify the determinants of financial and operational sustainability of Ethiopian MFIs. Nonetheless, studies on the determinants of profitability of micro finance in Ethiopia are rare. Sima Gudeta (2013) was the first scholar who tried to investigate the determinants of profitability of microfinance sector in Ethiopia. Majority of the previous studies involved only the internal determinants and give little or no emphasis for external variables and most of them did not painstakingly examine the determinant of profitability of MFIs in Ethiopia. Therefore, the gaps identified above have paved the way for the timeliness of this study on the determinants of profitability of Ethiopian MFIs, which may contribute to achieve their dual goals of sustainability and outreach.

1.2 Research Objectives

In general, the objective of this study is to examine the determinants of Ethiopian micro finance sector profitability. More specifically, the study assumes the following objectives:-

- i) To evaluate the effect of firm-specific variables on micro finance profitability in Ethiopia.
- ii) To study the impact of macroeconomic variables on the efficiency of Ethiopian micro finance sector.
- iii) To offer some suggestions that may point out the dimness of the micro credit institutions (on their way to profitability) so that they may need to take corrective actions.

1.3 Scope and Limitations of the Study

This research involved only limited number of firm-specific and macroeconomic factors of Micro finance profitability. Accordingly, Breadth of Outreach, Portfolio Quality, Efficiency, Capital Adequacy, microfinance Size and Age were among the firm-specific factors included in the study. On the other hand, Inflation and GDP Growth rate were among the macroeconomic variables incorporated in the study. The study didn't incorporate some of the firm-specific factors of micro finance efficiency (profitability) like Average loan size, lending methodology, ownership structure, and type of institutions. Furthermore, some other external variables like: industry concentration, unemployment rate, interest rate, etc. were not involved in the study. The secondary data were collected from a total of 12 MFIs registered by NBE and currently operating in the country for a period of 2007-2016. The MFIs included in the study were: ACSI, AdCSI, DECSI, OCSSCO, OMO, AVFS, Bussa Gonofa, Meklit, PEACE, SFPI, Wasasa and Wisdom.

The investigators were hoping to include all the 35 MFIs which were registered by NBE in 2014, but lack of financial data for consecutive ten years for some MFIs has forced the researchers to include only 12 of the MFIs in the study. Also, lack of financial data for 2017 and 2018 has compelled the researchers to confine the assessment only up to 2016; this in turn has some drawback with regard to the recentness of the study.

2. LITERATURE REVIEW

2.1. Performance Measures of Microfinance Institutions

The success of a firm should be judged both from the perspectives of the firm's objectives or goals and from the industry's average. It is clear that the principal goal of microfinance's credit scheme is to alleviate extreme poverty. Supporting this notion, Johnson and Rogaly (1997) indicated that, in the early years of micro finance operation most prominent MFIs were financed by donor funds that have a poverty eradication goal. Accordingly, the performance of an MFI then was judged on the number of poor it served (outreach) and the positive impact that an the credit program had on the lives of those who get access to micro credit services as compared to those who don't get these services from the institutions (Melkamu, 2012).

Sustainability of an MFI

In the early days of micro finance operation, the debatable issue was whether donor support is necessary in the long term and the issue of sustainability of such institutions came up as well. It can be said that as long as money was given to micro entrepreneurs and a startup support was offered, the long term viability of these institutions is not relevant. This inturn would suggest that the current operation of the MFIs is more important than the long term presence of the institution that stood behind the startup (Sarah, 2011). In order to achieve their overriding goal of alleviating extreme poverty, micro credit institutions aspire to reach as many poor people as possible in the long term. Yet, this outreach is only attained through establishing sustainable and financially sound micro credit institutions (Rosenberg et al., 2009). In the words of Shahidur (1995), sustainability refers to the ability of a Micro finance institution to continually offer credit and other related services in the pursuit of its goals (p.36). Two types of sustainability can be widely known; operational sustainability (OSS) and financial sustainability (FSS).

Operational Sustainability

According to Armendáriz & Morduch (2010, pp. 243-244), a micro credit is operationally self-sufficient (OSS) when the revenues generated from its operation adequately cover its operating expenses. The main source of revenue for a typical micro finance institution includes interest on loans, fees paid by borrowers, income from investment and other services. OSS can be computed as a ratio of operating revenues to expenses as shown below:

$$OSS = \frac{\text{Operating Revenue}}{\text{Financial Expense} + \text{Loan Loss Provision Expense} + \text{Operating Expense}}$$

The cost of mobilizing commercial source of funds is taken as a financial expense of the period under consideration. It includes the interest and fee that the institution pays to commercial banks, shareholders and other investors (CGPA, 2003). Similarly, CGAP (2003) recommended the inclusion of loan- loss provision expenses along side financial and operating expenses.

According to Ledgerwood (1999), loan-loss provision expense is the amount set aside to cover the cost of loans that an MFI do not expect to recover. On the other hand, operating expenses consists of rent expense, staff salaries and benefits, transportation costs and other expenses. Operating revenue is calculated net of subsidy i.e it is a residual, ultimate value after subsidy adjustments are made (Yaron, 1994).

Operational Self Sufficiency ratio is commonly expressed as a percentage. An OSS ratio of 100 percent signify that the institution achieved full operational self-sufficiency (self-reliance of

the MFI on its revenue sources for its operation), while an OSS below 100 percent depicts that the institution does not attained full self-sufficiency, and hence, have to rely on donors funds to continue its current level of operation (Yaron, 1994). OSS is one of the major goals which MFIs strive to attain so that they maintain steady growth and viability in their operations.

Financial Self- Sufficiency (FSS)

Yaron (1994) defined FSS as the ability of an MFI to shield all of its costs on adjusted basis and designates the firm's capacity to operate without any kind of subsidies, including soft loans and grants (Yaron, 1994). FSS ratio adjusts soft loans to its market cost. FSS can be computed as a ratio of revenues to expenses as;

$$FSS = \frac{\text{Adjusted Operating Revenue}}{\text{Financial Expense+Loan Loss Provision Expense+Operating Expense+Expense Adjustments}}$$

As stated by Armendáriz and Morduch (2010) unlike OSS, FSS requires further adjustments to operating revenues and expenses that could well explain the model that the micro finance institution could cover the expenses of its operations with no subsidies and if it were financing its expansion mainly with funds acquired at commercial interest rate. Yaron (1994) identified two types of subsidy adjustments for an MFI: (1) subsidized cost-of-funds adjustment (or adjustment for concessionary borrowing). This type of adjustment encompasses the difference between the costs or expenses that a micro credit institution pays on borrowed funds, and what it would pay if all of its borrowing were valued at commercial rates. Usually, micro credit firms will add the difference to financial expenses. (2) Adjustment for in-kind donation; involves goods and services offered to the MFI at no or below the prevailing commercial rate of interest. Generally, an MFI is subsidy dependent if its FSS ratio falls below 1.0 or 100 percent, i.e., if adjusted cost exceeds its adjusted revenue, the institution is considered subsidy dependent. Thus, it is clear that to remain competitive in the market and to continue serving the large mass of economically active poor clients for a long period of time, Micro credit institutions should adequately cover their costs (both operating & financial expenses). As stated by Rosenberg et al. (2009), MFIs can serve their poor customers best by operating sustainably, rather than by generating losses that require constant infusions of undependable subsidies from donors.

