ISSN (Print Version) 0975-3931
ISSN (On Line Version) 2278-1277

Profitability Determinants in Microfinance Industry: Case of Zimbabwe (2010-2014)

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1. INTRODUCTION

The traditional known goal of micro financing is to alleviate poverty by ensuring that the poor and some marginalized communities gain access to funding. Credit facilities from microfinance institutions can be made available to different categories of customers and for different purposes. Before 1970s, low income groups and marginalized communities were excluded to accessing credit due to poor incomes as well as high transaction costs associated with issuing small loans. However, since 1970s a vast of microfinance programs have been promoted to meet financial needs of most financially excluded groups (Verlle and Berlage, 2003). Initially the low incomes population was regarded as risky group in terms of the ability to repay loans hence the associated counterparty risk was considered high. Nevertheless, modern microfinance institutions managed to incorporate these highly neglected groups into their businesses and such initiative improved degree of financial inclusion in the Zimbabwean economy.

Micro financing business is increasingly gaining reputation in most parts of developing countries than ever before. The microfinance industry is complementing the banking industry's financial intermediation function by improving credit provision. Since dollarization, the Zimbabwean microfinance industry evidenced growth in MFIs as depicted in Table 1 below.

Table 1: Growth in MFIs in Zimbabwe (2009-2014)

YEAR	NUMBER OF REGISTERED MFIs
2009	95
2010	114
2011	157
2012	150
2013	146
2014	148

Source: RBZ (2015)

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Table 1 indicates an increase in MFIs by 20% during 2009-2010 and this was probably due to increase in market confidence as a result of the newly adopted multiple-currency regime. MFIs increased by approximately 38% and then marginally decreased by 4% during 2010-2011 and 2011-2012 correspondingly. The reduction in the number of microfinance institutions might be a direct result of liquidity glitch that the Zimbabwe economy experienced during 2011-2012. The MFI industry went on to catch the cold during 2012-2013 as evidenced by further reduction in microfinance institutions from one hundred and fifty (150) to one hundred and forty-six (146). During 2013-2014, MFIs slightly improved by 1% as a result of incorporation of new players in the market, including one deposit taking MFI. The above table proved instability in the microfinance industry as shown by continuous ups and downs in the number of MFIs operating in Zimbabwe thus the study intends to identify causes to these variations.

Generally, the existence of MFIs widens consumer choice as well as degree of financial inclusion in the economy. Although MFIs do not pose direct competition to banks, their existence plays a linchpin role in driving loan prices downwards to affordable rates and this then help the economy meet the definition of financial inclusion. This is made clearer if we consider an economy that only operates with few banks and no MFIs. Players in such an economy will have monopoly power and are more likely to price their loans higher than those in an economy that is eked out by MFIs. Growth in the Zimbabwean microfinance industry led to low concentration within the industry and such growth stemmed from, inter alia, initiatives by commercial banks to establish microfinance divisions within their setup and the developments spurred total loans and assets in the microfinance industry as shown in Figure 1.

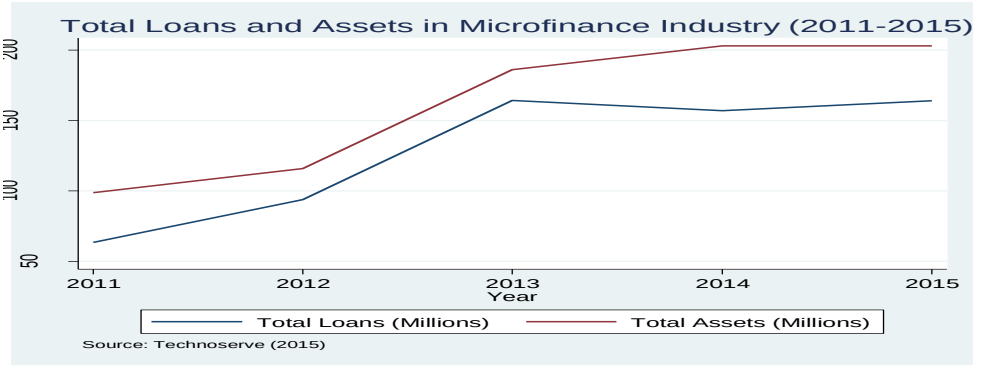

Figure 1: Industry Loans and Assets Growth

The trends are not consistent during the five year time horizon. During 2011-2012, total loans significantly improved whilst total assets increased at lower rate relative to total loans. Differences in growth rates between the two variables might have resulted from rising non-performing loans that deteriorated assets quality in the industry. High non-performing loans weaken assets quality by increasing write-offs which will have negative impact on gross loans. Increase in NPLs also reduces profitability through high loan loss provisions which are directly aligned to NPL levels.

Total assets and total loans trend steeply improved during 2012-2013. The improvement was probably a direct result of reduction in lending rates by most MFIs. This then resulted in increased uptake of loans which finally increased total loans and total assets levels. In reiteration 2011-2013 snapshot suggest that credit provision in the microfinance industry improved drastically and such rise in total loans signifies absolute acceptance of micro financing services by most economic agents in Zimbabwe. The 2011-2013 trends also entails improved access to credit by marginalized groups in the economy.

Total assets trend maintained upward movement but at decreasing rate of change during 2013-2014. In the same period, total loans disbursed significantly deteriorated. The total assets graph went on maintaining upward movement but at decreasing rate again whilst total loans steadily improved between 2014 and the first quarter of 2015. Overly, Figure 1 clearly shows that there is much volatility in total loans trend whilst total assets trend oscillates upwards.

The known hypothesis is that profitability is likely to improve when total loans disbursed increases and Figures 1 and 2 proved this positive association, although the two variables improved at different growth rates.

