INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES

Vol 15, Issue 9, (2025) E-ISSN: 2222-6990

Credit Risk and Microfinance Performance in Pakistan: The Moderating Role of Board Risk Committee

Khalid Hafeez, Salawati Binti Sahari and Burhan Ahmed

Faculty of Economics and Business, University Malaysia Sarawak (UNIMAS), Malaysia

DOI Link: http://dx.doi.org/10.6007/IJARBSS/v15-i9/26079

Published Date: 16 September 2025

Abstract

This study investigates the influence of credit risk on the financial performance of microfinance institutions (MFIs) in Pakistan, with a particular focus on the moderating role of the Board Risk Committee Index (RCINDEX). Using panel data from 19 microfinance banks spanning the years 2012 to 2021, the study applies fixed-effects regression with robust standard errors to assess the relationships among key variables. Credit risk is proxied by Portfolio at Risk (PAR) and Non-Performing Loans (NPL), while financial performance is measured using Return on Assets (ROA), Return on Equity (ROE), and Operational Self-Sufficiency (OSS). The RCINDEX is constructed as a standardized composite of risk committee size, independence, and competence. The findings reveal that both PAR and NPL are significantly negatively associated with MFI performance, indicating that increased credit risk compromises profitability and sustainability. However, the RCINDEX exhibits a significant positive moderating effect, suggesting that well-structured risk committees can mitigate the adverse consequences of credit risk. These results align with agency and stakeholder theories, which highlight the critical role of governance mechanisms in managing risk and enhancing institutional performance. The study offers practical implications for MFI regulators, boards of directors, and policymakers seeking to strengthen governance frameworks and ensure financial sustainability in emerging economies.

Keywords: Microfinance Institutions, Credit Risk, Portfolio at Risk, Non-Performing Loans, Financial Performance, Board Risk Committee, Agency Theory, Stakeholder Theory, Pakistan

Introduction

Microfinance institutions (MFIs) play a critical role in promoting financial inclusion, especially in developing economies where large segments of the population remain excluded from traditional banking services. These institutions provide small loans, savings, and other financial services to low-income households and micro-entrepreneurs, empowering them to improve their livelihoods and fostering grassroots economic development (Cull et al., 2009). In Pakistan, microfinance has emerged as a cornerstone of poverty alleviation strategies, particularly in rural and marginalized communities where access to formal credit has

historically been limited. According to the State Bank of Pakistan (2023), the sector now serves millions of clients nationwide, contributing to job creation, women's empowerment, and social welfare improvement. This makes the microfinance sector not only a tool for poverty reduction but also an essential driver of inclusive and sustainable economic growth. Despite these contributions, the rapid growth of the microfinance sector has brought new challenges, particularly regarding financial stability and institutional sustainability. Among these challenges, credit risk stands out as the most significant threat to the operational and financial viability of MFIs. Credit risk arises when borrowers are unable or unwilling to meet their repayment obligations, a situation that is especially prevalent in microfinance due to the absence of collateral, volatile income patterns, and borrowers' limited financial literacy (Armendáriz & Morduch, 2010). In the Pakistani context, this issue has been further amplified by macroeconomic instability, rising inflation, and political uncertainty, all of which have weakened clients' repayment capacities. As a result, key indicators such as Portfolio at Risk (PAR) and Non-Performing Loans (NPL) have risen, posing systemic risks to the sector. Elevated levels of PAR and NPL not only erode profitability but also threaten the core mission of MFIs by diverting resources away from outreach activities and increasing the likelihood of mission drift (Ghosh, 2015; SBP, 2023).

The importance of addressing this challenge lies in its potential ripple effects across the broader economy. A financially unstable microfinance sector could undermine poverty alleviation efforts, reduce access to credit for vulnerable communities, and weaken public confidence in financial systems. For regulators and policymakers, ensuring the soundness of MFIs is crucial for maintaining financial stability and advancing national development goals. For MFI managers and boards, effectively managing credit risk is vital for maintaining operational self-sufficiency and safeguarding the trust of stakeholders, including clients, donors, and investors. Therefore, there is an urgent need for strategies that not only mitigate credit risk but also ensure sustainable financial performance in this high-risk environment.

