

Factors of Credit Risk Handling in Selected Microfinance Institutions of Ethiopia

Idris Ali Yimer



Abstract: *This study examined how certain Ethiopian microfinance institutions manage credit risk. Microfinance institutions are a crucial means of raising substantial funds in developing nations. Secondary data sources were collected from specific microfinance institutions for this investigation. The years 2010 through 2018 were consecutively included in the collected data. The data were analysed using a balanced regression model. Purposive sampling was used to select the sample, and a quantitative research methodology was employed to achieve the study's objectives. The study's target population is the whole Ethiopian microfinance industry. An explanatory research design is used to achieve the study's aim. For analytical reasons, credit risk management is measured as the dependent variable. Moreover, explanatory (independent) factors include the loan-to-deposit ratio, average loan balance per borrower, company development, managerial performance, and total assets. Credit risk is positively correlated with total assets, the loan-to-deposit ratio, management performance, and average loan balance per borrower, as indicated by a regression analysis in EViews 8. The study also recommended that companies enhance their overall asset value and management performance by implementing training and other strategic measures.*

Keywords: *Factors, Handling, Credit Risk, Microfinance, Ethiopia.*

Nomenclature:

ACSI: Addis Credit and Saving Institution
CR: Credit Risk
DCSI: Dede-bit Credit and Saving Institution
DTL: Deposits to loans
DWT: Durbin-Watson Test
FE: Fixed Effect
MF: Micro Finance
MoF: Ministry of Finance
MFIs: Microfinance Institutions
NBE: National Bank of Ethiopia
OCSSCO: Oromia Credit & Saving Share Company
OMO: Omo Micro Finance
RE: Random Effect
TA: Total Assets
FIs: Financial Institutions
ROA: Return on Assets
DW: Durbin Watson
JB: Jarque Bera
NT: Normality Test
RE: Random Effects

I. INTRODUCTION

Financial institutions (FIs) play a crucial role in any economy. Micro-finance institutions (MFIs) are vital sources of economic funding because they are financial institutions (FIs). They also play a crucial role in emerging economies when borrowers lack access to traditional financing markets [3]. Through profitability, the microfinance sector can attain sustainability and long-term viability [12]. By lowering the risk of a financial catastrophe, impressive profits are crucial for reassuring MFIs' stakeholders, including suppliers, borrowers, investors, and regulators [1]. A thriving microfinance industry is more resilient to adverse shocks and significantly contributes to the macro-level stability of the financial system [15]. Addis Credit and Saving Share Company is one of Ethiopia's publicly traded MFIs. The Addis Credit and Savings Institution was established in accordance with Decree No. 40/88 to provide comprehensive support to micro and small business owners in Addis Ababa and the surrounding Oromia region. In addition to 10 branch offices, the company currently operates 126 service delivery locations across the Addis Ababa city administration. Globally, there is an increasing focus on credit risk issues [2]. Inadequate credit risk management will exacerbate MFIs' failures. For all MFI's, managing credit is a critical concern. Many countries struggle with non-performing loans, which prevent businesses from turning a profit. Business profitability is negatively impacted by increased exposure to credit risk [13].

The number of MFIs operating in the country has been increasing yearly, according to the 2009/2010 National Bank of Ethiopia report. For MFIs, managing credit risk is a challenging endeavour, as it involves numerous factors and methods for identifying, assessing, controlling, and mitigating credit risk [11]. Inadequate credit risk management will contribute to MFIs' failure [4]. For all MFI's, managing credit is a critical concern. For several countries, a table of figures is not available. Experiencing non-performing loans, which hinder its ability to generate revenue. Business profitability is negatively impacted by increased exposure to credit risk [16]. Given the benefits of microfinance institutions (MFIs) in terms of deposit-to-loan ratios, average loan balances per borrower, total assets, and management efficiency, the study focused on evaluating MFIs' credit risk and management strategies. The study's empirical results also showed a distinct difference in credit risk between government-owned and privately held MFIs in Ethiopia. The research conducted by [14] and [7] focuses on the growth of microfinance institutions nationwide, specifically in terms of branches, loan amounts, and trade.

Manuscript received on 13 August 2025 | First Revised Manuscript received on 28 September 2025 | Second Revised Manuscript received on 25 October 2025 | Manuscript Accepted on 15 November 2025 | Manuscript published on 30 November 2025.

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II. LITERATURE REVIEW

Risk management is a dynamic process that is best designed during regular times and tested following a risk event, as Nagarajan [3] found in his research on risk management for Mozambican microfinance firms. It requires careful planning and commitment from all stakeholders. It is encouraging to know that with proper portfolio and cash-flow management, risk-related losses can be cut by 25%. building a solid institutional foundation with competent employees and encouraging client discipline through practical stakeholder cooperation.