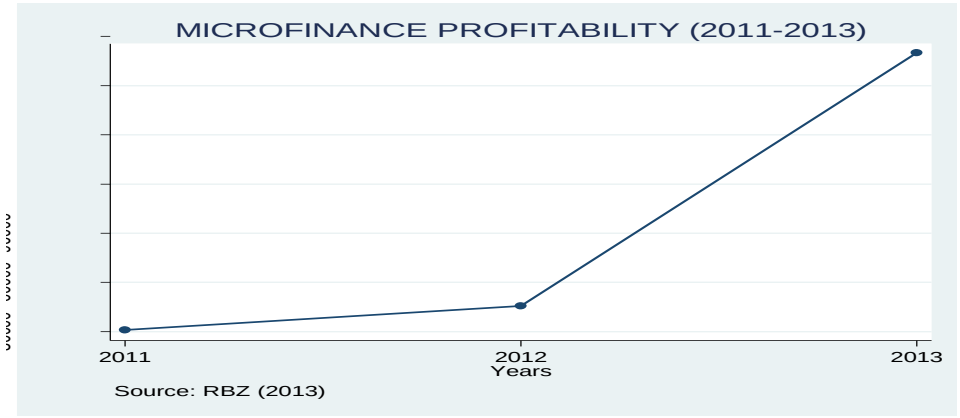

Figure 2: Average Net Profit Growth

According to Figure 2, the microfinance industry recorded passive growth in net profit during 2011-2012 and this might have been due to few microfinance institutions operating in the industry. Slow growth could also be result of high interest rates that acted as a barrier to borrowers in the credit market. Average net profit escalated during 2012-2013 and the trend was consistent with loans growth trend for the same period under review. Steep growth in the net profit trend might also have resulted from reduced interest rates that motivated most potential borrowers to apply for loans hence allowing MFIs to profit from economies of scale through a large clientele base. Figures 1 and 2 suggest that MFIs must profit from volumes unlike from margins as this will compromise meeting micro financing objectives.

In order to ensure the viability of the microfinance industry in Zimbabwe, various regulatory boards were established to govern MFIs in Zimbabwe post and prior dollarization. The most known active association is the Zimbabwe Association of Microfinance Institutions (ZAMFI) which was formed in 1999 as recommended in the Small Enterprise Education Promotion (SEEP) micro enterprise conference in 1997.During the first quarter of 2013, Microfinance Advisory Council (MAC) was formed to succeed the National Microfinance Taskforce that pioneered the National Microfinance Policy in 2006. MAC objectives were, among others, to advise government on microfinance sector policies and promoting professionalism.

According to Figure 2, the microfinance industry looks flourish, in profitability terms, hence it is important to demystify factors influencing the profitability of the microfinance institutions. Figures 1 and 2 formed a similar upward trajectory, thus the study intends to develop an intricate understanding on what exactly influenced the growth in average net profit as depicted in Figure 2?

The objectives of this paper are:

- To identify endogenous and exogenous determinants of profitability in the Zimbabwean microfinance industry after dollarization.
- To develop and estimate profitability model for microfinance institutions operating in Zimbabwe.
- To reveal strategies to improving profitability in the microfinance industry.

2. LITERATURE REVIEW

2.1 Theoretical Literature Review

2.1.1 Theories relating profitability and structure of the industry

The most well know theory relating to profitability is the market power hypothesis. The theory states that profitability is influenced by the market structure of the industry (Gudeta, 2013). From this postulation we can say that the market power hypothesis explains the relationship between profitability and industry specific factors which is an external determinant. The market power hypothesis posits that it is market power that drives bank profitability and the assumed relationship between banking industry concentration and profitability is a positive one. The positive association implies that increase in banking industry concentration raises bank's profitability and that the increase in industry concentration is a possible outcome of collusion by individual firms which will, at the end, create space for themselves to dominate the industry (Katuka, 2015). However collusion is far from happening considering the structure of the Zimbabwean microfinance industry.

There are two versions of the market power hypothesis and these are the relative market power (RMP) and structure-conduct performance (SCP) hypotheses. The structure-conduct performance approach is the notion that industry concentration

improves profits through market power whilst relative market power version is of the view that bank profitability is driven by market share (Gudeta, 2013). Guillen*et al.* (2014) further explained that only firms with large market share and well differentiated products can have market power as well as earn non-competitive profits.

Saleem (2006) emphasized that banks in more concentrated industries can earn more profits than those in less concentrated markets, regardless of their efficiency. The major point being put forward is that efficiency will not be of any importance if a firm is dominating the market because it will always profit due to less competition. Relating all the above postulations to Zimbabwean microfinance industry we can safely say that this theory explain more in terms of the indutsry profitability because most MFIs share small amounts of profits due to high congestion in the industry. However, some microfinance institutions operating in Zimbabwe are very profitable regardless the fact that the industry is less concentrated.

In contrast to the above theory, Katuka (2015) declared that market power exploitation and collusion possibilities are a function of the structure of the market. The author went on to explain that collusion and market power exploitation may only exist if the industry is mainly characterized by imperfect competition where operating firms are price makers. On product differentiation aspect, it is complex to enhance market share and market power due to similarity and oversimplification of banking services that are offered by banks in Zimbabwe (Katuka, 2015). As highlighted before, the Zimbabwean microfinance industry is mainly dominated by credit only MFIs that provides similar financial services to a small market, hence the issue of improving profitability through market dominance is impossible.

