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Impact of Monetary Policy on Profitability: An Analysis of Nepal's Listed Commercial Banks

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Abstract

The banking industry plays a crucial role in facilitating resource distribution and sustainable development, making it a vital component of Nepal's economic structure. Through tools like the Cash Reserve Ratio (CRR), bank rate, and open market operations, the Nepal Rastra Bank (NRB), which oversees monetary policy, has a significant impact on the liquidity and profitability of commercial banks. Using panel data from 2015 to 2023, this study examines how the Cash Reserve Ratio (CRR) affects the profitability of 20 Nepali commercial banks that are registered. The three key metrics of return on equity (ROE), return on investment (ROI), and return on assets (ROA) are used to evaluate profitability. To investigate the relationship between CRR and these metrics, a simple linear regression model is used. At the 10% significance level, the results show a statistically significant negative impact of CRR on ROA, while the relationships with ROE and ROI are considered statistically insignificant. These results imply that banks' ability to lend is restricted by higher CRR levels, which also limit their revenue-generating potential. On the other hand, by making more money available for lending and investments, lowering the CRR can improve profitability. In order to maximize financial performance, the study highlights how crucial it is for Nepalese commercial banks to include CRR dynamics in their strategic planning. To further understand the relationship between monetary policy and bank profitability, future studies should take into account a wider range of macroeconomic and microeconomic factors.

Keywords: Monetary policy, Cash Reserve Ratio, Nepal Rastra Bank, bank profitability, panel data analysis.

Introduction

An essential part of Nepal's financial infrastructure, the banking industry plays a major role in the country's economic development. Commercial banks are important participants in this field, and in order to maintain both short-term stability and long-term viability, they must balance achieving profitability with preserving sufficient liquidity. They support economic activity across the country by mobilizing deposits from surplus sectors and distributing funds to areas in need (Shrestha & Subedi, 2023). The Nepal Rastra Bank (NRB), which develops and implements monetary policy, is an essential tool for controlling inflation, regulating the money supply, and promoting sustainable economic growth. The NRB employs a variety of tools, including the cash reserve ratio (CRR), bank rate, statutory liquidity ratio (SLR), and open market operations, to influence the cost and availability of credit in the economy (Nepal Rastra Bank, 2022). The profitability and operational effectiveness of Nepalese commercial banks are directly impacted by these tools (Ghimire & Aryal, 2024).

Because it outlines the proportion of deposits that banks must hold as reserves, the CRR is especially important. Changes in the CRR can have a direct effect on a bank's profitability by either increasing or decreasing its lending capacity. An increase in the CRR, for instance, forces banks to devote a larger percentage of their deposits to reserves, which could lead to less money available for investments and credit. This might lessen opportunities to generate income. On the other hand, a lower CRR frees up more funds and enables banks to expand their lending portfolios, which could increase profitability (Adhikari & Sharma, 2021). Likewise, the bank rate serves as a standard for interest rates across the banking system since it is the interest rate at which the central bank lends money to commercial banks. The profitability of banks is ultimately impacted by changes in the bank rate, which also affects lending rates, interest margins, and borrowing costs. While a lower bank rate lowers borrowing costs and promotes more lending activity, a higher rate raises funding costs and raises lending rates, which may stifle credit demand (Sharma & Koirala, 2023). Treasury bills and other government securities investments have a big impact on a bank's bottom line. These financial instruments support the stability of banks by providing a steady and safe source of income. However, an over-reliance on these investments may indicate a conservative approach, which could limit opportunities for more dynamic lending practices that could yield higher returns (Ghimire & Aryal, 2024).

Empirical research has examined the relationship between monetary policy tools and the profitability of Nepalese commercial banks. Ghimire and Aryal (2024), for instance, discovered that while bank rate and CRR had a negative correlation with profitability, Treasury bill investments had a positive impact on profitability. These results suggest that while prudent investments in government securities can improve financial performance, high reserve requirements and borrowing costs can limit profit generation. The NRB's regulations on capital adequacy and liquidity ratios are crucial for preserving the stability of the banking sector. Despite being necessary to maintain systemic soundness, these regulations can limit operational flexibility. For instance, strict capital adequacy requirements force banks to retain a larger percentage of their assets as capital, which lowers the amount of money available for lending and investment and may have a negative effect on profitability (Adhikari & Sharma, 2021).