One of the most promising strategies to achieve this is strong risk governance, particularly through the establishment of dedicated Board Risk Committees (BRCs). Globally, BRCs have been recognized as vital mechanisms for strengthening oversight, ensuring compliance with risk policies, and aligning institutional risk-taking with strategic objectives (Subramaniam et al., 2016). An effective BRC can enhance the monitoring of high-risk portfolios, provide early warnings of potential defaults, and develop frameworks for balancing financial and social objectives. The structure and quality of BRCs such as their size, independence, and expertise are crucial determinants of their effectiveness. However, in the context of Pakistan, empirical evidence on the role of BRCs in microfinance governance remains limited, leaving regulators and practitioners without clear guidance on best practices.

The significance of this study lies in its potential to bridge these gaps. While prior research has examined corporate governance and MFI performance globally, limited attention has been given to the unique role of BRCs in moderating the relationship between credit risk and financial performance, particularly in developing economies like Pakistan. This study introduces a comprehensive measure, the Risk Committee Index (RCINDEX), which integrates multiple dimensions of BRC effectiveness, including size, independence, and competence. By investigating how RCINDEX influences the impact of credit risk on financial outcomes such as

Return on Assets (ROA), Return on Equity (ROE), and Operational Self-Sufficiency (OSS), this research addresses a critical knowledge gap.

The findings of this study will have direct implications for multiple stakeholders. For policymakers and regulators, the results can inform the design of governance regulations and risk management guidelines tailored to the microfinance sector. For boards of directors and MFI managers, the study provides evidence-based insights into how risk committees can be structured and empowered to enhance financial stability. Furthermore, donors and investors can benefit from a clearer understanding of governance mechanisms that promote responsible and sustainable lending practices.

In light of these considerations, this research aims to examine the effect of credit risk, measured by PAR and NPL, on the financial performance of MFIs in Pakistan, while exploring the moderating role of the Board Risk Committee Index. Drawing on panel data from 19 microfinance banks between 2012 and 2021, the study provides robust empirical evidence on how effective board-level risk governance can mitigate the adverse effects of credit risk. By doing so, the study contributes to the theoretical discourse on governance and risk management while offering practical recommendations to strengthen the resilience of Pakistan's microfinance sector and enhance its role in achieving inclusive and sustainable economic development.

Literature Review

The sustainability of microfinance institutions (MFIs) depends largely on their ability to manage credit risk while maintaining financial performance. Numerous studies have explored the dynamics between risk management, governance structures, and performance outcomes in microfinance, yet gaps remain, particularly concerning the moderating role of risk committees in emerging economies. Credit risk is a fundamental challenge in the microfinance sector due to the nature of lending to financially vulnerable and often undocumented borrowers (Morduch, 1999). Unlike traditional banks, MFIs typically do not require collateral, and their clients may lack formal employment or credit histories, increasing the likelihood of default (Ahlin & Townsend, 2007). Credit risk is commonly measured through Portfolio at Risk (PAR) and Non-Performing Loans (NPL), two indicators widely used to assess loan portfolio quality (Gonzalez, 2007). High PAR and NPL levels are associated with increased loan losses, reduced capital reserves, and lower profitability (Ghosh, 2015).

Empirical research has consistently found a negative relationship between credit risk and financial performance in financial institutions. For example, Ghosh (2015) reported that rising credit risk deteriorates profitability by increasing loan loss provisions and reducing net income. Similarly, Baidoo et al. (2021) found that PAR significantly reduces Return on Assets (ROA) and Return on Equity (ROE) in African MFIs. In South Asia, studies like Iqbal and Mirakhor (2011) have highlighted that excessive NPL ratios contribute to operational inefficiencies, undermining the sustainability of financial intermediaries. However, most of these studies have focused on banks or large financial institutions, leaving a research gap in microfinance-specific contexts, particularly in Pakistan.

Corporate governance is essential in financial institutions to mitigate agency problems and align managerial actions with stakeholder interests (Jensen & Meckling, 1976). In the

microfinance sector, governance becomes even more complex due to the dual objectives of social outreach and financial sustainability (Mersland & Strøm, 2009). Governance mechanisms such as board independence, board size, CEO duality, and the presence of audit committees have been extensively studied in relation to MFI performance (Hartarska, 2005). However, the role of Board Risk Committees (BRCs) in managing financial risks has received less attention.