To explain profitability under these versions of market power hypothesis, in the Zimbabwean context, MFIs need to understand how to improve market share and market power. The best combination of success factors is product diversification, customer retention and holistic marketing campaign and these are among key ingredients lacking in Zimbabwe. Most clients lack trust with MFIs due to bad reputation that was created by some closed microfinance institutions some years back in 2012. To clear such a negative perception, MFIs must tag along their mission, values and also being abided by laws relating to the industry. It is this initiative that will build good image for MFIs which will in turn improve their market share and hence profitability. Also to improve market share and market power, there is need for MFIs to revise their lending rates downwards in Zimbabwe. Average lending rates being charged by MFIs are high and do not portray microfinance objectives at all.

2.1.2 Theories relating profitability and efficiency

The most known theory that explains profitability-efficiency relationship is the efficiency hypothesis. The theory explains the relationship between size and profitability. Although efficiency was an irrelevant ingredient to improving profitability under the market power hypothesis together with both its versions, it was proved a success factor under efficiency structure hypothesis (ES). Efficiency structure

hypothesis is the theory that supports the view that bank performance is positively related to its efficiency (Saleem, 2006). The two versions to efficiency theory are the X-efficiency and scale-efficiency paradigms.

X-efficiency theory is the notion that efficient firms earn high profits due to low operating expenses (Gudeta, 2013). This version of the theory believes that profits are a direct function of expenses levels in microfinance institutions. In this regard, for a microfinance institution to be categorized as efficient institution, it means that it is minimizing costs in order to maximize revenue.

This theory is more real in economic sense since to generate revenue, institutions always has to incur expenses but what is important is whether the firm is incurring necessary expenses and it is this ability to identify relevant expenses that leads to profit maximization as well as cost minimization. In Zimbabwe, Microfinance institutions such as FMC incur high levels of marketing cost than any other microfinance institution in the industry and this is a relevant expense that helped the organization maintain top-class performance. There are also MFIs that hesitate to incur such levels of marketing expenses and these firms are said to be minimizing both profits and cost which will have a zero impact, if not a negative one on their performance.

Scale-efficiency hypothesis postulates that large institutions earn high profits due to lower unit costs and through economies of scales (Gudeta, 2013). The underlying concept under this theory is that of the benefits of economies of scale. In one way or the other, the theory looks at all aspects of economies of scale that allows MFIs to acquire high market share which will ultimately increase industry concentration and hence profitability. According to the scale-efficiency theory, large firms are most likely to benefit from all facets of economies of scale such as managerial economies of scale. In the same vein, unit costs are spread over a wider base than if it were in the case of a small institution. However not all large banks are efficient as the theory assumes and not all bank size proxy are adequate enough to full explain the size-profitability relationship (Katuka, 2015).

One of the important weaknesses that Katuka (2015) tried to highlight is that of the possibilities of diseconomies of scale coming into play. Generally growth brings prosperity but only to a certain level and any point beyond that add more to cost that revenue. FMC is one of the example that is growing and there shall come a point where that growth will be adding more to costs than to revenue. Although lower costs tend to improve market share which implies high concentration, concentration levels do not have any influence on profitability under the efficiency theory. Closely analyzing the market power hypothesis and efficiency theory we can see that the former theory rejects efficiency as key ingredient to improving profitability while the later also invalidates concentration which is the key driver under the market power theory. However these discussions are theoretical views but in practice both efficiency and market dominance matters for any microfinance institution to be profitable.

2.1.3 The Balanced portfolio hypothesis

The balanced portfolio theory is among less and poorly discussed theories in the banking and finance field. All previous studies copied and pasted the work of Nzongang and Atemnkeng (2006) as the only existing literature relating to this theory and truly there are no other complimenting theories thus the researcher explained this theory from the aforesaid author perspective. The theory asserts that optimum asset balance is direct outcome of rates of return and risk of individual assets making up a portfolio as well as the size of the resulting portfolio. Just like what all other portfolio construction models assumes, the ideal portfolio construction process is that which takes into account risk/return characteristics of every asset making up the portfolio as well as finding the risk/return combination that minimizes risk at the same time maximizing profits.

2.1.4 Theories relating profitability and capital

Previous studies indicated that three main theories explain the relationship between bank capital and earnings and these are the signaling, expected bankruptcy cost and risk-return hypotheses (Katuka, 2015; Obamuyi, 2013). Among these theories, some assumes positive relationship and others assume negative association.

2.1.4.1 Signalling Hypothesis

The term is self-explanatory if one bears in mind which variable is being relating to what factor. For clarity, the theory relates bank capital to earning by assuming that bank capital signals the market value of the bank to outside stakeholders such as investors and customers. High levels of capital communicate high bank value whilst low capital signals low bank value. Heid, Porath and Stolz (2004) expressed that a higher equity value positively signals to the market value of the bank. The reasoning behind this phenomenon is that high equity ratio (equity divided by debt) results in high profits (Berger, 1995).

A variety of justifications can explain how profits are maximised based on signalling theory. The overriding factor is that of degree of financing risk that is brought into play by introducing debt financing. When equity ratio is high, it means that the MFI has equity as main funding component in its capital structure and this reduces the likelihood of the company being liquidated to repay debt obligations thus customer and investor confidence improves as less debt is employed hence high profits. Also high equity ratio implies small or no periodic loan repayment that an MFI must honour hence more cash will be available for business which will enhance profitability.

2.1.4.2 Expected bankruptcy cost hypothesis

This theory also assumes positive connection between profitability and earning. Bankruptcy cost refers to the likelihood of bank failure multiply deadweight liquidation costs which creditors must absorb in the event of failure (Hoffmann, 2011). Shareholders compensate costs borne directly by creditors through higher required rate of return on bank debts. The logic behind this hypothesis is that when expected costs increase as a result of environmental changes that increase the probability of bank

failure, the optimal capital ratios increase in order to reduce the likelihood of failing and thereby lower the expected value of bankruptcy costs (Hoffmann, 2011). Berger (1995) stated that the theory assumes that banks avoid financial ditress by accumulating higher equity when they expect bankruptcy cost to be high.