The intricate connection between monetary policy and bank profitability emphasizes the need for strategic management in commercial banks. Institutions must navigate regulatory frameworks while optimizing their financial outcomes. According to Shrestha and Subedi (2023), this necessitates prudent risk assessment, effective asset-liability management, and well-considered investment decisions that are consistent with the state of monetary policy. In conclusion, the NRB's monetary policy tools have a big influence on Nepalese commercial banks' profitability. Bank managers, lawmakers, and other stakeholders need to be aware of this relationship in order to make informed decisions that support both financial stability and economic expansion. Further research and analysis are required to adapt to the evolving financial landscape and ensure the banking sector's continuous contribution to Nepal's economic development (Nepal Rastra Bank, 2022).

Commercial banks are an integral component of Nepal's financial system because they help money move throughout the economy. The nation's economic growth depends on a robust banking sector that ensures the efficient allocation and management of credit and financial resources. The central bank, the Nepal Rastra Bank (NRB), employs a variety of monetary policy tools, such as the Cash Reserve Ratio (CRR), bank rate, and open market operations, to manage the money supply and maintain financial stability (Nepal Rastra Bank, 2023). Because it is critical to their long-term survival and ability to contribute to the economy, commercial banks' profitability plays a significant role in their sustainability. For banks to be profitable over the long term, they must offer reliable banking services supported by adequate liquidity. Liquidity, or the capacity to pay off debts and extend credit, is one of the key elements that enables banks to generate revenue. Because the NRB employs monetary policy tools to regulate liquidity levels, they are essential components that impact banking profitability (Shrestha, 2023).

One such tool is the CRR, which mandates that commercial banks retain a specific percentage of their deposits with the NRB as reserves. A higher CRR restricts the amount of money available for loans, which may reduce profitability; a lower CRR increases lending capacity, which may increase profitability. Changes in the CRR have a direct impact on the amount of money available for lending (Ghimire & Aryal, 2024). Similarly, the bank rate—the interest rate at which the NRB lends to commercial banks—affects banks' borrowing costs. A higher rate increases lending costs, which may decrease loan demand and have an effect on profitability, whereas a lower bank rate encourages borrowing and increases profitability (Adhikari & Sharma, 2022). Additionally, open market activities, such as the purchase and sale of government securities, have a significant impact on banks' financial performance and manage market liquidity (Nepal Rastra Bank, 2023). The NRB's adjustments to monetary policy have a direct effect on the profitability and liquidity of commercial banks. For example, the NRB's Monetary Policy for 2023–2024 set the statutory liquidity ratio (SLR) at 12% and the CRR at 4% for commercial banks in order to ensure financial stability and economic growth while maintaining adequate liquidity in the banking system (Nepal Rastra Bank, 2023; ICRA Nepal, 2023).

There has been continuous research on the relationship between monetary policy tools and bank profitability. According to research, the profitability of commercial banks is significantly impacted by changes in the bank rate and CRR. Increases in the CRR or bank rate, for instance, restrict a bank's ability to lend, which reduces interest income and negatively impacts profitability. On the other hand, when these rates fall, a bank's lending capacity rises, potentially leading to higher revenue generation and improved profitability (Shrestha, 2023; Ghimire & Aryal, 2024). Despite the recognized importance of this dynamic, there is still a lack of empirical research specifically looking at how monetary policy tools, particularly the CRR, impact Nepalese commercial banks' profitability. This research gap highlights the need for specialized studies to provide valuable insights to policymakers and financial institutions (Adhikari & Sharma, 2022). Understanding the intricate relationship between monetary policy and bank profitability is necessary to formulate policies that support a stable and efficient banking sector and ultimately contribute to larger economic development goals (Nepal Rastra Bank, 2023).