Risk governance is a specific subset of corporate governance that focuses on the identification, assessment, and mitigation of financial and operational risks (Subramaniam et al., 2016). In banking and finance literature, BRCs are recognized for their role in strengthening risk management practices and reducing financial volatility (Ellul & Yerramilli, 2013). A well-functioning BRC can monitor risk exposures, review risk policies, and ensure that the institution operates within acceptable risk limits. Yet, despite these recognized functions, the BRC remains under-researched in the context of microfinance, particularly in developing countries where formal risk governance structures are often nascent or inconsistent. The effectiveness of a Board Risk Committee depends on its size, independence, and competence. Larger committees may offer broader expertise but could face coordination challenges (Klein, 2002). Independence is critical for unbiased risk oversight, as independent directors are less likely to succumb to managerial influence (Pathan, 2009). Competence, defined by the presence of members with risk management experience, ensures that the committee can effectively assess complex financial risks (Subramaniam et al., 2016). Studies in the banking sector have shown that BRC characteristics significantly affect financial performance and risk-taking behavior (Ellul & Yerramilli, 2013; Li et al., 2020). However, whether these findings apply to microfinance institutions remains unclear due to differences in organizational structure, mission focus, and regulatory environments.

Few studies have explicitly examined the moderating role of risk committees in the relationship between credit risk and financial performance. Research in the banking sector suggests that BRCs can weaken the negative impact of credit risk on profitability by enforcing better credit policies and monitoring loan portfolio quality (Kallamu, 2016). For instance, Mollah et al. (2019) demonstrated that strong risk governance mechanisms reduce the adverse effects of risk exposure on bank stability. However, in microfinance, similar empirical examinations are limited. Most MFI studies focus on governance-performance links directly without exploring interaction effects between governance and credit risk (Tchakoute-Tchuigoua, 2010). This gap highlights the need for further research to understand whether BRCs can effectively moderate credit risk in the unique context of MFIs.

The microfinance sector in Pakistan presents a unique setting where issues of credit risk and governance are particularly relevant. According to the State Bank of Pakistan (2023), microfinance banks in Pakistan have faced rising PAR and NPL levels, partly due to economic disruptions, inflation, and the COVID-19 pandemic. Simultaneously, the governance frameworks of many Pakistani MFIs are still evolving, with varying degrees of formality in risk management structures. While prior research has examined corporate governance and performance in Pakistani MFIs (Ahmad et al., 2020), the role of risk committees remains underexplored. There is a pressing need for empirical studies to investigate how Board Risk Committees can influence the credit risk–performance relationship in the Pakistani microfinance sector. Despite growing global literature on microfinance governance and credit

risk, the specific role of Board Risk Committees as moderators in the credit risk–performance nexus remains insufficiently studied, especially in developing economies like Pakistan. Most prior research treats governance and credit risk as separate determinants of performance, rather than examining their interaction. This study addresses this gap by analyzing whether a composite measure of the Board Risk Committee can mitigate the negative effects of credit risk on MFI performance in Pakistan.

Building on the conceptual framework and grounded in agency theory and stakeholder theory, this study develops a set of hypotheses to examine the relationship between credit risk and the financial performance of microfinance institutions (MFIs) in Pakistan, along with the moderating role of the Board Risk Committee Index (RCINDEX). Agency theory suggests that information asymmetries and conflicts of interest between managers and stakeholders can be mitigated through sound governance structures. In microfinance institutions, credit risk represents one of the most critical challenges, with direct implications for profitability, asset quality, and sustainability. Incorporating stakeholder theory, which emphasizes that organizations must address the interests of multiple stakeholders including investors, regulators, and clients, the study considers the role of the Board Risk Committee in enhancing risk oversight and ensuring long-term institutional viability. Drawing from the theoretical framework and empirical gaps identified in prior literature, the following hypotheses are formulated: first, that credit risk, as measured by PAR and NPL, is negatively associated with the financial performance of MFIs in Pakistan; and second, that the Board Risk Committee Index (RCINDEX) moderates this relationship, such that the negative effects of credit risk on performance are diminished in institutions with stronger risk committee characteristics. These hypotheses are tested across three dependent variables ROA, ROE, and OSS using robust panel data econometric techniques.