2.1.4.3 Risk-Return Hypothesis

The risk/return theory explains negative correlation between bank capital and profitability in contrast to signalling and bankruptcy cost hypotheses that assume positive relationship between the two variables. Risk/return hypothesis holds that an increase in risk yields higher returns (Katuka, 2015).The hypothesis opines that profits tend to increase as MFIs increases risk through increased leverage (Debt divided by equity) (Ommeren, 2011).Ommeren (2011) explained that there is a negative relationship between capital and profitability and that if banks expect to increase returns by taking up more risks, through increasing leverage, the equity to assets ratio will be reduced. Increase in risk can be achieved by increasing leverage, that is, the equity to assets ratio.

2.2 Empirical Literature Review

The empirical findings from various authors produced mixed findings pertaining determinants of profitability of MFIs and some of the findings converged to theoretical expectations whilst some diverged. The reason why findings differed is mainly because these studies where performed in different countries at different periods characterized by different forces.

A study by Dissanayake and Anuranga (2012) identified the determinants of return on assets in the microfinance industry of Sri Lanka. A study sample of eleven microfinance institutions was used in Sri Lanka covering from 2005-2010. Study variables that were included in the analysis are return on assets (ROA), operating expenses ratio, personal productivity ratio, write-off ratio, cost per borrower ratio and debt-to-equity ratio. Using multiple regression analysis, the authors found that cost per borrower ratio, operating expenses ration and debt-to-equity ratio were significant predictor variables in driving profitability for MFIs in Sri Lanka. Write off ratio was statistically insignificant implying that it has no impact on return on assets.

Findings indicated that operating expenses ratio, cost per borrower and debt-to-equity ratio negatively correlate with return on assets (ROA). On the other end, the study found that personal productivity positively influence profitability[3]. Though the study made significant contributions in laying the foundation to identifying drivers of return on assets, it was purely limited to examining the idiosyncratic factors yet MFIs in Sri Lanka operate in an environment where outside influence exerts pressure on their performance. The most important to note is that firms do not operate in a vacuum but in an environment where their business processes can be affected by other external factors.

[3]See for example, Athanasoglou*et al* (2008), Cull *et al* (2007) and Cull *et al* (2011). These authors discussed much on the influence of efficiency, in terms of labour productivity and operating expenses management, on return on assets.

The researchers were supposed to capture influence of the external environment so that a well comprehensive model could be produced to equally promote strategy development.

Dissanayake (2012) identified determinants of return on equity, return on assets, operational self sufficiency and profit margin in Sri Lanka using a sample of eleven (11) microfinance institutions. Using multiple regression analysis on operating expenses ratio, personal productivity ratio, write-off ratio, cost per borrower ratio and debt-to-equity ratio, study findings were that cost per borrower, write-off ratio and operating expenses ratio significantly influence return on equity (ROE). This study resolved problems associated by employing ROA. Clearly research findings proved that ROE is very sensitive to changes in write-offs and ROA is not. This is practically true more write offs cost shareholders' capital. Also, of more interest, the study revealed that debt-to-equity ratio only influences ROA but not ROE.

In a close line of research, Gudeta (2013) conducted a study on the determinants of profitability in the Ethiopian microfinance industry by capturing both internal and external variables. Research period covered from 2003-2010 and a total sample of thirteen (13) microfinance institution was analyzed. The study used return on assets profitability proxy. MFI-specific variables that were used in the study where financing structure, portfolio quality, operational efficiency, size and age. The researcher employed only one macroeconomic variable which is economic growth. Multivariate regression analysis was performed and findings revealed that age of MFI positively influence profitability. Findings were similar to those drawn by Mersland and Strom (2009)[4].

Portfolio quality (PaR) and operational efficiency had negative relationship with profitability as expected. Some variables such a size, capital, capital adequacy and GDP were insignificant and clearly the study implied that only MFI-specific factors influences profitability. The major reason why the study reached such a conclusion is because only one macroeconomic variable was analyzed. Hence the study was biased towards supporting internal influence. Also the research topic was to identify internal and external factors yet indutsry-specific factors were not captured in the regressions. External factors are a combination of the macroeconomic factors and industry-specific variables so in this case the researcher was supposed to rephrase the research topic to identifying macroeconomic and MFI-specific determinants of profitability.

A well comprehensive study on determinants of profitability in the microfinance industry was conducted by Muriu (2011). The study analyzed two hundred and thirty (230) across 32 countries and study period was from 1997 to 2008. Among, the model was generalized methods of moments (GMM) which is a dynamic model that capture changes over time. Research findings revealed that FMI performance is mainly driven by firm level specific factors and institutional environment of that country. The study

[4] Also Cull et al (2011) found similar results. However Cull et al (2007) indicated that size is an insignificant predictor variable of profitability

identified that MFIs that efficiently manage their operational expenses are profitable. Main findings also suggested that capital adequacy, financing choice, leverage and loan defaults have much impact on profitability.

In Malaysia, Siti, Nurul and Shahreena (2014) researched on determinants of profitability of lslamic microfinance institutions using the least square method on a set of variables was analyzed covering from 2006 to 2012. Variables were return on assets, cost efficiency, capital ratio, fuel price, GNI per capita and GDP deflator. The study found that cost efficiency, capital ratio, GNI per capita and GDP deflator positively influence return on assets. Fuel price had negative influence on ROA. Athanasoglou, Brissimisand Delis (2005) explained that ROA may be a biased indicator due to its failure to capture off-balance sheet activities and to resolve this problem the researcher should have incorporated more profitability proxies such as return on equity and/or net interest margin variables.