2.2. Determinants of MFIs Profitability

In order for the MFIs to reach large number of poor citizens and alleviate poverty, they should be profitable and financially and institutionally sustainable. The available evidence discusses profitability of a financial institution as a function of firm-and industry-specific as well as macroeconomic variables using return on assets (ROA) and/or return on equity (ROE). According to Dissanayake (2012), variables which are under the direct control of the firm's management or which are influenced by management decisions are called *firm-specific* or *internal variables*.

Such determinant factors as creditrisk provisioning, firm size and age, capital adequacy, and efficiency in the management of operating expenses are some of the internal or firm-specific factors of profitability (Dissanayake, 2012).

On the other hand, the external variables are those factors which are beyond the control of the firm's internal management. These variables include macro-economic and industry-

specific factors which reflect the economic, legal and business frameworks within which the financial institutions operate (Muriu, 2011).

Empirical literatures associated with the factors of MFIs profitability are scarce. The largest portion of previous efforts made on the subject were related to that of commercial banking profitability, and the determinant of Microfinance sector profitability are still not adequately addressed. Yet, there are a few researches who attempted to identify the factors of MFIs profitability. Perhaps early effort to investigate determinants of profitability of microfinance sector was made by Muriu (2011). Using an unbalanced panel data obtained from MIX Database, World Development Indicators, and Heritage Foundations, comprising of 210 MFIs operating in 32 countries from 1997 to 2008 and Generalized Method of Moments (GMM) system, he studied determinants of African Micro finance profitability by employing ROA and ROE as measures of profitability. Accordingly, he concluded that Capital, Size (scale of economy) and freedom from corruption had significant positive correlation with profitability of MFIs. The study also revealed that Credit risk and Efficiency had significant negative association with profitability of African microfinance sector. On the other hand, there was statistically insignificant relation between gearing ratio, inflation, GNI per capita and age of firm with profitability of MFIs.

Similarly, Jorgensen (2012) studied the determinants of profitability in connection with yield on gross profit by taking sample of 879 MFIs all over the world. The data needed for the study was obtained from MIX Database for the year 2009, and used ROA and Profit Margin as proxies' for profitability and gross yield portfolio respectively. His study focused on factors such as outreach, financing structure, expense, revenue, efficiency, quality of portfolio and different peer group comparisons like age, deposit taking, legal status and profit status. Accordingly, the result depicted that number of active borrowers, cost per borrower; deposit and legal status have negative significant correlation with ROA. While GLP, capital to asset ratio, GLP to asset, operating expense to GLP and age of MFIs were having positive and significant impact on ROA. The author concluded that yield on GLP did not have significant impact on profitability; hence, there is no general trend between increase in profitability and increase in interest rate.

In Ethiopia, different researches have been conducted by different scholars on the subject of micro finance. To start from the recent studies; Sima Gudeta (2013) in his study entitled determinants of profitability, an empirical study on Ethiopian MFIs, tried to investigate the major internal and external factors influencing Ethiopian Micro credit firms' profitability using data for 13 MFIs for the period of 2003-2010. Accordingly, the outcome from the regression analysis revealed that age of the Micro credit, which is measured by the number of years an MFI is operating, was found to have a positive statistically significant impact on profitability of Ethiopian MFIs. While, Portfolio Quality and Operational Efficiency were found to have a negative statistically significant influence on profitability; however, GDP, Size, and Capital Adequacy were found to be statistically insignificant factors to influence the profitability of the sector.

In general, as shown in the above paragraphs, studies on the determinants of MFIs profitability revealed contrasting results. Moreover, majority of the studies considered only firm-specific variables and ignored the important macroeconomic factors like inflation, GDP, etc. Again some studies took only narrow observation which can add to the divergence of the findings. OSS or FSS were used as a proxy to measure the performance of the Microfinance sector and they kept muted on profitability parameters like ROA and ROE, most of the studies

came short of giving emphasis in black and white about the importance of being profitable in order to be sustainable MFI and increase in outreach.

In view of all this, therefore, the current study will shade light and minimize the knowledge gap that has been identified in the area of profitability determinants of MFIs in Ethiopia. Especially this study tries to incorporate external factors like GDP growth and inflation (now a days the challenge of developing economies) in the assessment of micro finance profitability in addition to the internal factors and hopefully, this will add some value to the recent need of having this study.

3. METHODS

3.1 Research Design and Approach

As indicated by Kothari (2004), explanatory research design examines the cause and effect relationships between dependent and independent variables. Therefore, since this study examined the cause and effect relationships between profitability and its potential determinants, it mainly employed explanatory research design. In addition, descriptive research design has been used to describe the facts as they are.

The objective to be achieved in the study is a base for determining the research approach for the study. In case, if the problem identified is factors affecting the outcome having numeric value, it is quantitative approach (Creswell, 2003). Therefore, the researchers employed quantitative research approach to see the results of regression analysis with respective empirical literatures on the contributing factors of MFIs profitability. Consequently, the present study used panel datasets for 12 MFIs for a period of 10 years (2007–2016).

3.2 Nature of Data and Instruments of Data Collection

This study used panel data. Panel data has been used since it can take heterogeneity among different units into account over time by allowing for individual-specific variables. Besides, by combining time series and cross-section observations, it gives more informative data. Furthermore, panel data can better detect and measure effects that simply cannot be observed in pure cross-section or pure time series data (Gujarati, 2004).

Accordingly, secondary source of data was used by the researchers since it is less expensive in terms of time and money while collecting. And also, it affords an opportunity to collect high quality data (Saunders et al., 2007). Accordingly, secondary data were obtained from AEMFI published bulletins for each corresponding year, for the MFIs specific variables and from annual reports held by NBE for the macroeconomic variables.

3.3 Sampling Design

This study employed purposive sampling technique to select the required sample MFIs from among the 35 MFIs registered by NBE. Since it is viable in line with time and funds available for this study, the selection criteria settled for the study was first, the MFI has to operate at least for the last ten years under consideration, second, only those MFIs with an available financial performance data for the last consecutive 10 years were considered by the study.

