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[Examining the Mediating Role of Leverage in to the Linkage between Credit Risk and Firm Financial Performance: Empirical Evidence from Banking Sector]

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ABSTRACT

This study examines the mediating role of leverage in the relationship between credit risk and financial performance within the banking sector. Credit risk, arising from potential borrower defaults, is a significant concern for banks as it can severely impact profitability and long-term stability. Leverage, which refers to the proportion of debt in a bank's capital structure, may amplify the effects of credit risk on financial performance. Despite substantial research on credit risk and financial performance, the interaction between credit risk, leverage, and performance remains under explored. This research aims to fill this gap by analyzing empirical evidence from Pakistani commercial banks. Using data from 2010 to 2023, the study investigates whether leverage mediates the relationship between credit risk (measured by the non-performing loan ratio) and financial performance (assessed through Return on Assets, ROA). The findings reveal that higher credit risk leads to increased leverage, which in turn exacerbates the negative impact of credit risk on profitability. The results confirm that leverage partially mediates the relationship between credit risk and financial performance. These findings highlight the importance of managing credit risk and optimizing capital structure to improve financial outcomes in the banking sector. This study offers valuable insights for policymakers, bank managers, and investors on maintaining financial stability while managing credit risk effectively.

Keywords: Credit risk, Leverage, Financial performance, Banking sector, Non-performing loans, Return on assets, Capital structure, Mediation analysis

Introduction

The banking sector plays a crucial role in the economic development of nations by facilitating financial inter mediation, providing loans, and supporting business growth. However, banks face a myriad of risks, with credit risk being one of the most significant. Credit risk arises from the potential that borrowers may fail to meet their debt obligations, leading to financial losses for banks. The impact of credit risk on banks' financial performance has long been a subject of academic research, particularly in the context of emerging markets and developed economies. An effective management of credit risk is vital for maintaining a bank's profitability and long-term stability (Apergis & Payne, 2021; Uwuigbe & Oyekanmi, 2022).

Financial performance is a key indicator of a firm's ability to generate earnings and sustain growth. In the banking sector, profitability metrics such as Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM) are often used to assess performance. Credit risk directly impacts these metrics by increasing the likelihood of default and impairing asset quality, which in turn affects profitability (Beltratti & Stulz, 2023). Despite the well-documented negative relationship between credit risk and financial performance, the underlying mechanisms that explain this relationship remain under explored.

One crucial factor that may mediate this relationship is leverage. Leverage, defined as the proportion of debt in a firm's capital structure, influences the sensitivity of a bank's financial performance to credit risk. High levels of leverage amplify both the potential returns and risks associated with credit exposure, making it a potential mediator between credit risk and financial performance. The interaction between credit risk, leverage, and financial performance has received limited attention in the literature, particularly within the context of the banking sector.

Recent studies emphasize that the relationship between credit risk and financial performance is not linear but may be moderated by various factors, including leverage (Mohammad et al., 2023; Khan et al., 2024). However, the mediating role of leverage remains an area of active investigation. By analyzing the impact of leverage on the link between credit risk and financial performance, this study seeks to contribute to the literature by providing empirical evidence from the banking sector, shedding light on the dynamics of financial performance in the face of credit risk.

Thus, this study aims to examine the mediating role of leverage in the relationship between credit risk and firm financial performance in the banking sector. By exploring this link, the research will offer valuable insights for policymakers, bank managers, and investors on how to manage credit risk effectively while optimizing the capital structure for improved financial outcomes.

Research Objectives

The following are the objectives of research:

i- To probe the credit risk effect on firm financial performance.

ii- To examine the mediating effect of leverage level in the relationship between credit risk and firm performance.

Research Questions

i- What is the effect of credit risk in firm performance?

ii- How relation between credit risk and firm performance mediates by leverage level of banks?

Literature Review

Credit Risk and Financial Performance in the Banking Sector

Credit risk is one of the most significant risks faced by banks, as it directly affects their financial performance. A large body of literature has explored the impact of credit risk on financial performance. For example, Naceur and Kandil (2013) found that higher credit risk in banks led to a decrease in profitability due to loan defaults and increased provision requirements. Similarly, Boudriga et al. (2010)

showed that credit risk negatively affects the performance of banks in Tunisia, as non-performing loans (NPLs) reduce earnings by forcing banks to allocate more resources to loan loss provisions.
However, the relationship between credit risk and financial performance is not always straightforward. Some studies have indicated that the effects of credit risk on profitability can be moderated by other factors such as capital structure, management quality, and operational efficiency (e.g., Pasiouras et al., 2011).

The Role of Leverage in Banking Performance

Leverage in the banking sector refers to the proportion of debt in the capital structure of a bank. A high level of leverage means that a bank has a greater reliance on borrowed funds, which can amplify returns but also increase the risk of insolvency if not managed properly. Several studies have analyzed the relationship between leverage and financial performance in the banking sector.
Frank and Goyal (2012) found that banks with higher leverage ratios tended to perform better during economic booms but were more vulnerable to downturns. On the other hand, Demirgüç-Kunt and Huizinga (2010) suggested that high leverage could be detrimental to banks' stability, particularly when coupled with high levels of credit risk. The trade-off between risk and return makes leverage an important factor in understanding the financial performance of banks.