Mersland and Strom (2008) examined influences of corporate governance in MFI using random effect panel data analysis. The study used global dataset that was collected from rating agencies. The research examined effects of board and CEO characteristics, firm ownership type, customer-firm relationship, competition and regulation on MFI performance. Findings indicated that MFI performance improves with local directors, an internal board auditor and female CEO. Justification on improved performance in MFIs with local rather international directors lies upon the fact that they have intricate understanding of the local environment than in the case of international directors.

Most studies views microfinance as subsector in the financial system hence none of the researchers ever thought to identify the influence of changes in political policies on MFIs profitability. The study will use government of national unity (GNU) political stability dummy variable. Another new line of thought that was brought in by this study was to incorporate branch network variable to see whether this has any influence in the resultant profitability of MFIs.

3. METHODOLOGY

3.1 Model Specification

Least square method was applied in running multiple regression analysis on a variety of profitability indicators. Use of multiple profitability measures provides an in-depth understanding on how each of the independent variables influences selected dependent variables, in terms of direction of movement and magnitude. This study adopted multiple regression model used by Katuka (2015), but with variations on other variables that do not relate to the microfinance industry.

Regression models are as follows:

$$ROE = \alpha + \beta 1CER + \beta 2CPB + \beta 3WG + \beta 4DER + \beta 5BNG + \beta 6GNU + \varepsilon \ldots\ldots\ldots\ldots (1)$$

$$ROA = \alpha + \beta 1CER + \beta 2CPB + \beta 3WG + \beta 4DER + \beta 5BNG + \beta 6GNU + \varepsilon \ldots\ldots\ldots\ldots (2)$$

Where:

α = a constant term

β_{it} = the vector of coefficients of explanatory variables

ε = error term

ROA = Return on assets

ROE = Return on equity

CER = Cost efficiency ratio

CPB = Cost per borrower ratio

WG = Write-off growth

DER = Debt equity ratio

BNG = Branch network growth

GNU = Government of National Unity

3.1.1 Dependent Variables

Two performance measures were incorporated in the paper and these are return on assets (ROA) and return on equity (ROE).

Return on assets (ROA)

ROA is the ratio of net income to assets. The ratio indicates profit earned per dollar of assets invested, that is to say, it measures management's ability to generate profit from invested assets. Greater ratio communicates greater ability to earn profit on invested assets whilst lower ratio infers less ability to convert assets into net income. Dissanayake and Anuranga (2012) are among authors that used ROA as profitability measure in their study. ROA is one of the ratios that Microfinance Financial Reporting standards recommend when measuring profitability. Lafourccade*et al.* (2006) recommended the use of ROA basing on the reasoning that it produces better results than ROE because equity is abnormally low in the microfinance industry in Africa.

Return on equity (ROE)

This ratio was proposed as an alternative profitability measure in this paper and it is calculated as the ratio of net income to equity. ROE, together with ROA, were recommended as best measures of profitability in Microfinance Financial Reporting standards. The ratio shows net income generated per dollar of equity capital invested,

hence an indicator of management's ability to add value to the firm. The ratio also measure the extent to which management successfully achieve the prime objective of maximising shareholders' wealth. A greater ROE portray high ability to convert equity into net income and lower ratio indicates low profit per dollar of invested equity capital.

3.1.2 Explanatory Variables

The study employed microeconomic and political stability variables in the analysis.

3.1.3 Microeconomic determinants

The study incorporated different internal variables to gauge the influence of the internal environment of profitability. Understanding microeconomic determinants is of significant in this study because internal environment is the only world that MFIs can control as they operate.

Cost Efficiency (CER)

As explained in profit maximization function in economics, lower cost structure is best platform to improving profitability. The ratio measures the effectiveness of MFIs' in using their resources as well as the ability to keep overhead costs low (Siti, Nurul and Shahreena, 2014). Cost efficiency is the ratio of total expenses to total revenue. The ratio also measures MFI's ability to internally use its assets and liabilities. Higher ratio infer lower profitability and high costs while lower ratio is an indication of high profitability and lower costs hence we expect negative relationship between the cost efficiency variable and profitability.

H5: There is a significant negative connection between cost efficiency and profitability of MFIs.

Debt-to-equity ratio (DER)

The mix of debt and equity in the capital structure influences the resultant MFI profitability. Ratio of debt to equity measures composition of debt and equity in the capital structure. A great deal of authors advocates that capital structures with higher equity are more profitable (Rhyne*et al.,* 1992). In contrary, Muriu (2011) found that MFIs with more debt in their capital structure (Highly leveraged) are more profitable hence the researcher expects either positive or negative relationship.

H6: There is a significant positive/negative connection between leverage/gearing and profitability of MFIs.

Cost per borrower ratio (CPB)

The cost per borrower ratio is a direct way of assessing how much is incurred to issue a loan to single borrower. Cost per borrower ratio is calculated by dividing operating expenses by average number of active borrowers. If the cost per borrower ratio is low, MFI profitability will increase. Conversely, high cost per borrower ratio leads to lower profitability. The ratio measures total value of inputs needed to produce certain level of output (Woller*et al.,* 1999).

H7: There is a significant negative connection between cost per borrower and profitability of MFIs.

Write-offs growth (WG)

Write offs have direct impact on the quality of the gross loan portfolio as well as realized interest income. High write offs leads to poor quality loan book and high write off expenses as well as provisions which reduces profitability. The study expects negative association between write off variable and all profitability measures.