Furthermore, research on bank performance and credit risk management showed a significant relationship between financial institutions' profitability and their ability to control credit risk (as indicated by loan performance) [6]. asserts that effective management of credit risk enhances performance [5]. A study on the sustainability and profitability of microfinance institutions found that efficacy and efficiency are the main challenges Kenya faces in delivering services. A weak portfolio may be vulnerable to both credit risk and liquidity [10], [15]. According to her research, loan performance is influenced by the credit risk controls that microfinance institutions implement, including credit insurance, customer covenants, loan diversification, customer credit ratings, financial situation reports, and restrictions on further borrowing. Between 2003 and 2009, Ethiopian enterprises were primarily studied in terms of macro-level and firm-specific characteristics, including leverage, operating inefficiency, loan growth, ownership, loan-to-deposit ratio, GDP, inflation, and market interest rate. According to the study, these characteristics had a substantial impact on the credit risk of Ethiopian MFIs throughout the test period.

III. RESEARCH METHODOLOGY

An explanatory study design and a quantitative approach were used to achieve the purpose. The research population consisted of all Ethiopian microfinance institutions as of June 30, 2017. The NBE and the Association of Ethiopian Microfinance Institutions' report (NBE Annual Report) states that, as of June 30, 2017, there were 33 microfinance institutions. The sampling frame used to create the sample comprises microfinance institutions that have been in operation in Ethiopia for at least ten years as of June 30, 2017. Wisdom Microfinance, CSSCO, ACSI, DECSI, ADCSI, and OMO are among these microfinance organisations. Microfinance organisations that have been in operation for less than 10 years will not be selected for this study, to ensure that data collection is conducted across all sample organisations that have been in operation for 10 years or more. The researcher used data from 2010 to 2018 to achieve a significant sample size. Furthermore, statistics on macroeconomic indicators for the years 2010–2018 were provided by the National Bank of Ethiopia, the MOF, and the Central Statistics Authority. For secondary data on the credit risk and credit risk management of microfinance institutions, the Microfinance Institutions' Annual Bulletin, the NBE report and proclamation on MFIs, the MFIs' annual reports, and financial statements were included.

A. Model Specification and Variables

The following model was developed by including the variables:

$$CrRMgit = \alpha + \beta_1 * MIit + \beta_2 * AvLB_{it} + \beta_3 * ToAs_{it} + \beta_4 * LoTDR_{it} + \delta_i + \epsilon_{it} \text{-----}(1)$$

Where, CrRMg: denotes credit risk management iⁿ MFI in year “t”

AvLB_ Average Loan Balance “t”

ToAs: Total assets

LoTDR: is the loan-to-deposit ratio of the MFI

δ_i : fixed effects in MFI “i”

ϵ_{it} : random error term

B. Dependent Variable: Credit Risk (CR)

To calculate credit risk (CrR), ROA and DtL of the Micro Finance Institutions:

Item	Formula	Where
CrR	NPL/TL	CR=credit risk, NPL=non-performing loan, TL=total loan
ROA	$ROA_{it} = \frac{NI}{TA}$	ROA=return on assets, NI=net income TA=total assets.
DtL	ToDp/ToL	DtL=deposits to loans ratio, TL=total loan ToDp= total deposit

IV. DISCUSSION OF THE RESULT

A. Descriptive Analysis of Explanatory Variables

Table I: Descriptive Analysis (Explanatory Variables)

	CR	ME	ALBPB	TA	LD
Mean	0.266231	0.134000	1.568958	5.429895	0.590274
Median	0.274160	0.129605	1.482203	5.223829	0.562177
Max.	0.326220	0.431662	2.918532	7.089215	0.860614
Min.	0.108000	-0.223296	0.653106	4.124145	0.245523
Std. Devs.	0.042743	0.128260	0.535050	0.851870	0.157596
Observations	72	72	72	72	72

Source: Researcher Computation

According to Table 4.1 above, the descriptive statistics of the explanatory (independent) determinants of credit risk for Ethiopian Microfinance Institutions are presented below. The first independent variable, managerial efficiency, has a mean of 0.134, a maximum of 0.43, a minimum of -0.223, and a standard deviation of 0.128. The most significant return they have generated over the last 9 years, according to the ratio analysis method employed in this study, is 43% of total assets, indicating that the enterprises' management is more efficient. One metric used to evaluate management's efficiency is return on assets (ROA).