Therefore, for this study data was collected from 12 MFIs operating in the country. The selected MFIs were; ACSI, AdCSI, DECSI, OCSSCO, OMO, AVFS, Bussa Gonofa, Meklit, PEACE, SFPI, Wasasa and Wisdom. Among the 12 MFIs chosen the first five were government

owned as per the order mentioned. Lastly, the researchers strongly believe that a sample size of 12 MFIs is fairly enough to infer about the population since more than one-third of the population has been involved in the study.

3.4 Data Analysis Techniques

As noted by Kothari (2004), data have to be scrutinized as per the purpose of the research plan after data collection. Accordingly, secondary data collected from AEMFIs and NBE was analyzed to determine its suitability, reliability, adequacy and accuracy. Thus, this study employed both descriptive and econometric analysis based on a panel data from 2007–2016 to test the association between profitability of MFIs and the potential variables affecting it. After having gathered the relevant data from diverse sources, it has been checked carefully, coded, and entered in to MS-Excel program; and lastly it was sorted and arranged for analysis. Finally, the data was processed and analyzed through E-views Version 7 software packages.

Various diagnostic tests such as, Heteroskedasticity, autocorrelation, normality and multi collinearity were performed to decide whether the model used in the study is appropriate and satisfy the assumptions of Classical Linear Regression Model (CLRM). Results of the descriptive statistics such as Minimum, Maximum, Mean and Standard Deviation values were reported to describe the characteristics of variables under investigation. Thus, in order to examine the possible degree of Multicollinearity among variables, the Pearson Correlation Coefficient was employed. Moreover, to inspect the influence of each explanatory variable on the profitability of Ethiopian MFIs, the fixed effect regression model was employed. Subsequently, results of regression analysis were presented in a tabular form with the relevant test statistics and then clarification or description of each parameter was given in accordance with the evidence in the literature.

3.5 Description of Variables

Dependent Variable

Studies on MFIs performance rely on accounting profit or cost efficiency indicators based on the efficiency and productivity analysis (Muriu, 2011). Similar to those prior studies, therefore, the current study also used accounting-based profitability indicators. Accordingly, the ROA, which is a measure of ex-post MFI profits, was used as a dependent variable. In the words of (Muriu, 2011), ROA reveals the ability of a Microfinance institution's management to make profit from its assets. While it may be influenced owing to off balance-sheet activities, yet it can be contended that such activities may be inconsiderable in MFIs.

Since an investigation of ROE derisions the risks related to high leverage and financial leverage is frequently determined by regulation, ROA appears as the basic ratio for the assessment of Microfinance sector profitability. Moreover, ROA is more appropriate since MFIs equity in developing countries is abnormally low (Lafourcade et al., 2006) and ROA is a more comprehensive measure of profitability. It is also widely used in the literature, which allows comparison with previous studies. Debt/equity levels also differ considerably between MFIs. Having this crystallized truth in hand, the current study also selected ROA over ROE as a dependent variable for the measurement of profitability of Ethiopian Microfinance sector. ROA is measured as adjusted net operating income net of tax dividend by adjusted average total assets (AEMFI Annual Performance Report, 2012, p. 63).

Independent Variables

Since profitability is supposed to be influenced by both internal (firm-specific) and external variables as in the studies of (Muriu, 2011; Jorgensen, 2012), the present research too categorized the explanatory variables into firm specific (internal) and macroeconomic (external factors). Firm specific factors are those controllable by the internal managerial organ of the firm and those of macroeconomic variables are out of their control that is why they have been called external.

Internal Variables

As it is discussed in the literature most theories of profitability are fetched from the retail banking industry. Theories related to micro finance profitability are rare so that the theories that are formulated to the retail banking industry are in planted to MFIs presuming that they are also workable to MFIs. Firm specific factors involved in the study include: breadth of outreach, financing structure, portfolio quality, operational efficiency, size and age.

(a) Breadth of Outreach

Breadth of outreach refers to the number of poor served by a micro finance institution. Various studies have used the number of active borrowers as a measure of micro finance breadth of outreach (Mersland & Strom, 2009). Normally, the larger the number of borrowers a Microfinance institution has, the better is its outreach. Therefore the present study measured breadth of outreach using market share of number of active borrowers similar to the studies of Muriu (2011) and Jorgensen (2012).

By way of increasing its breadth of outreach (number of active borrowers) an MFI can increase its profitability too, but up to a certain threshold limit, after that point profitability starts to decline with the increase in the NAB this is mainly due to the failure of the Micro credit institutions' management to device rigorous credit management policy (*the problem might be in the form of capacity limitation of management to serve large number of borrowers efficiently*). In line with the above analysis, therefore, the researchers' hypothesized that:

H1: Breadth of Outreach measured by NAB has a significant positive effect on Profitability of Ethiopian MFIs.

(b) Financing Structure

The financing structure measures how much of a micro credit institution's resources (assets) are financed with equity fund (inverse to leverage ratio). To represent Micro finance institutions' capital structure, the present study employed Capital to Asset Ratio (CAR) measured as adjusted total equity divided by adjusted total assets (AEMFI Annual Performance Report, 2012). According to the Signaling and Bankruptcy theories, high equity ratio tips to better profitability because of the signaling effect and lower financial distress. Inversely, the risk return trade off takes on high leverage (more debt financing) leads to higher return (Berger, 1995; Van Ommeren, 2011). Consistent with the Signaling and Bankruptcy theories, therefore, a hypothesis has been formulated which states that:

H2. Capital to Asset Ratio (CAR) has a significant positive effect on Profitability of Ethiopian MFIs.

(c) Portfolio Quality

As it is clearly discussed in different literatures, the quality of loan portfolio an MFI holds is one of the most important determinant factors of profitability. It follows that as the quality of loans that a Micro credit firm holds increases, its profitability would increase too; that is poor loan quality has undesirable impact on profitability and vice versa (Ayayi and Sene, 2010). This association is assumed since an increase in bad loans (default), which does not earn income, obliges micro credit firms to assign a substantial share of their operating profit as a cushion to cover expected loan losses; thus, affecting profitability adversely. This notion is quite consistent with the theory that increased exposure to credit risk is normally associated with reduced firm profitability. Accordingly, to represent the quality of microfinance loan portfolio, the present study calculated and employed Portfolio at risk past due 30 days (PAR>30), similar to the study of Muriu (2011). Therefore, consistent with the discussions made in the foregoing paragraph, the present study hypothesized that:

H3. Quality of loan portfolio as measured by (PAR>30) has a significant negative effect on the Profitability of Ethiopian Microfinance sector.