H9: There is a significant negative connection between write offs and profitability of MFIs.

Variables and Hypothesized relationships

Table 2 describes variables that were incorporated in the research model along with hypothesised relationship to profitability.

Table 2: Variables Description

Variables	**Description**	**Expected relationship with profitability**
Dependent Variables		
Return on assets (ROA)	Net income/total assets	N/A
Return on equity (ROE)	Net income/ total equity	N/A
Independent Variables		
Cost Efficiency Ratio (CER)	Total expenses/total revenue	-
Write off Ratio (WOR)	Value of loans written off/ average gross portfolio	-
Debt to Equity Ratio (DER)	Debt/Equity	+/-
Branch Network (BN)	Number of branches	+/-
Cost Per Borrower (CPB)	Operating expenses/ average number of active borrower	-
GNU	Political stability	+/-

4. RESULTS

4.1 Correlation Analysis

The paper tested the existence of multicollinearity problem in our research data by constructing a correlation matrix. The matrix provides an insight on whether variables under investigation move together or in the opposite direction and the degree to which they correlate. Understanding the strength and direction of linear relationship is the major objective for performing correlation analysis. Table 3 showed that there is weak

downhill linear relationship between debt-to-equity ratio (DER) and write offs growth (WG). The study also identified negative linear relationship between debt-to-equity ratio and branch network growth. Weak uphill linear relationship exist between debt-to-equity ratio and cost per borrower ratio.

Table 3 Correlation Analysis for Explanatory variables

	DER	WG	BNG	CPB	CER	GNU
DER	1.000000	-0.228711	-0.593274	0.322365	-0.051849	0.117832
WG	-0.228711	1.000000	0.784983	-0.412781	-0.022958	-0.77968
BNG	-0.593274	0.784983	1.000000	-0.397458	0.196791	-0.730929
CPB	0.322365	-0.412781	-0.397458	1.000000	0.508611	0.225826
CER	-0.051849	-0.022958	0.196791	0.508611	1.000000	-0.058783
GNU	0.117832	-0.77968	-0.730929	0.225826	-0.058783	1.000000

Cost efficiency ratio negatively correlate with debt-to-equity ratio but the relationship is weak. There is positive correlation between political stability dummy variable and debt-to-equity ratio. However the uphill linear relationship is weak. Strong uphill relationship exists between branch network growth and write-offs growth. This is one of the relationships that almost every microfinance institution, from Zimbabwe and outside the country, can witness. Analysis reveals that non-performing loans tend to rise as MFIs increase in size and NPLs usually move in tandem with write off hence positive correlation between write offs and branch network growth.

Growth in write offs negatively correlate with cost per borrower ratio, cost efficiency ratio and government of national unity variables. The downhill between write offs growth and government of national unity is strong than with cost efficiency ratio. Branch network growth negatively associates with cost per borrower and GNU variables whilst cost per borrower ratio positively correlates with cost efficiency ratio and government of national unity proxy. Conclusively, this section revealed that none of the explanatory variables will be dropped in our next analysis as all are within the acceptable range of -0.8 and 0.8. The test gave an insight on how each of the explanatory variables relate to another and the level of strength of interaction.

4.2 Unit Root test

After understanding that research data is free from multicollinearity problem, the research further performed stationarity test. This test helps to identify whether research data has unit root or not. When performing unit root test, the researcher intends to see whether volatilities in variables are permanent or transitory. Temporary shock means that variables will restore to long-run equilibrium and permanent shocks infer the otherwise.

This paper performed stationarity test using Augmented Dickey-Fuller test. Stationary test was done under the following hypotheses:

Null Hypothesis: Variable has unit root

Alternative Hypothesis: Variable do not have unit root.

There are two ways of interpreting presence of unit root in variables in Table 4. The paper interpreted the stationary tests based on probability values as well as critical values and Augmented Dickey-Fuller test statistics.

Tables 4 ADF Unit Root Tests

Variable	ADF Statistic	Critical Value @ 5%	P-value	Order of integration
ROE	-7.960517	-2.915522	0	I(0)
ROA	-6.830138	-2.916566	0	I(0)
WG	-7.574367	-2.916566	0	I(1)
GNU	-7.348469	-2.916566	0	I(1)
DER	-3.153159	-2.915522	0.0284	I(0)
CPB	-5.981123	-2.915522	0	I(0)
CER	-8.595137	-2.915522	0.0000	I(0)
BNG	-7.543278	-2.916566	0	I(1)

To interpret unit root testing results from probability value perspective, if the p(value) is less than 5%, we can reject the null hypothesis and accept alternative hypothesis. But if probability value is more than 5 we cannot reject null hypothesis, rather we accept null hypothesis. Alternative interpretations are based on test statistic and critical values and if the absolute test statistic is greater than the absolute critical value we reject null hypothesis and accept alternative hypothesis. If the absolute test statistic is less than the critical value, we then accept the null hypothesis and reject alternative hypothesis.

Applying the above theories, all variables have p(values) of less than 5% hence we rejected the null hypothesis. However BNG, GNU and WG variables were stationary at all levels after first difference implying that the variables are integrated with order (1). Alternatively, the critical values for BNG, GNU and WG are less than test statistics thus arriving at the same conclusion that we reject null hypothesis and accept alternative hypothesis.

ROA and ROE are our dependent variables and according to unit root test result, both variables are stationary, implying that they will restore long-run equilibrium. Results also proved that DER, CPB and CER are stationary at level meaning that the variables are integrated with order (0). After such thorough testing for unit root, regression analysis was performed and all variables were included since they passed the two tests.