However, another company experienced a loss equivalent to roughly 2% of its total assets, which might have resulted from subpar management attempting to increase profits. However, the sector average demonstrates strong management efficiency, helping generate more than 13 per cent of the total assets invested. The mean, maximum, and minimum values of the second independent variable—the natural log of the average loan per borrower—are 1.568, 2.918, and -0.223, respectively, with a standard deviation of 0.535. This represents the average loan balance for all current MFI borrowers in Ethiopia. The average loan per borrower fluctuates less than other factors.

The third variable, the size the value of the microfinance institutions is determined by taking the natural log of their



total assets. It has a standard deviation of 0.578096, a mean of 5.429895, a maximum of 7.0892, and a minimum of 4.124. This illustrates the significant variation in the sizes of Ethiopian MFIs. The loan-to-deposit ratio, the final explanatory variable, has mean, maximum, and minimum values of 0.59, 0.86, and 0.345, respectively. Its lowest standard deviation, 0.1575, further supports the idea that there is a slight variation across microloans and deposit amounts. Specific MFIs provide loans that are less than the amount of the deposits they receive from customers. Compared to other microfinance institutions in the industry, these organizations have a higher demand for loans or fewer deposits because of their low interest rates or other characteristics. These microfinance organizations may therefore be regarded as having high-earning assets. Some microfinance institutions, however, can only lend 34.5% of the money they receive from depositors. Due to the large number of deposits these MFIs receive and the low demand for their loans (which results in higher interest rates), they have a large amount of non-earning assets.

B. CLRM and Tests

i. Homoscedasticity

This test is designed to determine if the variance of the error terms is constant (homoscedasticity) or not (heteroscedasticity). The widely used white test was used to check for heteroscedasticity [8]. Both the Chi-Square and F-statistic versions of the test statistic, as shown in Table 4.2, indicate evidence of heteroscedasticity in this study, as the p-values are significantly less than 0.05. As a result, it is appropriate to reject the null hypothesis of constant error variance (homoscedasticity).

Table II: Homoscedasticity Test

F-statistic	2.006084	Pro. F (14,57)	0.0335
Obs * R-squared	23.76598	Pro. Chi-Square	0.0489
	16.18943	Pro. Chi-Square	0.3019

ii. Autocorrelation

If DW falls between the higher critical value, the null hypothesis is not rejected, and no significant residual autocorrelation is assumed.

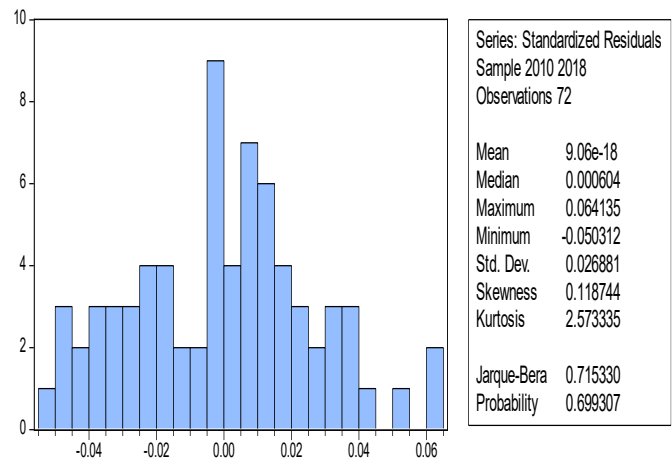
Table III: DW Test

Dependent Variable: CrR				
Swamy and Arora (S&R) estimator of factor adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.109370	0.038141	2.867489	0.0055
ME	0.237510	0.032646	7.275429	0.0000
AvLB	0.033341	0.008631	3.862896	0.0003
ToAs	0.009811	0.006795	1.443791	0.1535
DtL	0.032951	0.022723	1.450145	0.1517
Effects Specification				
		S.D.	Rho	
Cross-section random			0.017387	0.3467
Idiosyncratic random			0.023870	0.6533
Weighted Statistics				
R-squared	0.525839	Mean dependent var		0.110783
Adjusted R-squared	0.497531	S.D. dependent var		0.033789
S.E. of regression	0.023952	Sum squared resid		0.038437
F-statistic	18.57557	Durbin-Watson stat		0.743864
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.576004	Mean dependent var		0.266231
Sum squared resid	0.054998	Durbin-Watson stat		0.586585

The dL and dU values for this study's six descriptive variables (k) with 120 observations are 1.31 and 1.87, respectively. The Durbin-Watson (DW) examination value of 0.74 designates that the residuals that meet the first hypothesis have positive autocorrelation.