(d) Operating Efficiency

For a micro credit firm to make effective use of its funds, wise and efficient management of costs and expenses is very important to augment its profitability. As indicated by Gonzalez (2007), lower ratios of operating expenses to GLP suggest efficient management of costs and expenses. Providing micro credit service is a costly business maybe due to high transaction and information costs (Hermes and Lensink, 2007; Gonzalez, 2007). A well-managed MFI that applies best practices can effectively control its operating expenses. Like the previous studies by Muriu (2011) and Dissanayake (2012), operating expense ratio, which is adjusted operating expense divided by adjusted average GLP, has been used as a measure of operating efficiency (AEMFI Annual Performance Report, 2012). Accordingly, based on the discussions made in literature the following proposition has been framed:

H4. Operating efficiency, as measured by the ratio of operating expense to GLP, has negative significant effect on MFIs profitability.

(e) Size

Academicians consent that economies of scale increase up to a certain level of size. However beyond that level, financial institutions become too complex to manage and diseconomies of scale starts to prevail. The effect of size on profitability could therefore be nonlinear. Similar to the study by Amdemikael (2012) the natural logarithm of total assets of MFIs was used as a proxy to size. The study observed that since the dependent variable in the model (ROA) can be deflated by total assets it would be appropriate to log total assets before including it in the model. Since the expected sign of the effect of size on profitability is indeterminate as per the available literatures the formulated hypothesis is:

H5. Size, as measured by the natural logarithm of total assets of an MFI, has a significant positive/negative effect on profitability of Ethiopian MFIs.

(f) Age

According to the literature discussed in the foregoing section, the Age of a micro credit is one of the factors that influence its profitability. Age is designated by the number of years an MFI has been in operation in order to capture learning effect in MFI performance. Thus, based on the available literature the following hypothesis has been formulated:

H6. Age, as measured by the number of years an MFI is in operation, has a significant effect on profitability of Ethiopian MFIs

External Variables

(a) Real GDP

As indicated by Muriu (2011), GDP is the most revealing single indicator of growth in economic development. The quality of a micro credit loan portfolio can be affected by the progress in economic condition. Favorable economic conditions can improve loan quality and thereby enhance the profitability of the firm. Inversely, poor economic conditions can deteriorate the quality of loan portfolio, thereby reducing profitability (Muriu, 2011). Based on the above notion, therefore, a hypothesis has been framed which states that:

H7. Real GDP growth has a positive significant impact on Profitability of Ethiopian MFIs.

(b) Inflation

Inflation is a galloping rise in price. Inflation has a significant negative impact, Athanasoglou, et al. (2008), found inflation and cyclical output to affect the performance of the banking sector negatively. While Pasiourasa and Kosmidou (2007) identified that inflation has a positive impact on the profitability of domestic banks, implying that during the period of their study the levels of inflation were anticipated by domestic banks. This gave the banks the opportunity to adjust the interest rates accordingly and consequently earn higher profits. With regard to foreign banks, inflation triggered a higher increase in costs than revenues as the negative relationship between inflation and foreign banks profits shows. These mixed results can be attributed to different levels of country-specific macroeconomic conditions and expectations concerning inflation rate between domestic and foreign banks (Pasiourasa and Kosmidou, 2007). As per the concepts discussed above, the likely sign of the impact that inflation has on micro credit sector profitability is undecided. Consequently, a hypothesis has been articulated which states that:

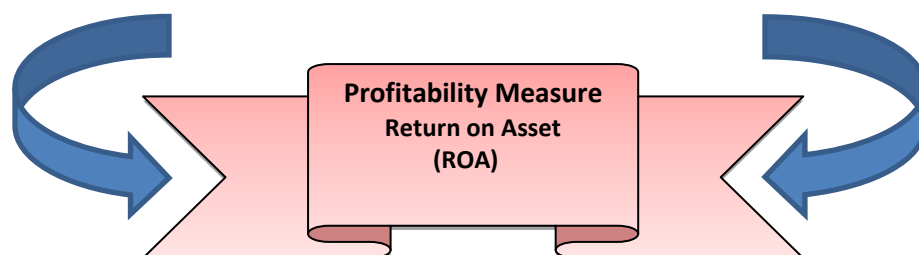
H8. Inflation has a significant positive/negative effect on Profitability of Ethiopian Microfinance Sector.

3.6 Conceptual Framework

The discussions made in the foregoing section clearly indicated that profitability can be affected by both firm specific and macroeconomic factors; accordingly the following conceptual model has been framed to summarize the main focus and scope of the present study in terms of variables included in the study.

Figure 3.1 Conceptual Model





Source: *Developed by the Researchers from the literature*

3.7. Variables and Measurements

The following table summarizes the variables used in the study, their measurement and expected sign along with some empirical evidence thereof.

Table 3.1 Summary of Variables and Measurements

| Variable | Measurement | Notation | Expected Sign | Some Empirical Evidence |
|-------------------------------|---|-----------------|----------------------|---|
| Dependent Variable | | | | |
| Profitability | Operating income (adjusted)/adjusted average total assets | ROA | | |
| Independent Variables | | | | |
| MFI-specific variables | | | | |
| Breadth of outreach | Market share of active borrowers | BOR | Indeterminate | Crabb, (2008) Jorgensen, (2012) |
| Financing structure | Adjusted total equity/adjusted total assets | CAR | Indeterminate | Ayayi, (2009) Muriu, (2011) Jorgensen, (2012) |
| Quality of portfolio | Portfolio at Risk >30 Days/Adjusted Gross Loan Portfolio | PAR>30 | Negative | Muriu, (2011) Dissanayake,(2012) Sima, (2013) |
| Operational efficiency | Adjusted Operating Expenses/Adjusted Average Gross Loan Portfolio | EFF | Negative | Muriu, (2011) Dissanayake,(2012) Sima, (2013) |
| Size | Natural log of total assets | SIZE | Indeterminate | Melkamu, (2012) Muriu, (2011) |
| Age | Number of years of operation | AGE | Indeterminate | Yonas, (2012) Sima, (2013) |
| Macroeconomic Factors | | | | |

| | | | | |
|-----------------|------------------------|-----|---------------|--|
| Economic growth | Real GDP growth (in %) | GDP | Positive | Jordan (2008) Muriu, (2011) Sima, (2013) |
| Inflation | Annual inflation rate | INF | Indeterminate | Kosmidon, (2007) Athanasoglou, (2008) Muriu, (2011) |

Source: Muriu (2011), Melkamu (2012), Dissanayake (2012), Jorgensen (2012), Sima (2013), and other literatures used as point of reference for the current study.