Research Methodology

This study utilizes a balanced panel dataset comprising 19 microfinance banks (MFBs) operating in Pakistan over a ten-year period from 2012 to 2021. These institutions were selected based on data availability and their market representation, collectively accounting for over 80% of the microfinance sector's total outreach in the country. Data were extracted from the audited annual reports of the selected MFBs, along with supplementary information obtained from the Pakistan Microfinance Network (PMN) and the State Bank of Pakistan (SBP). The construction of a balanced panel ensured consistent time-series and cross-sectional representation, resulting in a total of 190 firm-year observations for the analysis. The dependent variable in this study is the financial performance of microfinance institutions, which is measured using three standard indicators: Return on Assets (ROA), Return on Equity (ROE), and Operational Self-Sufficiency (OSS). ROA is calculated as the ratio of net income to total assets and reflects how efficiently the institution uses its assets to generate profit. ROE is computed as net income divided by shareholder equity and serves as a measure of profitability from the investors' perspective. OSS is derived by dividing operating revenue by the sum of financial expenses, loan loss provisions, and operating expenses. This indicator is particularly important for microfinance as it reveals the institution's ability to sustain itself operationally without relying on external subsidies. These performance metrics are consistent with those employed in prior empirical studies on MFI performance, including Mersland and Strøm (2009) and Tchakoute-Tchuigoua (2010). Credit risk is the independent variable in this study and is captured through two key indicators: Portfolio at Risk (PAR) and Non-Performing

Loans (NPL). PAR is defined as the percentage of the gross loan portfolio overdue by more than 30 days, a standard measure in the microfinance sector that signals potential repayment issues. NPL represents the portion of loans that are unlikely to be recovered based on regulatory classification and provides insight into the overall credit quality of the institution's portfolio. These two indicators have been widely recognized in microfinance literature as robust proxies for credit risk exposure (Gonzalez, 2007; Ghosh, 2015).

The moderating variable in this study is the Board Risk Committee Index (RCINDEX), which is developed to measure the effectiveness of board-level risk oversight. This index comprises three components: Risk Committee Size (RCSIZE), Risk Committee Independence (RCIND), and Risk Committee Competence (RCCOMP). RCSIZE refers to the number of members in the risk committee. RCIND captures the proportion of independent directors within the risk committee, calculated by dividing the number of independent members by the total committee size. RCCOMP is a binary variable that equals 1 if at least one member has formal experience in risk management and 0 otherwise. Each of these variables is standardized, and the composite RCINDEX is constructed by taking the mean of the standardized values, a methodology aligned with governance index development in previous studies (Li et al., 2020). To control for institutional heterogeneity and mitigate omitted variable bias, several control variables are included. Firm Size (FSIZE) is measured as the natural logarithm of total assets to account for scale-related effects. Firm Age (FAGE) is the number of years since the MFI's establishment and captures the institution's maturity and operational experience. Leverage (LEV), defined as the ratio of total liabilities to total assets, is included to assess financial risk exposure. Operational Efficiency (OPREFF), measured as operating expenses divided by total assets, reflects the institution's cost management capability. These controls are standard in microfinance and corporate finance studies and are important for isolating the effects of credit risk and governance on performance (Hartarska, 2005; Mersland & Strøm, 2009; Baidoo et al., 2021). The econometric estimation is conducted through a series of panel data regression models. The baseline model estimates the direct effect of credit risk on performance and is specified as:

$$PERF_{it}=\beta_0+\beta_1 PAR_{it}+\beta_2 NPL_{it}+\beta_3 FSIZE_{it}+\beta_4 FAGE_{it}+\beta_5 LEV_{it}+\beta_6 OPREFF_{it}+\epsilon_{it}$$

where $PERF_{it}$ represents ROA, ROE, or OSS for institution i at time t.. The terms PAR_{it} and NPL_{it} captures credit risk. The model also includes firm-specific control variables, and ϵ_{it} represents the error term. To examine the moderating role of the Board Risk Committee, an extended model is estimated by including interaction terms between RCINDEX and the two credit risk indicators. The full model is specified as:

$$PERF_{it}= \beta_0+\beta_1 PAR_{it}+\beta_2 NPL_{it}+\beta_3 RCINDEX_{it}+\beta_4 (PAR_{it}\times RCINDEX_{it})+\beta_5 (NPL_{it}\times RCINDEX_{it})+\beta_6 FSIZE_{it} +\beta_7 FAGE_{it}+\beta_8 LEV_{it}+\beta_9 OPREFF_{it}+\epsilon_{it}$$

This moderated model allows us to investigate whether board-level risk governance alters the impact of credit risk on financial outcomes. The estimation technique involves both Fixed Effects (FE) and Random Effects (RE) regressions to account for unobserved heterogeneity. The Hausman specification test is employed to choose between the FE and RE models. In the cases of ROA and OSS, the test strongly favors the FE model due to significant coefficient differences, indicating that unobserved firm-level effects are correlated with the regressors. For ROE, where the Hausman test results are inconclusive due to rank conditions, both FE and RE outputs are reported to ensure robustness. Diagnostic tests are conducted to validate the

model assumptions. Heteroskedasticity is assessed using the Breusch-Pagan/Cook-Weisberg and the Modified Wald tests, while serial correlation is checked via the Wooldridge test for autocorrelation in panel data. To correct for any heteroskedasticity and autocorrelation detected, robust standard errors clustered at the firm level are used in all models. All analyses are carried out using STATA 15. The model specification and variable choices are grounded in established microfinance literature, including studies by Mersland and Strøm (2009), Baidoo et al. (2021), and Subramaniam et al. (2016). By incorporating both main effects and interaction terms, this study provides a nuanced understanding of how credit risk affects microfinance performance and how board-level governance mechanisms may buffer or intensify this relationship.

Result and Discussion

The analysis begins with descriptive statistics presented in Table 1 to understand the data distribution of key variables. The mean Return on Assets (ROA) for the sampled microfinance banks is 6.17%, with a standard deviation of 5.13%, indicating moderate profitability with some variability across institutions. Return on Equity (ROE) has a mean value of 6.78% with a standard deviation of 5.57%, reflecting variation in owner returns across different MFIs. Operational Self-Sufficiency (OSS) has a mean of 104.85%, suggesting that, on average, Pakistani MFIs are able to cover their operational costs through income generated from operations. However, the large standard deviation of OSS (87.65%) and its minimum value of -95.4% suggest that some MFIs are still dependent on subsidies or are facing severe operational challenges. Regarding credit risk, the mean Portfolio at Risk (PAR) is -0.011, and the mean Non-Performing Loans (NPL) is -0.003, though both variables show considerable dispersion due to differences in risk management across institutions. Firm Size, measured as the log of total assets, averages 18.21, while Firm Age has a mean of 12.5 years, reflecting a mix of established and relatively new microfinance banks in the dataset. Leverage has a mean of 0.55, indicating that slightly over half of the MFIs' assets are financed through liabilities. Operational Efficiency shows a wide spread, with a mean of 0.68 and a standard deviation of 35.70, which reflects significant heterogeneity in cost management across institutions.

Table 1
Descriptive Analysis .

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	190	6.17	5.129	-8.44	17.95
ROE	190	6.787	5.568	-10.92	17.98
OSS	190	104.846	87.653	-95.4	289.45
PAR	190	-0.011	2.799	-4.158	11.282
NPL	190	-0.003	2.084	-1.881	7.449
FSIZE	190	18.208	1.392	13.882	20.245
FAGE	190	12.5	4.763	1	23
LEV	190	0.552	0.333	0.029	0.976
OPREFF	190	0.68	35.70	-45.05	67.75

To ensure the validity and robustness of the panel data regression analysis, several diagnostic tests were conducted prior to estimating the econometric models presented in Table 2. These tests assess the key statistical assumptions underlying fixed effects estimations, namely normality, multicollinearity, serial correlation, and heteroskedasticity, as well as model selection between fixed and random effects.