iii. Normality

Table IV: Normality Test (NT)



Source Output of Eview 8

The normality test for this study yielded a p-value of 0.69 for the Jarque-Bera (JB) test, as shown in the figure. This value is greater than 0.05, and the bell-shaped histogram suggests that the study's residuals are normally distributed.

iv. Multicollinearity

Table V: Correlation Matrix for Independent Variables

	ME	ALBPB	TA	DL
ME	1			
AvLB	-0.3204	1		
ToAs	-0.1689	0.5802	1	
DtL	-0.02356	0.2517	-0.0176	1

The correlation coefficients for the study's explanatory factors are displayed in Table 4.4 below. Size and ALBPB have the strongest correlation coefficient (0.580) among the explanatory variables in this study.

C. Model Selection: Random Effect and Fixed Effect Model

Table VI: Hausman Test

Random Effects (RE)			
Test	Chi-Square. Statistic	Chi-Square. d.f.	Prob.
Cross-section	4.46	4	0.347

The Hausman test result in the table allows us not to reject the null hypothesis that the random-effects model is better in this regression analysis. This implies that a random-effect model is more appropriate than a fixed-effect model.

D. Results of Regression Analysis

Table VII: Result of Regression Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.1013	0.0381	2.8674	0.005
ME	0.2315	0.0326	7.2754	0.000
AvLB	0.0303	0.0086	3.8628	0.003
ToAs	0.0018	0.0067	1.4437	0.150
DtL	0.0319	0.0227	1.4501	0.152
			S.D.	Rho
Cross-section random			0.017	0.3467
Idiosyncratic random			0.02470	0.6533
Weighted Statistics				
R-squared	0.5258	Mean		0.1112
Adjusted R-squared	0.4975	S.D.		0.0348
S.E. of regression	0.0239	Sum resid		0.0485
F-statistic	18.575	Durbin-Watson test		0.7439
Pro (F-statistic)	0.0000			
Unweighted Statistics				
R-squared	0.5760	Mean dependent var		0.262
Sum (resid)	0.0549	Durbin-Watson stat		0.585

According to the coefficient of 0.033341, credit risk and the average loan amount per borrower are strongly connected; a 1% increase in the average loan amount per borrower will raise the likelihood of default in Ethiopian MFIs by 3.33%. Ethiopian microfinance institutions' higher R-square of 0.57 suggests that these factors, taken together, have a greater impact on their credit risk. The natural log of total assets, which has a positive coefficient of 0.0098, represents the size of the institutions (microfinance institutions). The positive coefficient of 0.03295 for the loan-to-deposit ratio indicates a positive association between credit risk and the ratio. This means that for every 1% increase in the loan-to-deposit ratio, the credit risk of Ethiopian MFIs will increase by 3.29%.

V. CONCLUSION AND RECOMMENDATIONS

Based on the ratio of non-performing loans to total loans for the current year, the study's results showed that, among the variables specific to MFIs, the average loan balance per borrower and MFI management efficiency had a statistically significant effect on credit risk management in MFIs in Ethiopia. In contrast, the natural log of total assets and the percentage of deposits to loans did not have a statistically significant effect. Our hypothesis was supported by the positive correlation between the deposit-to-loan ratio and CrR, although it did not support the "too big to fail" notion. Furthermore, a positive correlation was observed between CrR and the average loan amount per borrower. The natural log of total assets has a positive and statistically insignificant effect on the CR of Ethiopian MFIs, per research by [8] and [9]. The coefficient's positive sign indicates that when total assets rise, MFIs' CR also rises. Ethiopian microfinance institutions' high reserves for underperforming assets — primarily loans and advances — are impacting their bottom lines; therefore, they need to improve their credit risk management. The ability to allocate resources to credit risk management increases with the firm's significant assets, and the presence of highly effective management reduces the credit risk of Ethiopian MFIs. Therefore, the concerned senior management should concentrate on improving their total asset and management efficiency through training and other measures.

DECLARATION STATEMENT

I must verify the accuracy of the following information as the article's author.

- **Conflicts of Interest/ Competing Interests:** Based on my understanding, this article has no conflicts of interest.
- **Funding Support:** This article has not been funded by any organizations or agencies. This independence ensures that the research is conducted with objectivity and without any external influence.
- **Ethical Approval and Consent to Participate:** The content of this article does not necessitate ethical approval or consent to participate with supporting documentation.
- **Data Access Statement and Material Availability:** The adequate resources of this article are publicly accessible.
- **Author's Contributions:** The authorship of this article is contributed solely.

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DOI: <https://doi.org/10.53555/ecb/2024.13.01.17>

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