3.8 Model Specification

Like Muriu (2011), the current study was also adopted the following general multivariate regression equation to examine the influence of both firm-specific and macroeconomic determinants of MFIs profitability.

$$\Pi_{it} = \beta_0 + \sum_{j=1}^J \beta_j X_{it}^j + \sum_{m=1}^M \beta_m X_{it}^m + \varepsilon_{it}; \varepsilon = V_i + \mu_{it}$$

Where Π_{it} is the profitability of MFI i at time t , with $i=1 \dots T$, β_0 is a constant term; X_{it} is the explanatory variables and ε_{it} the disturbance, with v_i the unobserved MFI-specific effect and μ_{it} the idiosyncratic error. This is a one-way error component regression model, where $v_i \sim \text{PIN}(0, \sigma^2)$ and independent of $\mu_{it} \sim \text{PIN}(0, \sigma^2)$. The X_{it} 's are grouped into MFIs-specific X_{it}^j and macroeconomic variables X_{it}^m .

Therefore, the above general multivariate regression equation was worked out to suit the study in hand, therefore the modified regression equation for this study is:

$$ROA_{it} = \beta_0 + \beta_1 NAB_{it} + \beta_2 CAR_{it} + \beta_3 PAR_{it} + \beta_4 EFF_{it} + \beta_5 SIZE_{it} + \beta_6 AGE_{it} + \beta_7 GDP_{it} + \beta_8 INF_{it} + \varepsilon_{it}$$

Where;

ROA_{it} = Return on asset for MFI i at time t

NAB_{it} = Market share of active borrowers for MFI i at time t

CAR_{it} = Capital adequacy ratio for MFI i at time t

PAR_{it} = Portfolio quality of MFI i at time t

EFF_{it} = Operating efficiency for MFI i at time t

$SIZE_{it}$ = the natural logarithm (ln) of total asset for MFI i at time t

AGE_{it} = Age of MFI i at time t

GDP_{it} = Real GDP growth for MFI i at time t

INF_{it} = Inflation rate for MFI i at time t

ε_{it} = the error term

4. RESULTS AND DISCUSSIONS

4.1 Document Analysis

As stated above, the objective of this study was to examine the internal and external factors influencing the profitability of MFIs in Ethiopia. To achieve the objectives sought, secondary data related to the internal variables were gathered from the performance analysis reports of the Association of Ethiopian Microfinance Institutions (AEMFI). On the other hand, data related to

macroeconomic variables were obtained from the annual reports of NBE. The following section presents the results for the tests of Classical Linear Regression Model (CLRM) assumptions, the descriptive statistics, the correlation analysis between the dependent and independent variables and the outcomes of the panel data regression analysis respectively.

Test Results for the Classical Linear Regression Model Assumptions

(i) Test for Heteroskedasticity

One of the basic assumptions of the Classical Linear Regression Model (CLRM) is the variance of the error term is homoscedastic, that is the probability distribution of the disturbance term remains same for all observations. That is the variance of each u_i is the same for all values of the explanatory variables (Andren T., 2007, p.91). However, if the disturbance terms do not have the same variance, this condition of non-constant variance or non-homogeneity of variance is known as heteroskedasticity (Bedru and Seid, 2005).

As shown in table 4.1 below, both the F-statistic and Chi-square version of the test statistic provide the same conclusion that there is no evidence for the presence of hetroskedasticity, since the p-values are in excess of 0.05.

Table 4.1 Hetroskedasticity test: White

| | | | |
|---------------------|----------|----------------------|--------|
| F-statistic | 0.631250 | Prob. F(44,75) | 0.9498 |
| Obs* R-squared | 32.43005 | Prob. Chi-square(44) | 0.9013 |
| Scaled explained SS | 66.09700 | Prob. Chi-square(44) | 0.0172 |

Source: Output from E-views 7

(ii) Test for Autocorrelation

To examine the factors affecting profitability of Ethiopian micro finance sector, a total of 120(10*12) observations have been employed in the model. The researchers tested the autocorrelation assumptions that imply zero covariance of error terms. That means errors associated with one observation are uncorrelated with the errors of any other observation. As noted in Gujarati (2004), the prominent test for detecting serial correlation is the Durbin Watson test. Hence, as can be seen in table 4.2 below the Durbin Watson test statistic for this study was 1.57, that it is clearly between the DL and DU which is 1.358 and 1.715 respectively. Thus, there is no evidence for the presence of autocorrelation.

Table 4.2 Autocorrelation test: Durbin Watson

| | |
|---|---------------------------|
| Variables | DW test statistics result |
| All firm-specific and macroeconomic factors | 1.57 |

Source: Output from E-views 7

(iii) Test for Normality

One assumption of Classical Linear Regression Model (CLRM) is the normal distribution of the residual part of the model. As noted by Gujarati (2004), OLS estimators are BLUE regardless of whether the u_i are normally distributed or not. If the disturbances u_i are independently and identically distributed with zero mean and constant variance and if the explanatory variables are constant in repeated samples, the OLS coefficient estimators are asymptotically normally distributed with means equal to the corresponding β 's. Moreover, as per the central limit theorem, if the disturbances are not normally distributed, the OLS estimators are still normally distributed approximately if there are large-sample data (Gujarati, 2004; Andren T., 2007). Thus, since the sample size for this study is large enough, it is approximately considered as normally distributed. This implies that residuals are asymptotically normal in this study.

(iv) Test for Multicollinearity

The term Multicollinearity indicates the existence of exact linear association among some or all explanatory variables in the regression model. When independent variables are multi collinear, there is overlapping or sharing of predictive power (Gujarati, 2004). The multicollinearity makes significant variables insignificant by increasing p-value since increased p-value lowers the t-statistics value. The multicollinearity problem is solved by dropping highly correlated variables (Ahmad and Bashir, 2013) then the result provide more significant variables than before.

As noted by Hair et al. (2006) a correlation coefficient of above 0.9 is cause for series multicollinearity problem. As can be seen in table 4.3 below, correlation between breadth of outreach and size (0.76) is rather higher than the other coefficients yet; still it can be said reasonable. The correlation coefficients for the other variables were lower implying no multicollinearity problem in the variables, making the regression analysis more reliable.

Table 4.3 Correlation matrix of independent variables

| | BOR | CAR | PAR | EFF | SIZE | AGE | GDP | INF |
|------|------------|------------|------------|------------|-------------|------------|------------|------------|
| BOR | 1 | | | | | | | |
| CAR | -0.39967 | 1 | | | | | | |
| PAR | -0.11975 | 0.0055 | 1 | | | | | |
| EFF | -0.54858 | 0.4798 | 0.06346 | 1 | | | | |
| SIZE | 0.76324 | -0.4626 | -0.16391 | -0.70430 | 1 | | | |
| AGE | 0.26111 | -0.3812 | -0.02388 | -0.39309 | 0.65136 | 1 | | |
| GDP | 0.00031 | -0.2261 | -0.14576 | -0.20543 | 0.21972 | 0.34946 | 1 | |
| INF | -0.00014 | -0.0228 | -0.02276 | -0.19628 | 0.27088 | 0.51241 | -0.00140 | 1 |

Source: Output from E-views 7

Model Selection: Random effect versus Fixed effect Models

Econometrics model used to examine the impact of age, breadth of outreach, capital adequacy, efficiency, portfolio quality, size, GDP and inflation on profitability of MFIs in Ethiopia was panel data regression model which is either fixed-effect or random-effect model. The appropriate test used to decide whether fixed effect or random effect model is appropriate was Hausman Specification Test. Thus, Hausman Specification Test identifies whether fixed-effect or random-effect model is more appropriate under the null hypothesis that unobservable individual effects

(u_i) are uncorrelated with one or more of explanatory variables (X_i). As Gujarati (2004) stated, random effect is appropriate when null hypothesis is not rejected whereas fixed effect model is appropriate when null hypothesis is rejected.