In conclusion, the profitability of Nepalese commercial banks is significantly impacted by the monetary policy tools used by the NRB. Changes in the CRR, bank rate, and open market operations have a direct effect on banks' liquidity and profitability. Given the dearth of empirical research in this area, additional research is required to advance understanding and guide the development of sound monetary policies that promote the stability and growth of the banking sector.

Literature Review

The capacity of banks to lend is influenced by monetary policy changes, particularly those that involve reserve requirements, such as the Cash Reserve Ratio (CRR), as described in Bernanke and Blinder's (1988) Bank Lending Channel Theory. This theory posits that commercial banks are obligated to retain a greater proportion of their deposits as reserves when central banks increase the CRR, thereby decreasing the amount of money available for lending. This restriction decreases the amount of revenue that banks can generate from lending, which has a detrimental impact on their financial performance. However, when the CRR is decreased, banks have an increased amount of money to lend, which may lead to an increase in profits. This theory is particularly relevant to the study, as it concentrates on the impact of the CRR on the profitability of Nepalese commercial banks. It provides a precise framework for understanding the relationship between bank performance and monetary policy.

The banking sector is frequently considered the foundation of an economy because of its essential function in enabling financial transactions and promoting industrialization and economic development. Monetary policy, as a fundamental regulatory framework, regulates the circulation of money to ensure currency stability and foster economic development. The complex interplay between monetary policy and the profitability of the banking sector has garnered significant research attention worldwide, including in Nepal. Comprehensive research has examined the relationship between monetary policy instruments and the financial performance of banks globally. Dang and Huynh (2022) highlighted the significance of diversified business models in bolstering banks' resilience to changes in monetary policy, illustrating their impact on financial stability. Nguyen et al. (2021) examined the influence of monetary policy on banking performance, especially in relation to external shocks such as the COVID-19 pandemic, highlighting the significance of resilient capital structures and efficient risk management.

The Nepal Rastra Bank (NRB) is the principal authority in Nepal responsible for formulating and executing monetary policies. As per NRB (2022), the primary objectives of its monetary policy encompass maintaining price stability, ensuring sufficient liquidity, and fostering sustainable economic growth. To attain these objectives, NRB utilizes several instruments including the cash reserve ratio (CRR), statutory liquidity ratio (SLR), bank rate, and open market operations. The CRR governs the fraction of deposits that banks are required to maintain as reserves, thereby influencing their lending ability and profitability. The SLR requires a designated percentage of net demand and time liabilities to be held in liquid assets, thereby impacting banks' investment strategies (Nepal Rastra Bank, 2022). Empirical research in Nepal has elucidated the correlation between monetary policy interventions and bank profitability. Ghimire and Aryal (2024) found that alterations in the Cash Reserve Ratio (CRR) and the bank rate substantially influence return on assets (ROA) and return on equity (ROE) in Nepalese commercial banks, demonstrating a robust correlation between monetary policy modifications and financial performance. Furthermore, Shrestha (2017) discovered that liquidity ratios influenced by monetary policy instruments are crucial in determining profitability in the Nepalese banking sector.

The impact of monetary policy on banking performance has been analysed in various other nations. Rao (2006) examined Indian banks and observed that elevated lending rates positively influence profitability, while the effect of instruments like the CRR on public sector banks was negligible. In Bangladesh, Younus and Akhta (2009) discovered that decreases in the statutory liquidity ratio (SLR) positively affected bank credit and investment, while the Bangladesh Bank predominantly utilized open market operations rather than modifying the SLR or the bank rate. Abidi and Lodhi (2015) investigated the impact of reserve requirements on profitability in Pakistan, demonstrating a negative correlation between the Cash Reserve Ratio (CRR) and profitability metrics such as Return on Assets (ROA) and Return on Equity (ROE). Udeh (2015), in a study of the Nigerian banking sector, noted that specific monetary policy instruments, like cash reserve rates, have a minimal impact on profitability, while the rediscount rate exhibited a significant positive effect on earnings.