The normality of the regression residuals was examined using the Jarque–Bera test. The test statistics for ROA (p = 0.3709), ROE (p = 0.1471), and OSS (p = 0.0614) were all statistically insignificant at the 5% level, indicating that residuals were approximately normally distributed across all models. Although the normality of residuals is less critical in large samples due to the central limit theorem, its confirmation adds reliability to the estimated coefficients. Multicollinearity was assessed using the Variance Inflation Factor (VIF). The mean VIF value was 1.89 across all three models, which is well below the commonly accepted threshold of 10 (Gujarati & Porter, 2009). This suggests that there is no severe multicollinearity among the explanatory variables. Serial correlation in the panel data was tested using the Wooldridge test for autocorrelation in panel models. The test returned insignificant p-values for ROA (0.3245) and ROE (0.2925), indicating no serial correlation. However, the test detected the presence of first-order serial correlation in the OSS model (p = 0.0342). Heteroskedasticity was evaluated using the Breusch–Pagan test. While the ROA and ROE models showed no signs of heteroskedasticity, the OSS model reported a significant p-value (0.0487), suggesting the presence of non-constant variance in residuals.

Given these findings, all models were estimated using fixed effects regressions with robust standard errors clustered at the firm level. This approach corrects for both heteroskedasticity and autocorrelation, thereby improving the reliability of standard errors and hypothesis testing. To determine the appropriate model specification, the Hausman test was conducted to compare fixed effects and random effects estimators. The test results were statistically significant for the ROA (χ^2 = 14.87, p = 0.038) and OSS (χ^2 = 19.64, p = 0.012) models, supporting the use of fixed effects. The test for the ROE model was inconclusive due to matrix singularity; however, the fixed effects model was retained based on theoretical alignment with agency theory and to maintain consistency across estimations. These diagnostic tests confirm that the assumptions underlying the regression models are reasonably satisfied and that the fixed effects model with robust standard errors is the most appropriate approach for this study.

Table 2
Diagnostic Test

Test	ROA	ROE	OSS	Decision
Normality (Jarque-Bera test, p-value)	0.3709	0.1471	0.0614	Residuals approximately normal
Multicollinearity (Mean VIF)	1.89	1.89	1.89	No multicollinearity
Autocorrelation (Wooldridge test, p-value)	0.3245	0.2925	0.0342	Autocorrelation present in OSS
Heteroskedasticity (Breusch-Pagan test, p-value)	0.1325	0.3348	0.0487	Heteroskedasticity in OSS
Hausman Test (χ^2, p-value)	14.87, 0.038	Inconclusive	19.64, 0.012	FE preferred for ROA & OSS; FE retained for ROE

Table 3 presented the results of the Fixed Effect Regression Model. The relationship between credit risk and financial performance was analyzed using both Fixed Effects (FE) and Random Effects (RE) models. The Hausman test favored the Fixed Effect model for ROA and OSS due to significant differences in coefficients, while for ROE, the test returned inconclusive results because of rank deficiency. However, the FE model was still used consistently for interpretation, given its ability to control for time-invariant unobserved heterogeneity. The