For Hausman test, the null and alternative hypotheses are as follows:

Ho: u_i is not correlated with X_i (random - effects model appropriate)

H1: u_i is correlated with X_i (fixed-effects model appropriate)

Thus, to test the null hypothesis, it requires comparing the estimates from the random-effects and the fixed-effects estimator. Random-effect estimator is consistent under the null hypothesis, but inconsistent under the alternative hypothesis whereas fixed-effect estimator is consistent under both the null and alternative hypothesis (Gujarati, 2004). If the estimates for the random-effects estimators are not significantly different from the estimates for the fixed-effects estimator, then the null hypothesis is accepted and concluded that u_i is not correlated with X_i , and therefore the random-effect model is the appropriate model. If the estimates for the random effect estimator are significantly different from the estimates for the fixed-effect estimator, the null hypothesis is rejected and concluded that u_i is correlated with X_i and then the fixed effect model is appropriate (Gujarati, 2004).

As cited in Muriu (2011) fixed effect is further reinforced by the absence of heteroskedasticity in the residuals, therefore under the null hypothesis the two estimates differ systematically as indicated by the P- values in table 4.4. This means that the coefficients of interest are statistically different in the two estimates hence, the random effect solution is rejected both on substantive and statistical grounds, as a result the fixed-effect model is the appropriate model for this study.

Table 4.4 Hausman fixed-random specification test

| Variable | Fixed | Random | VAR (diff.) | Prob. |
|----------|-----------|-----------|-------------|--------|
| BOR | 0.326325 | 0.158679 | 0.006220 | 0.0335 |
| CAR | 0.061084 | 0.041922 | 0.000641 | 0.4490 |
| PAR>30 | -0.223937 | -0.254232 | 0.001456 | 0.4272 |
| EFF | -0.297712 | -0.275187 | 0.002205 | 0.6315 |
| Size | -0.011131 | -0.014880 | 0.000018 | 0.3747 |
| Age | 0.012056 | 0.011949 | 0.000001 | 0.9287 |
| GDP | 0.033126 | 0.058690 | 0.000366 | 0.1814 |
| Infl. | 0.058246 | 0.075430 | 0.000031 | 0.0020 |

Source: Output from E-views 7

4.1.2. Descriptive Statistics

As it is clearly depicted on table 4.5 below, MFIs' profitability was measured using ROA for 12 MFIs for 10 years data (120 observations). Accordingly, during the study period (2007-2016), the average value of ROA was 1.1 percent with maximum and minimum values of 23 percent and -10.9 percent, respectively. This shows that the most profitable MFIs earned 23 cents of profit after tax for one birr investment made on total assets. Inversely, unprofitable MFIs lost 11 cents on one birr investment made on total asset of the firm. The standard deviation statistics for ROA was 5.4 percent which indicates that there was moderate variation in the profits earned by Ethiopian MFIs during the study period.

Table 4.5 Descriptive Statistics

| Variables | Observation | Mean | Maximum | Minimum | Std. Dev. |
|-----------|-------------|----------|----------|----------|-----------|
| ROA | 120 | 0.01117 | 0.23000 | -0.10900 | 0.05422 |
| BOR | 120 | 0.08327 | 0.40900 | 0.00360 | 0.11113 |
| CAR | 120 | 0.40802 | 0.88600 | 0.03300 | 0.17699 |
| PAR>30 | 120 | 0.04406 | 0.23800 | 0.00000 | 0.04401 |
| EFF | 120 | 0.11364 | 0.41800 | 0.01370 | 0.07634 |
| SIZE | 120 | 18.33250 | 22.20078 | 14.66993 | 1.90612 |
| AGE | 120 | 9.08333 | 15.00000 | 3.00000 | 3.12104 |
| GDP | 120 | 0.09890 | 0.13300 | -0.02100 | 0.04211 |
| INF | 120 | 0.16710 | 0.36400 | 0.02800 | 0.11101 |

Source: Output from E-views 7

Looking into the independent variables, starting from breadth of outreach of the selected MFIs, the study revealed that there was considerable disparity in breadth of outreach of the sample MFIs; with the average value of 8.3 percent; the maximum and minimum being 40.9 percent and 0.36 percent, respectively. The quality of loan portfolio measured in terms of PAR>30 days for sample MFIs was on average 4.4 percent, indicating that there was a moderate variation among the MFIs. The finding implies that MFIs with highest PAR>30 days (lower portfolio quality) exhibits higher default risk and hence lower profit compared to MFIs with high portfolio quality. Considering into capital to asset ratio of the selected MFIs it is clearly shown that there was large variation among the MFIs with a mean value of 40.8 which was far above the statutory requirement of 12 percent set by NBE (Sima, 2013); the maximum and minimum values of capital to assets ratio being 88.6 percent and 3.3 percent, respectively. The standard deviation of capital adequacy among the MFIs was 17.7 percent indicating the existence of large variation among the MFIs for the study period. Regarding the efficiency level of Ethiopian MFIs, the result revealed that sample MFIs were having an average efficiency of 11.4 percent, while the maximum and minimum efficiency were 41.8 percent and 1.4 percent, respectively; the standard deviation for efficiency was 7.6 percent implying that there was a huge variation among the MFIs in terms of operational efficiency (operating expense management). Hence, the finding implies that most efficient MFIs have a better trend in managing their operating expenses in relation to their loan portfolio compared to least efficient MFIs. In this study, Size of MFIs was measured by the natural legalism of their total assets. Accordingly, the result indicates that there was wide variation among Ethiopian MFIs with a standard deviation of 190.6 percent. Similarly, there exists wide disparity among MFIs in relation to their age with a standard deviation of 312 percent. Both results confirmed that there were huge disparities among Ethiopian MFIs in terms of both size and age.

Regarding the macroeconomic variable, the result revealed that the mean real GDP growth rate during the study period (2007–2016) was 9.9 percent with maximum and minimum values of 13.3 percent and -2.1 percent, respectively. The standard deviation for GDP was 4.2 percent which is the smallest of all other deviations in the current study, signifying that economic growth in Ethiopia during the study period of 2007-2016 remains fairly stable and the result is more or less in line with the government’s report in relation to the improvement in the economic conditions of the country. Inflation during the study period on average was 16.7 percent with

maximum of 36.4 percent and minimum of 2.8 percent showing unstable price level during the study period.