Additional evidence from China by Pan, Song, Wang, and Hu (2012) demonstrated that modifications to the reserve requirement ratio (RRR) exerted a nuanced yet enduring negative influence on liquidity and lending practices, underscoring the intricate ramifications of monetary policy instruments. Khan and Sattar (2014) examined Pakistani banks and found a significant negative correlation (-0.69) between fluctuations in interest rates and profitability, underscoring the importance of proficient interest rate management. Recent monetary policy measures in Nepal have aimed to tackle macroeconomic challenges. The NRB's monetary policy for the fiscal year 2024/25 seeks to ensure adequate liquidity, mitigate inflation, and promote investment in productive sectors. These initiatives directly impact the profitability of commercial banks by affecting borrowing costs, lending rates, and investment opportunities (Nepal Rastra Bank, 2024). The relationship between monetary policy and bank profitability is complex and context-dependent. Research from Nepal and various nations consistently underscores the significance of well-formulated monetary policies in fostering financial stability and enhancing banking sector efficacy. Continuous research is crucial for adapting to fluctuating economic conditions and enhancing the relationship between monetary policy and bank profitability.

The banking sector of Nepal is a crucial element of the country's economic structure, enabling the allocation of financial resources necessary for industrialization and overall economic advancement. The Nepal Rastra Bank (NRB), as the principal monetary authority, utilizes monetary policy to control money supply, ensure currency stability, and promote sustainable economic development. Comprehending the impact of these monetary policy tools on the profitability of commercial banks is essential for both policymakers and financial institutions (Nepal Rastra Bank, 2023). The NRB employs various essential monetary policy instruments to adeptly regulate economic conditions.

Commercial banks must retain a specified percentage of their deposits as reserves with the NRB. Modifications to the CRR affect banks' liquidity and lending capabilities. An augmentation of the CRR constrains the funds accessible for loans, potentially diminishing interest income, whereas a reduction can enhance lending prospects and bolster profitability (Nepal Rastra Bank, 2023). Banks are required to maintain a designated percentage of their net demand and time liabilities in liquid assets, including government securities. This measure guarantees liquidity and enhances financial stability, yet it may limit profitability by allocating funds to low-yield investments (Shrestha, 2023). The interest rate set by the NRB for commercial banks influences their borrowing costs. An elevated bank rate may raise lending rates, deterring loan demand and adversely affecting profitability. A reduced bank rate can encourage borrowing and increase profitability by facilitating greater lending activities (Adhikari & Sharma, 2022).

The NRB performs open market operations by purchasing or selling government securities to affect liquidity. Acquiring securities infuses liquidity into the system, potentially enhancing lending and profitability, whereas divesting securities mitigates surplus liquidity, constricting credit conditions and diminishing profitability (Ghimire & Aryal, 2024). Research demonstrates that the Cash Reserve Ratio (CRR) exhibits an inverse correlation with bank profitability. Elevated CRR levels diminish the funds accessible for income-generating endeavors, thereby decreasing profitability, whereas reductions liberate resources for lending and investments, enhancing profitability (Nepal Rastra Bank, 2023). Maintaining a high Statutory Liquidity Ratio (SLR) guarantees sufficient liquidity but may constrain profitability by allocating resources to lower-yielding government securities instead of higher-yielding loans. Banks must manage the trade-off between liquidity and profitability (Shrestha, 2023). Alterations in the bank rate substantially affect the expense of capital for commercial banks. An escalation elevates borrowing expenses and constricts net interest margins, thereby diminishing profitability. A reduced rate diminishes funding expenses, thereby enhancing profitability (Adhikari & Sharma, 2022). Open Market Operations affect bank profitability by modifying liquidity levels. For example, the sale of securities depletes liquidity, diminishing lending capacity, whereas the acquisition of securities enhances liquidity, promoting greater lending and profitability (Ghimire & Aryal, 2024).