ISSN (Print Version) 0975-3931
ISSN (On Line Version) 2278-1277

4.3 Descriptive Statistics

It is important to understand intrinsic variables characteristics before dwelling on how variable relates with other variables when combined in a model. Results showed that the average debt-to-equity ratio for most MFIs is 1.29, with a minimum record of 0.53 and maximum record of 3.13. Standard deviation statistic suggest that the debt-to-equity ratio for MFIs is less volatile implying less deviation for the mean value hence less risk and variability.

Tables 5 Descriptive Statistics

	BNG	CER	DER	GNU	WG	CPB	ROE	ROA
Mean	16.14286	0.489904	1.291524	0.535714	11382.32	94.54179	0.022159	0.010837
Median	21.00000	0.481043	1.034807	1.000000	8212.510	87.64733	0.025729	0.013527
Max	23.00000	0.859339	3.125699	1.000000	27297.18	209.8124	0.143449	0.050173
Min	3.000000	0.202752	0.525886	0.000000	0.000000	55.73748	-0.456914	-0.110748
Std. Dev.	7.626339	0.130495	0.589186	0.503236	9358.753	26.45952	0.082277	0.028107
Skewness	-0.8684	0.709337	1.024020	-0.143223	0.456580	2.155994	-3.651047	-2.240174
Kurtosis	2.171493	3.549033	3.460269	1.020513	1.890992	9.269598	21.90669	10.00608
Jarque-Bera	8.640092	5.399511	10.28141	9.334315	4.815442	135.1026	958.4944	161.3701
Probability	0.013299	0.067222	0.005854	0.009399	0.090020	0.000000	0.000000	0.000000
Observations	56	56	56	56	56	56	56	56

Table 5 indicated that average ROA is 0.010837 and this tells us that average ROA for the MFI since inception is 1.084%. Although average ROA is positive, the lowest value that was ever recorded is -11.0748% and maximum of 5.0173%. Minimum and maximum ROE statistics are -45.6914% and 14.3449% respectively. Average ROE value is 0.02215and this is far below the maximum ROE. In terms of variability from the mean statistic, descriptive statics concluded that there is greater variability in ROE than in ROA. The standard deviation statistics for ROE and ROA are 0.028107 and 0.082277 respectively.

Concerning write-offs growth, analysis indicates that average write off amounts to $11,382.32 whilst minimum write-off record that ever exists is $0.00 with maximum of $27,297.18. The minimum WG of $0 was the record at inception of the organization and growth in write-off accumulated with time. The standard deviation is large signifying greater variability in write-offs growth rates hence the need to monitor loans from the initial application stage. In terms of growth and service convenience, the

maximum value for FMC is 23 branches implying coherent delivery channel to customers.

Cost per borrower is a significant indication of how much is being incurred to issue a loan to a single borrower and the best position is to have a low ratio hence a trade-off between the aforesaid ratio and profitability. According to descriptive statistics, the average CPB is $94.54. Comparing mean value to maximum value, statistics shows that the average ratio ($94.54) is quite low from the maximum value of $209.81. However there is wide gap between the minimum value ($55.73) and maximum value which signifies the need to maintain low ratios in order to raise profitability.

The average cost efficiency ratio for MFI if 49%. The decision whether this position is favourable or not is only justified by revenues produced by incurred expenses. Some MFIs may make huge investments in expenses that do not produce quick returns but adding value to the organisation in the future thus management must closely analyse the ratio, paying attention to dominating components in MFI expenses. The maximum CER is 85.9% and minimum of 20.3%. Standard deviation statistic detects less variability in cost efficiency ratio. Overly this section gave a snapshot on behaviour and characteristics of all study variables using common descriptive statistics. Now the that the researchers know intrinsic variable characteristics, next analysis was done to have an insight on how each variable relates with the selected profitability measures using regression analysis.

4.4 Regression Estimations

Multiple regression technique was performed using Eviews 7.

4.4.1 Return on Equity Model Estimations.

To objectively measure how MFI profitability is influenced by different factors, the least square method was employed. The overall ROE model is significant at 1% implying greater reliability. R^2 is 0.59131 indicating that 59.131% of fitness can be observed in the sample regression line. The R^2 results also indicates that 59.131% of the variance in return on equity (ROE) is significantly explained by the explanatory variables which are cost efficiency ratio, cost per borrower, debt-to-equity ratio, branch network growth, write-offs growth and government of national unity. The remaining 0.40869 will be explained by other factors that were not incorporated in this paper. The R^2 is also indicating moderate correlation between the variance.

Table 6: ROE Regressions

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CER	-0.282711	0.078594	-3.59709	0.0008
CPB	-0.001312	0.000411	-3.192948	0.0025
DER	-0.019974	0.019531	-1.022655	0.3116
BNGD	-0.000548	0.002546	-0.215335	0.8304
GNUD	-0.023533	0.027783	-0.847012	0.4012
WGD	-1.94E-06	1.63E-06	-1.191668	0.2393
C	0.352706	0.068005	5.18651	0
R-squared	***0.59131***			
Adjusted R-squared	***0.540223***			
Durbin-Watson stat	***1.651394***			
Prob(F-statistic)	***0.000000***			

The Durbin-Watson statistic is used to test for the presence of serial correlation among the residuals. The general rule is that when the Durbin-Watson statistic is close to zero, there is strong positive serial correlation. When the value is close to 4, there will be negative correlation. Guided by the aforesaid rule, the Durbin-Watson statistic is 1.651394 which is close to 2 hence the residuals are uncorrelated.