4.1.3 Results of Correlation Analysis

Looking into the correlation coefficients between the dependent and independent variables shown on table 4.6 below, Breadth of Outreach (BOR) has a positive association with ROA with a coefficient of 0.224, showing that an increase in breadth of outreach enhances profitability of MFIs. CAR was found to have a negative association with ROA indicating that an increase in the ratio of equity to total assets resulted in a decrease in MFIs profitability; this is quite contrary to the signaling and bankruptcy cost hypotheses. As PAR > 30 days and operating expenses to GLP increases, ROA moves in opposite direction which is evidenced by the negative coefficients of -0.26 and -0.40, respectively. This result confirms the prior expectations that the less efficient MFIs and those having low quality assets tend to generate negative profits.

On the other hand, the association between Size and Age of microfinance with profitability (ROA) was tested. Accordingly, the result disclosed that both Size and Age showed up a positive correlation with ROA with a coefficient of 0.402 and 0.553 in that order, portentous that the increase in size (total assets) of MFIs and the increase in the number of years of operation tend to increase profitability of Ethiopian MFIs.

Similarly, the study revealed that both GDP and inflation were having a positive association with Microfinance profitability in Ethiopia with correlation coefficients of 0.249 and 0.425, correspondingly. This suggests that an increase in the consumer price level and improvement in economic conditions have a tendency to upsurge profitability of Microfinance sector in Ethiopia.

Table 4.6 Correlation Coefficients of Dependent and Independent Variables.

| | ROA | BOR | CAR | PAR | EFF | SIZE | AGE | GDP | INF |
|------|---------|---------|---------|---------|---------|--------|--------|---------|-----|
| ROA | 1 | | | | | | | | |
| BOR | 0.2241 | 1 | | | | | | | |
| CAR | -0.2245 | -0.3997 | 1 | | | | | | |
| PAR | -0.2602 | -0.1197 | 0.0055 | 1 | | | | | |
| EFF | -0.4002 | -0.5486 | 0.4798 | 0.0634 | 1 | | | | |
| SIZE | 0.4016 | 0.7632 | -0.4625 | -0.1639 | -0.7043 | 1 | | | |
| AGE | 0.5532 | 0.2611 | -0.3812 | -0.0239 | -0.3931 | 0.6513 | 1 | | |
| GDP | 0.2494 | -0.0003 | -0.2261 | -0.1458 | -0.2054 | 0.2197 | 0.3494 | 1 | |
| INF | 0.4254 | -0.0001 | -0.1492 | -0.0228 | -0.1963 | 0.2709 | 0.5124 | -0.0014 | 1 |

Source: Output from E-views 7

4.1.4. Results of Regression Analysis

Table 4.7 below presents the estimation result of the operational panel regression model used in this study. As shown in the table, the R-squared and adjusted R-squared statistics were 70.19 percent and 64.5 percent, respectively. This implies that the predictor variables included in the model together explained 64.5 percent of the changes in the dependent variable. Which means that, breadth of outreach, capital to asset ratio, operational efficiency, portfolio at risk, size; age of MFIs, GDP and inflation collectively explained 64.5 percent of the changes on ROA. The remaining 35.5 percent of the changes is explained by other factors which are not included in the model. Since the value of R-squared is more than 0.5, one can conclude that the 8 explanatory

factors taken together have good explanatory power of the profitability of microfinance sector in Ethiopia. Therefore, the null hypothesis of F-statistic (the overall test of significance) that the R-squared is equal to zero has been rejected at 1 percent level as the p-value is rightly low. The F-value of 0.000 shows robust statistical implication, which enhances the validity and reliability of the model.

Table 4.7 Regression results for factors affecting profitability of Ethiopian MFIs for the period of 2007-2016

| Variable | Coefficient | Std. Error | t-statistic | Probability |
|--------------------|-------------|---------------------|-------------|-------------|
| C | 0.084316 | 0.113022 | 0.746015 | 0.4574 |
| BOR | 0.326325 | 0.103470 | 3.153824 | 0.0021* |
| CAR | 0.061084 | 0.038062 | 1.604862 | 0.1117 |
| PAR>30 | -0.223937 | 0.089956 | -2.489422 | 0.0144* |
| EFF | -0.297712 | 0.087583 | -3.399193 | 0.0010* |
| SIZE | -0.011131 | 0.006658 | -1.671872 | 0.0977 |
| AGE | 0.0112056 | 0.002289 | 5.266173 | 0.0000* |
| GDP | 0.033126 | 0.085356 | 0.388089 | 0.6988 |
| INFL | 0.000582 | 0.000339 | 1.718051 | 0.0889 |
| | | | | |
| R-squared | 0.701949 | Durbin- Watson stat | | 1.570471 |
| Adjusted R-squared | 0.645319 | | | |
| S.E of regression | 0.032293 | | | |
| F-statistic | 12.39543 | | | |
| Prob(F-statistic) | 0.000000 | | | |

*denote statistically significant variables

Source: Output from E-views7

As shown in table 4.7 above, age, breadth of outreach, efficiency, and portfolio quality were among the firm-specific factors having statistically significant influence on profitability of microfinance sector in Ethiopia, whereas capital adequacy and size were found insignificant. On the other hand, the macroeconomic variables GDP and inflation were found statistically insignificant factors to influence profitability of Ethiopian MFIs.

4.1.5. Discussions

The researchers made the analysis based on the theoretical framework and the results of regression analysis for the collected data. The study included, age, breadth of outreach, capital adequacy, efficiency, portfolio quality and size as firm-specific variables of profitability of MFIs whereas GDP and inflation were used as external factors.

Market share of active borrowers of the micro credit firms was used as a surrogate measure of breadth of outreach in this study. As shown in the above table, Breadth of Outreach has positive and statistically significant effect on ROA (coefficient of 0.326, $p < 0.001$). From the result one can infer that breadth of outreach is one of the key determinants of microfinance sector profitability in Ethiopia. Therefore, the hypothesis which states that there is a significant

relationship between breadth of outreach and profitability of MFIs has been accepted. This finding is consistent with Crabb (2008). Yet, it is in contrast to Jorgensen (2012).

Age of MFI was found directly associated with profitability with a positive coefficient of 0.012 and statistically significant at 1% level ($p < 0.001$). This clearly shows that age is one of the key determinants of Micro finance profitability in Ethiopia. Consequently, the hypothesis that there is a significant association between age of MFIs and their profitability has been accepted. The result is consistent with Sima (2013) and Yonas (2012).