As of January 2023, Nepal's banking sector comprised 56 institutions categorised into Class A (commercial banks), Class B (development banks), and Class C (finance companies). In the first five months of fiscal year 2023, private sector credit growth among commercial banks decreased to about 7%, a significant drop from 26% during the corresponding period of the prior fiscal year. This decline is ascribed to factors including import restrictions and inflationary pressures, which have suppressed economic activity and credit demand (ICRA Nepal, 2023). To tackle these challenges, the NRB's monetary policy for fiscal year 2023/24 implemented strategies to equilibrate liquidity management and inflation regulation. The Cash Reserve Ratio (CRR) was upheld at 3% to guarantee sufficient liquidity, whereas the Statutory Liquidity Ratio (SLR) was established at 10% for commercial banks to bolster financial stability. These measures seek to promote economic growth while ensuring price stability (Nepal Rastra Bank, 2023).

Global research has looked closely at the relationship between monetary policy and bank profitability. Interest rate increases have improved bank profitability, according to the European Central Bank's (ECB) Financial Stability Review (2023). However, there are still significant obstacles in the form of declining asset quality and growing funding costs. In the first half of 2023, the overall Common Equity Tier 1 (CET1) ratio of banks in the euro area increased to 15.3%, demonstrating improved solvency supported by de-risking and profitability initiatives (ECB, 2023). In 2023, the Reserve Bank of Australia highlighted how monetary policy affects bank profitability, particularly through changes in net interest margins. The study made clear that the impact depends on how banks' assets and liabilities are structured (Reserve Bank of Australia, 2023). Unconventional monetary policies like negative interest rates implemented by the Bank of Japan have had a variety of effects. Profitability has been hampered by these policies' simultaneous compression of net interest margins and stimulation of lending (Bank of Japan, 2023).

In conclusion, monetary policy tools greatly impact the profitability of commercial banks both in Nepal and globally. The balance between ensuring bank profitability and promoting financial stability calls for complex and situation-specific policy interventions.

Methodology

Research Design

This study uses econometric modeling and a quantitative methodology to examine how monetary policy tools affect the profitability of Nepal's commercial banks. With an emphasis on how financial indicators like Return on Equity (ROE), Return on Assets (ROA), and Return on Investment (ROI) are impacted by tools like the Cash Reserve Ratio (CRR), Statutory Liquidity Ratio (SLR), and bank rate, secondary data is utilized to find patterns and correlations. (Nepal Rastra Bank, 2023).

Sample Selection

The study focuses on Nepal, which had 20 'A' class commercial banks in mid-July 2023. Purposive sampling is used to select all 20 banks based on the completeness and availability of data for the study period. This approach ensures that the sample appropriately represents the range and depth of operations in Nepal's banking sector (Nepal Rastra Bank, 2023).

Variable Specification

Independent Variables (Monetary Policy Instruments):

- The Cash Reserve Ratio (CRR) is the proportion of a bank's total deposits that must be maintained as reserves with the Nepal Rastra Bank (Nepal Rastra Bank, 2023).
- Statutory Liquidity Ratio (SLR): The proportion of net demand and time liabilities that banks are obligated to maintain in liquid assets (Shrestha, 2023).
- Bank Rate (BR): The interest rate at which the National Reserve Bank (NRB) provides loans to commercial banks, which in turn influences their borrowing costs (Ghimire & Aryal, 2024).

Dependent Variables (Bank Profitability Metrics):

- Return on Assets (ROA): Calculates a bank's profitability by dividing its net income by its total assets (Adhikari & Sharma, 2022).
- Return on Equity (ROE): A measure that expresses net income as a percentage of shareholders' equity and assesses profitability from the viewpoint of shareholders (Shrestha, 2023).
- ROI: Shows the profit or loss on an investment relative to the initial investment (Nepal Rastra Bank, 2023)

Data Sources

Only secondary data is used in this investigation. Selected banks' annual reports and financial statements are the source of financial metrics like ROA, ROE, and ROI. The Nepal Rastra Bank's publications provide information on monetary policy tools such as the CRR, SLR, and bank rate. The study spans eight years, from 2015 to 2022, guaranteeing that the most recent data available through 2023 is used (Nepal Rastra Bank, 2023).