regression estimates reveal that credit risk significantly impairs MFI performance across all models. For ROA, both Portfolio at Risk (PAR) and Non-Performing Loans (NPL) show statistically significant negative relationships (PAR: $\beta = -0.267$, $p < 0.01$; NPL: $\beta = -0.367$, $p < 0.05$). These results imply that a deteriorating loan portfolio reduces asset efficiency and compromises institutional profitability. Similar findings were reported by Ghosh (2015) and confirmed more recently by Yang and Ibrahim (2023), who noted that high-risk lending practices undermine profitability and operational resilience in developing economies' MFIs. The ROE model demonstrates a comparable pattern, with significant negative coefficients for PAR ($\beta = -0.405$, $p < 0.01$) and NPL ($\beta = -0.362$, $p < 0.05$). This suggests that credit risk not only erodes asset returns but also diminishes shareholder value, as supported by Haider et al. (2023), who found a strong inverse relationship between credit risk and return on equity in South Asian MFIs. For OSS, the results are consistent though slightly weaker. PAR is significantly negative ($\beta = -4.221$, $p < 0.05$), confirming that elevated loan delinquency undermines the self-sufficiency of MFIs. NPL, though also negative ($\beta = -3.932$), is only marginally significant ($p = 0.095$), indicating that while severe credit default influences sustainability, its effect is less direct compared to early-stage risk indicators like PAR. These results align with Mersland and Strøm (2009) and are reinforced by Zubair and Khan (2024), who documented that persistent credit risk indicators are detrimental to microfinance institutions' ability to sustain operations without external support. In terms of governance, the RCINDEX exhibits a statistically significant and positive influence on both ROA ($\beta = 0.729$, $p < 0.05$) and ROE ($\beta = 0.722$, $p < 0.05$), while its effect on OSS is positive but statistically insignificant ($\beta = 7.240$, $p > 0.10$). This suggests that risk committee effectiveness defined through size, independence, and competence enhances financial returns, particularly in terms of profitability rather than operational coverage. The presence of qualified and independent members on the board risk committee strengthens oversight, risk monitoring, and strategic decision-making. These findings support agency theory by emphasizing that stronger internal control structures reduce information asymmetry and managerial opportunism (Jensen & Meckling, 1976). They are further echoed by Ahmed et al. (2022), who found that board risk structures improve governance outcomes in high-risk financial sectors, and corroborated by Agyemang et al. (2023), who demonstrated that board composition significantly affects profitability in African MFIs.

The interaction terms between RCINDEX and credit risk indicators offer key insights into the moderating effect of board-level governance. The interaction between RCINDEX and PAR is positive and significant across all three models: ROA ($\beta = 0.236$, $p < 0.05$), ROE ($\beta = 0.305$, $p < 0.01$), and OSS ($\beta = 3.358$, $p < 0.05$). This indicates that robust risk governance reduces the negative impact of credit risk, particularly in its early stages. The presence of an active, independent, and competent risk committee allows for timely interventions, such as credit risk controls and early warning systems, which in turn protect institutional performance. These findings reinforce recent evidence by Nwachukwu et al. (2023), who found that board-level vigilance mitigates credit shocks in MFIs across Southeast Asia. However, the interaction between RCINDEX and NPL is only marginally significant for ROA ($\beta = -0.334$, $p = 0.057$) and OSS ($\beta = -4.123$, $p = 0.088$), and statistically insignificant for ROE ($p = 0.132$). This suggests that board oversight is more effective in preventing loan delinquency rather than reversing defaults once they have occurred. Once a loan transitions into non-performing status, operational interventions may be more critical than governance oversight alone. This echoes findings by Kumar and Yeboah (2024), who observed that while board risk committees

enhance monitoring, they often lack the operational mandate to deal with post-default recovery.

Control variables offer further insights into institutional performance. Operational efficiency (OPREFF) is highly significant and positive across all models (ROA: $\beta = 0.045$, $p < 0.01$; ROE: $\beta = 0.043$, $p < 0.01$; OSS: $\beta = 0.818$, $p < 0.01$), indicating that cost-effective MFIs are more likely to be financially viable and sustainable. This result confirms the findings of Mersland and Strøm (2009) and is supported by recent evidence from Chikazhe and Chimucheka (2023), who noted that cost discipline is a crucial determinant of MFI success in emerging markets. Firm size (FSIZE) also has a significant positive effect on ROA and ROE, and a near-significant effect on OSS, suggesting that larger institutions benefit from economies of scale and enhanced reputational capital. Conversely, firm age and leverage do not significantly affect any performance indicators, implying that longevity or debt levels alone do not determine financial strength in the microfinance context, consistent with results from Bashir et al. (2023). Overall, the findings validate the theoretical expectations of agency theory by demonstrating that performance deteriorates when governance is weak or credit oversight is absent. The moderating role of the Board Risk Committee underscores stakeholder theory, suggesting that when boards are accountable to multiple stakeholders, including clients and regulators, institutional performance improves through proactive risk mitigation. As MFIs in Pakistan and similar economies face rising credit risks, strengthening board-level governance, particularly through empowered and independent risk committees, becomes vital for maintaining financial stability and achieving development goals.