Leverage as a Mediator Between Credit Risk and Financial Performance

The mediating role of leverage between credit risk and financial performance has been less extensively explored but has garnered attention in more recent studies. Leverage may serve as an intermediary variable by influencing how credit risk affects the financial performance of banks.
A study by Ghosh and Ghosh (2017) examined the relationship between credit risk, leverage, and performance, and found that leverage significantly mediates the relationship between credit risk and profitability. Banks with higher leverage tended to experience more substantial declines in profitability when credit risk increased due to the added pressure on their balance sheets.
Similarly, Alam and Wang (2020) suggested that banks with high leverage ratios face more pronounced negative effects on their financial performance as credit risk rises. This is because leverage amplifies the consequences of loan defaults and increases the risk of capital erosion, which diminishes profitability and leads to lower returns on equity (ROE).
Saha and Rathi (2022) empirically tested the mediating role of leverage in the Indian banking sector. They found that leverage partially mediates the relationship between credit risk (measured as non-performing loans) and financial performance (measured as ROE). Their findings suggest that the financial performance of banks with higher leverage is more sensitive to credit risk, as leverage increases the bank's exposure to loan defaults and solvency risk.

Empirical Evidence from the Banking Sector

Empirical studies from different regions support the view that leverage plays a crucial role in moderating the effects of credit risk on financial performance. For example, Irfan et al. (2018) studied the banking sector in Pakistan and confirmed that leverage amplifies the negative effect of credit risk on financial performance. Their findings showed that banks with high leverage ratios were more vulnerable to the adverse effects of credit risk, which led to lower profitability and reduced efficiency.

In contrast, Kassim et al. (2016) explored the role of leverage in Southeast Asian banks and found that leverage did not always mediate the relationship between credit risk and profitability in a linear fashion. They suggested that the relationship is context-dependent, with the level of economic development, regulatory environment, and bank-specific factors influencing the extent to which leverage mediates the effect of credit risk.

Vasilenko and O'Rourke (2021) conducted an analysis of European banks and found that the effect of credit risk on performance was more pronounced for highly leveraged banks. They concluded that leverage acted as a magnifier for the negative impact of credit risk on profitability, especially during financial crises when non-performing loans increase.

Methodology

Research Design

This study adopts a quantitative research design to empirically test the hypothesized relationships among credit risk, leverage, and financial performance. The research is cross-sectional in nature.

Population of the Study

The population of this study consists of all commercial banks operating within the banking sector of Pakistan, specifically those that are publicly listed on the Pakistan Stock Exchange (PSX). These banks are selected due to their publicly available financial data, which is essential for the empirical analysis of credit risk, leverage, and financial performance.

Data Collection Tools

The study utilizes secondary data obtained from publicly available financial statements and reports of Pakistani banks listed on the Pakistan Stock Exchange (PSX). The sample period is from 2010 to 2023, as this range provides sufficient data for a comprehensive analysis while considering recent economic and financial trends affecting the banking sector in Pakistan.

The data sources include Annual reports of respective banks, financial databases, State Bank of Pakistan for macroeconomic indicators.

Results

Table 1: Descriptive Statistics of Variables

Variable	Mean	Std. Dev.	Min	Max
Credit Risk (NPL Ratio)	4.5%	3.2%	0.5%	15.0%
Leverage (Debt-to-Equity)	2.5	1.0	1.0	6.0
Financial Performance (ROA)	1.2%	0.8%	-1.5%	3.0%

The table 1 shows basic descriptive statistics for the variables involved. Credit risk (NPL ratio) shows an average of 4.5%, indicating moderate risk across banks, while leverage has an average of 2.5, suggesting that banks are using more debt compared to equity. ROA is low on average, reflecting the overall financial performance of the sector.

Table 2: Correlation Matrix

Variable	Credit Risk	Leverage	Financial Performance
Credit Risk (NPL Ratio)	1	0.45	-0.30
Leverage (Debt-to-Equity)	0.45	1	-0.20
Financial Performance (ROA)	-0.30	-0.20	1

The above correlation matrix table reveals that a positive correlation between credit risk and leverage (0.45), suggesting that higher credit risk is associated with higher leverage. A negative correlation between credit risk and financial performance (-0.30), which is expected, as higher credit risk tends to erode profitability and a negative correlation between leverage and financial performance (-0.20), suggesting that higher leverage could be detrimental to profitability, though the relationship is weaker.

Table 3: Mediation Analysis Results

Path	Coefficient	Standard Error	t-statistic	p-value
Credit Risk → Leverage	0.35	0.08	4.375	0.000
Leverage → Financial Performance	-0.15	0.05	-3.000	0.003
Credit Risk → Financial Performance (Direct Effect)	-0.25	0.07	-3.571	0.001
Indirect Effect (via Leverage)	-0.053	0.015	-3.533	0.002

The first row of table 3 indicates a significant positive relationship between credit risk and leverage (coefficient = 0.35), suggesting that higher credit risk is associated with an increase in leverage. The second row shows that leverage has a negative effect on financial performance (coefficient = -0.15), indicating that higher leverage is associated with lower profitability. The direct effect of credit risk on financial performance is negative and significant (coefficient = -0.25), suggesting that higher credit risk directly leads to lower profitability. The indirect effect (mediated through leverage) is also significant (coefficient = -0.053), confirming that leverage partially mediates the relationship between credit risk and financial performance.

Conclusion

This study provides empirical evidence on the mediating role of leverage in the relationship between credit risk and financial performance in Pakistan's banking sector. It confirms that higher credit risk, measured through the non-performing loan (NPL) ratio, negatively impacts financial performance (ROA), as increased credit risk leads to lower profitability. Leverage, measured by the debt-to-equity ratio, was found to partially mediate this relationship, with higher credit risk increasing leverage, which in turn exacerbates the negative effect on profitability. The findings highlight the importance of effective credit risk management and a balanced capital structure to mitigate these adverse effects. Policymakers and bank managers are encouraged to manage leverage prudently to maintain financial stability, while future research could explore additional factors such as liquidity or market conditions.

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