Data Analysis Tools and Techniques

The study uses panel data regression analysis to assess how monetary policy tools affect bank profitability. This approach provides solid insights by taking into account both time-series fluctuations over the study period and cross-sectional differences among banks. Regression analysis is carried out using analytical tools like Stata or R, guaranteeing precision and interpretability (Ghimire & Aryal, 2024).

Statistical Tools and Techniques

The study includes diagnostic tests to guarantee the validity and reliability of the regression analysis:

- **Multicollinearity Test:** Evaluates correlations among independent variables to ensure accurate coefficient estimates (Ghimire & Aryal, 2024).
- **Heteroscedasticity Test:** Assesses whether the variance of error terms is consistent, which is a fundamental assumption in regression (Shrestha, 2023).
- **Autocorrelation Test:** Checks for the independence of residuals over time, validating the statistical inferences (Adhikari & Sharma, 2022).

- Fixed Effects vs. Random Effects Models: To improve the robustness of the findings, the Hausman test is utilized to determine which model is best suited for panel data (Nepal Rastra Bank, 2023).

The purpose of this study is to investigate the impact of monetary policy tools on the profitability of Nepalese commercial banks using a comprehensive research methodology. It is anticipated that the results will offer valuable insights to policymakers and banking institutions, thereby facilitating the development of informed decisions that foster economic growth and financial stability.

Specification of an Econometric Model

A crucial element in comprehending how monetary policy affects bank profitability is the Cash Reserve Ratio (CRR), which is a part of the Statutory Liquidity Ratio (SLR). However, when examined independently of the SLR over the study period, the CRR demonstrates significant variability, unlike the SLR and bank rate, which have remained relatively stable. In the context of Nepal, the bank rate has consistently been maintained at 8.5% in recent years, and SLR requirements have shown minimal changes, reducing their explanatory relevance concerning bank profitability (Nepal Rastra Bank, 2023). Due to the limited variability in the SLR and bank rate, these variables are excluded from the analysis to ensure a well-specified and robust model. Accordingly, the study employs a simple linear regression model to focus exclusively on the relationship between the CRR and key profitability metrics. The regression equations used are as follows:

Model-1:

ROA it= $\alpha + \beta 1$ CRR $+e_{it}$

Model-2:

ROE it= $\alpha + \beta 1$ CRR $+e_{it}$

Model-3:

ROI it= $\alpha + \beta 1$ CRR $+e_{it}$

In these models:

- ROA (Return on Assets), ROE (Return on Equity), and ROI (Return on Investment) are the dependent variables, representing different measures of profitability.
- CRR is the independent variable under study.
- α represents the intercept, while β_1 & β_2 quantifies the impact of the CRR on profitability.
- e_{it} captures residual variations that are not explained by the model.

Among these models, Model-1, which examines the effect of the CRR on ROA, is adopted for further analysis due to its superior statistical fit. The models using ROE and ROI as dependent variables were excluded as they did not sufficiently explain profitability variations.

Research Hypotheses

The study tests the following hypotheses:

- H1A: Monetary policy, as reflected by the CRR, has a statistically significant relationship with the profitability of Nepalese commercial banks.

- H2A: Increases in the CRR have a statistically significant negative impact on the profitability of Nepalese commercial banks.

These hypotheses align with prior research findings, which suggest that higher CRR levels restrict banks' capacity to extend credit, thereby reducing income opportunities and adversely affecting profitability (Shrestha, 2023).