Contrary to Age, Size of the micro credit was having a negative correlation with profitability with a coefficient of -0.011, $p\text{-value} = 0.0977$. The result shows that Size of MFI has statistically insignificant association with profitability measured by ROA. Compared to the previous studies, this finding is consistent with Sima (2013) but inconsistent with Melkamu (2012), Muriu (2011), Letenah (2009), and Cull *et al.* (2007). The result also contradicts the relative market power theory and scale efficiency theory. Thus, the proposition that there is a significant relationship between size and profitability of MFIs has been rejected; and it is established that Size is not among the major factors of MFIs profitability in Ethiopia.

Similarly, the study attempts to examine the relationship between microfinance profitability and PAR>30 (GLP was used as a measure of portfolio quality). Accordingly, the result indicates that PAR>30 was having a significant negative effect on Ethiopian MFIs profitability with a coefficient of -0.224 and $p = 0.01$ statistically significant at 1% significance level; this shows that profitability of MFIs decreases with the increase in PAR>30. The finding is attuned with Sima (2013) and Muriu (2011). Therefore, the proposition that states that there is a significant negative correlation between portfolio quality (PAR>30) and profitability of Ethiopian MFIs has been accepted.

Adjusted total equity to adjusted total assets was used in the study to measure the capital strength of MFIs in Ethiopia. So, the result shows that capital adequacy has positive insignificant effect on profitability of MFIs in Ethiopia (a coefficient of 0.061, $p\text{-value} = 0.11$). As a result, the supposition that, there is a significant association between MFIs profitability and capital adequacy has been rejected because the data botched to support it. The finding is aligned with Sima (2013) yet, dissenting with that of Jorgensen (2012), Muriu (2011) and Ayayi (2009).

Adjusted operating expense to adjusted average gross loan portfolio has been used to measure operating efficiency of MFIs. Accordingly, the finding shows that there is statistically significant correlation between operating efficiency of MFIs and profitability (a coefficient of -0.298 and $p\text{-value} = 0.001$). This hints at that there is inverse relationship between efficiency and profitability of Ethiopian MFIs. The result is in congruence with prior expectations and with X- efficiency theory that, efficient firms tend to earn high profit. Hence, the proposition that, there is a significant negative relationship between efficiency and profitability of MFIs has been accepted. The result is aligned with the findings of Sima (2013); Dissanayake (2012) and Muriu (2011), and disagrees with Jorgensen (2012).

Regarding the relationship between the macroeconomic factor, GDP, and profitability, the finding revealed that GDP has a statistically insignificant effect on MFIs profitability in Ethiopia (with a coefficient of 0.033 and $p\text{-value} = 0.699$). Hence the hypothesis that, there is a significant positive relationship between GDP and profitability of MFIs has been rejected since the data botched to backing it. The result is compatible with Sima (2013), Muriu (2011), and Jordan (2008).

The other macroeconomic factor included in the study was inflation. Inflation, measured by consumer price index, had a positive coefficient of 0.0006 and p-value = 0.0889, is found statistically insignificant variable to influence the profitability of MFIs in Ethiopia. Thus, based on the outcome, the proposition which says, there is a significant relationship between inflation and profitability of Ethiopian MFIs has not been supported. The result is consistent with the findings of Muriu (2011) and Jordan (2008).

5. CONCLUSIONS AND IMPLICATIONS

5.1 Conclusions

Based on the regression result, therefore, breadth of outreach shows a positive significant coefficient with ROA; implying that the increment in the number of active borrowers increases the profitability of Ethiopian micro finance sector. On the other hand, efficiency measured by operating expense to gross loan portfolio disclosed a negative association with ROA suggesting that it is statistically significant as was predicted. Hence, one can infer from this that profitability of MFIs increases with the improvement in the efficiency level and vice versa. Likewise, age of MFIs as measured by the number of years an MFI is under operation showed a positive coefficient and statistically significant variable as it was expected; implying that the more mature the MFI, the higher will be its profitability. Portfolio quality revealed a negative statistically significant coefficient against ROA, suggesting that MFIs holding low quality loan portfolio will suffer from loss or reduced profit.

The other variables considered in the study viz., capital adequacy ratio, firm size, GDP and inflation were found to be statistically insignificant factors to influence profitability of Ethiopian micro finance sector. Capital adequacy of Ethiopian MFIs showed on average a result greater than the statutory requirement set by NBE which is 12%, as the study verifies on average 40% of the MFIs asset was funded by owners' equity but the study found that capital adequacy is statistically insignificant variable to impact profitability of Ethiopian MFIs. Similarly, size was not a significant determinant factor of Ethiopian MFIs profitability for the study period. Finally, the macro economic variables included in this study i.e. GDP and inflation were found to be statistically insignificant factors to influence the profitability of Ethiopian MFIs.

5.2 Managerial Implications

Breadth of outreach (number of active borrowers) is one of the key determinants of profitability for Ethiopian MFIs. Ethiopia is a large country (equal to the size of Spain and France combined) with more than 1.14 million square kilometers land area and more than 90 million population, it has a vast yet unexploited market potential for MFIs operation. The current MFIs served very limited number of clients compared to the available potential micro credit clients in the country. Hence, it is suggested that MFIs should increase their breadth of outreach through different mechanisms: like organizing different awareness creation programs to the target population especially rural economically active citizens by showing how micro credit program change the life of poor people in other developing countries, how micro credit could bring a change on individuals' living standards on those who used the credit wisely. This may be through

electronic Medias like radios, TV etc. or through community awareness upgrading programs in different parts of the country especially through ‘Kebeles’, ‘Edirs’, ‘Mahibers’, etc.

Quality of portfolio is one of the key determinants of profitability of Ethiopian MFIs. In view of this, the management may need to develop a good credit management policy. And through the same mechanisms cited above for breadth of outreach, creating an awareness on the minds of their clients, how prompt payment of loan can contribute for the future expansion of the micro credit programs throughout the country and how it positively contributes for the country’s ambitions of alleviating extreme poverty.

Operational efficiency is the other key determinant factor of profitability of Ethiopian MFIs. In this regard, the management may strive to reduce operating costs (mainly transaction costs) by employing different technologies which can minimize cost like mobile micro banking, curtailing the frequency of installment payments so that increased profit help the MFIs to come out from being dependent on donated funds. In addition, the management of the micro credit firms needs to ensure the efficiency of operations from year to year as learning effect positively affects profitability.

Finally, this study examined only limited internal and external variables by using 10 years data. There are other variables which are not considered in this study like, depth of outreach, lending methodology, type of institutions, ownership structure from internal factors and industry concentration, unemployment rate, interest rate, from external factors. Having further investigation with the inclusion of the above variables might have a better role in identifying other factors which contribute for the profitability of Ethiopian MFIs.

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