4.4.2 Relationship between ROE and specified explanatory variables

ROE estimations indicated that there are only two significant determinants of MFIs' profitability and these are cost efficiency ratio and cost per borrower ratio. Study results suggested negative association between ROE and cost efficiency ratio. Findings are in line with theoretical expectations. Such connection means that profitability (ROE) decreases as cost efficiency ratio increases. Similar findings were drawn by Rachdi (2013). Cost efficiency ratio is the found by dividing total expenses with total revenue. Mathematically interpreted, high ratio infers lower profitability and lower ratio is an indication of high profitability and lower costs. If MFIs produce high ratio, it implies that they are incurring more expenses. Cost efficiency ratio is significant at 1% indicating that the variable is very significant.

Cost per borrower variable is significant at 1% and negatively correlate with ROE. High cost per borrower ration erodes profitability and profits available for distribution to shareholders. Negative relationship between cost per borrower and ROE indicates that the later decreases as the former increases. Based on these findings, there is need to maintain low cost per borrower ration in order to raise profitability. FMC can maintain low ratio by ensuring that only necessary expenses are incurred on borrowers. An expense is said to be necessary when the expected inflows overweight out flows and these outflow/inflow figures must be justifiable. In order to justify figure, the organization can predetermine average loan for each portfolio and relate possible profits to per borrower costs.

Debt-to-equity variable have negative influence on ROE but the variable in not significant. The associated probability value of 55.1% indicates that DER poses no effect to MFI profitability. Likewise, branch network variable was insignificant along with GNU. After incorporating significant variables into the regression model, the final model becomes:

$$ROE = \alpha - 0.282711CER - 0.001312CPB + \varepsilon$$

Overly the study concluded that ROE is only driven by MFI-specific factors, particularly cost ratios.

4.4.3 Relationship between ROA and specified explanatory variables

The second profitability proxy that was discussed in this paper is return on assets (ROA). The ratio measures return per dollar of assets, thus regression results explained what determines the level of return on invested assets. Regression analysis was performed by incorporating all study variables that were used in the return on equity model. The model is significant at 1% which indicates that it is a reliable model. The R^2 is 0.566925 signifying that approximately 57% of fitness can be observed in the sample regression line. R^2 also indicates that 56.69% of the variance in return on assets (ROA) is significantly explained by the explanatory variables which are cost efficiency ratio, cost per borrower, debt-to-equity ratio, branch network growth, write-offs growth and government of national unity. The remaining 0.433075 will be explained by other factors that were not incorporated in this paper. The R^2 is also indicating moderate correlation between the variance.

The Durbin-Watson statistic is 2.201917. The value is close to 2 indicating absence of serious correlation in residuals.

Table 7: ROA Regressions

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CER	-0.127056***	0.027728	-4.582246	0.0000
CPB	-0.000276***	0.000145	-1.902271	0.0631
DER	-0.004138	0.006891	-0.600503	0.551
BNGD	0.000556	0.000898	0.619271	0.5387
GNUD	-0.003634	0.009802	-3.370732	0.0713
WGD	-8.25E-07	5.75E-07	-1.434677	0.1579
C	0.106599	0.023992	4.443131	0.0001
R-squared	***0.566925***			
Adjusted R-squared	***0.51279***			
Durbin-Watson stat	***2.201917***			
Prob(F-statistic)	***0.000000***			

Above regression identified negative relationship between cost efficiency ratio and return on assets. Findings are similar to those on return on equity model. Negative association implies that there is trade-off where return on assets ratio decreases as cost efficiency increases. According the model, cost efficiency variable is statistically significant at 1% level. In previous studies, Rachdi (2013) found similar relationship between these two variables.

Another significant determinant, as identified in the ROE model, is cost per borrower ratio. The variable is significant at 1% and negatively affects ROA. Literally, increase in average per borrower costs erodes return that would have been rewarded to assets that generate those returns. This being so, further depletion of these returns, through high cost per borrower ratio, will result in lower ROA since these costs are directly expensed in the income statement hence lower profits after tax.Dissanayake and Anuranga (2012) found similar relationship between ROA and cost per borrower.

Surprisingly, the study detected the influence that the government of national unity had on MFIs profitability. According to the research model, GNU negatively influenced the profitability of MFIs. The results imply that the reform brought more challenges to MFIs than in pre-reform era. The GNU variable is statistically significant at 10%. The final regression model is as follows:

$$ROA = \alpha - 0.127056CER - 0.000276CPB + 0.003634GNU + \varepsilon$$

In contrary to ROE model, ROA regressions proved that profitability is a function of the combination of MFI-specific and political factors.

5.1 Conclusions and Recommendations

The study sought to find determinants of profitability in MFIs operating in Zimbabwe.

- Using time series data for the period 2011-August 2015, results rendered debt/equity ratio, branch network growth and write-offs growth as insignificants determinants of profitability in Zimbabwe. The research revealed that only cost-efficiency and cost-per-borrower ratios significantly drive this profitability proxy.
- The study also suggested that return on assets variable is influenced by a combination of microeconomic and political variables. Variables that were identified to influence ROA are cost-efficiency ratio, cost-per-borrower ratio and political instability variable.
- There is much volatility in total loans in the MFI industry whilst totals assets trends swings upwards.
- Average write-offs were high.
- The study supported X-efficiency hypothesis.

Based on study results, the researcher recommends that:

- MFIs should keep monitoring cost per borrower ratios periodically since the variable directly reduces both profitability proxies.
- Although cost per borrower has negative influence on MFI profitability, management should perform short-term cost benefit analysis to determine whether incurred costs will bring desired benefits in expected time horizon. Such an analysis is important as it may stops management from foregoing activities that embodies great benefits in the long run.
- The researcher roped in government as key stakeholder that influences profitability in MFIs. The study suggested that Zimbabwean government must promote political stability since variable negatively influence profitability of MFIs.

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