Table 3
Regression Result (Fixed Effect Model)

Variables	ROA		ROE		OSS	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
PAR	-0.267	0.009	-0.405	0.001	-4.221	0.021
NPL	-0.367	0.02	-0.362	0.035	-3.932	0.095
RCINDEX	0.729	0.017	0.722	0.031	7.24	0.2
PAR×RCINDEX	0.236	0.015	0.305	0.008	3.358	0.031
NPL×RCINDEX	-0.334	0.057	-0.269	0.132	-4.123	0.088
FSIZE	1.917	0.045	2.019	0.036	26.999	0.066
FAGE	0.186	0.438	0.242	0.337	6.774	0.077
LEV	0.911	0.781	0.99	0.76	12.345	0.833
OPREFF	0.045	0	0.043	0	0.818	0
Constant	-31.552	0.042	-33.426	0.03	-477.706	0.048
R^2	0.796		0.793		0.831	
F-Statistic	102.88		54.05		139.91	

Conclusion

This study examined the relationship between credit risk and the financial performance of microfinance institutions (MFIs) in Pakistan, while considering the moderating role of the Board Risk Committee. Using panel data from 19 microfinance banks covering the period from 2012 to 2021, the study provides robust empirical evidence on how credit risk management interacts with governance structures to influence institutional performance. The analysis employed three key performance indicators Return on Assets (ROA), Return on Equity (ROE),

and Operational Self-Sufficiency (OSS) to capture different dimensions of financial sustainability and profitability. Credit risk was proxied by Portfolio at Risk (PAR) and Non-Performing Loans (NPL), two commonly used measures in the microfinance literature. The Board Risk Committee Index (RCINDEX), comprising risk committee size, independence, and competence, was introduced as a composite moderating variable to evaluate the effectiveness of risk governance in mitigating financial vulnerabilities.

The findings reveal that credit risk exerts a significant negative impact on the financial performance of MFIs in Pakistan. Both PAR and NPL were found to reduce ROA and ROE, while PAR had a consistently negative effect on OSS. These results are consistent with previous studies in emerging economies, underscoring that higher credit risk deteriorates institutional profitability and sustainability. However, the study also confirms that an active and competent Board Risk Committee can alleviate some of these adverse effects. The RCINDEX positively moderates the relationship between PAR and financial performance, indicating that governance mechanisms centered on risk oversight can reduce the harmful consequences of credit risk. This effect was particularly significant for PAR, suggesting that the Board Risk Committee is effective in preventive risk management related to portfolio quality. For NPL, however, the moderating effect was weaker and statistically insignificant in some cases, which implies that while the risk committee can influence early risk detection and mitigation, its ability to resolve defaulted loans may be limited. These findings contribute to the microfinance governance literature by highlighting the role of board-level risk committees in enhancing financial resilience. From a theoretical standpoint, the results support agency theory and stakeholder theory, confirming that improved governance structures can align managerial actions with both shareholder and stakeholder interests, particularly in managing risks that affect financial performance. The study also aligns with the risk management framework, emphasizing the need for proactive governance in volatile lending environments.

In terms of policy implications, the results suggest that regulatory authorities, such as the State Bank of Pakistan, should encourage or mandate the formation of well-structured risk committees within microfinance institutions. These committees should not only be present in name but should be composed of members with adequate expertise and independence to function effectively. The study further recommends that MFIs invest in strengthening internal governance processes, particularly focusing on risk management training and independent oversight. As the microfinance sector in Pakistan continues to grow, managing credit risk will remain a central challenge, and governance mechanisms must evolve accordingly to sustain financial inclusion without compromising institutional viability. Despite the robust methodology and comprehensive dataset, the study acknowledges some limitations. The sample is limited to 19 microfinance banks, although they represent over 80% of the market share. Future research could expand the scope to include non-bank microfinance institutions and explore other moderating variables such as regulatory quality or technological adoption. Additionally, longitudinal qualitative assessments could complement the quantitative findings to capture the nuanced dynamics of risk governance in microfinance. Overall, this study provides new empirical insights into the interplay between credit risk, financial performance, and board-level governance in Pakistan's microfinance sector. The findings are relevant not only for academics but also for practitioners and policymakers aiming to foster sustainable and resilient microfinance operations in emerging economies.

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