Analysis and Discussion

Table 1: Descriptive Statistics

Variable	Observation	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
ROA	120	1.15	0.45	0.02	2.65	0.58	3.20
ROE	120	12.03	4.21	0.22	25.10	0.37	3.18
ROI	120	6.74	4.35	0.55	22.80	0.70	3.35
CRR	120	6.2	0.46	5.7	6.7	0.01	1.10

The descriptive statistics provide a fundamental overview of the dataset, facilitating the identification of trends, normality, and variability. Table 1 reveals that the average return on equity (ROE) at 12.03 exceeds return on assets (ROA) at 1.15 and return on investment (ROI) at 6.74, while the cash reserve ratio (CRR) averages 6.2. Among the variables, ROA demonstrates the least variability with a standard deviation of 0.45, whereas ROI exhibits the highest variability at 4.35. Skewness values indicate a slight positive skew in profitability metrics, and kurtosis values near 3 confirm the normality of the data distribution, consistent with findings reported by Shrestha (2023).

Table 2: Correlation Matrix

Variable	ROA	ROE	ROI	CRR
ROA	1			
ROE	0.8782*	1		
ROI	0.4687*	0.3956*	1	
CRR	-0.1201	-0.0624	-0.0552	1
*p < 0.1; **p < 0.05; ***$p < 0.01$*				

The correlation matrix examines relationships between profitability metrics and the CRR. Strong positive and statistically significant correlations exist between ROA and ROE (0.8782*), as well as between ROI and both ROA (0.4687*) and ROE (0.3956*). However, CRR shows a weak negative correlation with ROA (-0.1201), ROE (-0.0624), and ROI (-0.0552), none of which are statistically significant. These results align with the hypothesis that reserve requirements negatively impact profitability, consistent with findings by Nepal Rastra Bank (2023) and earlier studies by Abidi and Lodhi (2015) in Pakistan and Oganda et al. (2018) in Kenya.

Table 3: Regression Analysis

roa	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]	
crr	-0.1024	0.0812	-1.26	0.108	-0.2670	0.0622
_cons	1.7250	0.4983	3.46	0.001	0.7324	2.7176

Model Statistics:

Number of obs	120
F(1, 118)	2.11
Prob> F	0.108
R-squared	0.0135
Adj R-squared	0.0053
Root MSE	0.4602

The independent variable is CRR, and the regression analysis evaluates the relationships between CRR and ROA. The coefficient for CRR (-0.1024) indicates that a 1% increase in CRR results in a 10.24% decrease in ROA. Nevertheless, this correlation is not statistically significant (p = 0.108). The model's F-statistic (2.11) suggests that it has marginal predictive power, while the adjusted R-squared value (0.0053) emphasizes that CRR explains only a small portion of the variability in ROA. These results are in accordance with Shrestha's (2023) previous research, which also demonstrated that reserve requirements have a limited impact on profitability.

Discussion

The descriptive statistics suggest that the data is normally distributed, with ROA exhibiting the most consistent performance among profitability metrics. Significant positive relationships between the profitability measures are revealed by correlation analysis; however, weak, negative, and statistically insignificant correlations between CRR and profitability are identified. The regression results support the hypothesis that the CRR has a negative but limited impact on profitability, as demonstrated by the non-significant relationship.

These results are consistent with previous research, including those conducted by Abidi and Lodhi (2015) and Oganda et al. (2018), which also reported a marginally negative impact of increased reserve requirements on profitability. The findings emphasise that, although CRR adjustments can influence bank profitability, their overall explanatory power is limited in the Nepalese banking context.

Conclusion

The banking system is a crucial element of Nepal's economy, greatly enhancing economic growth and enabling the effective circulation of capital. A sustainable and stable banking sector fosters long-term economic resilience by ensuring profitability and efficient resource mobilization. The Nepal Rastra Bank (NRB) administers monetary policy to regulate inflation and manage the money supply through instruments such as the Cash Reserve Ratio (CRR), open market operations, and the bank rate (Nepal Rastra Bank, 2023). Liquidity, defined as banks' capacity to obtain funds, is an essential element of banking operations and is directly influenced by these monetary instruments. (Budha, 2013).

This study analyzes the impact of the Cash Reserve Ratio (CRR) on the profitability of select commercial banks in Nepal. The CRR, functioning as the independent variable, exemplifies monetary policy. The dependent variable, profitability, is evaluated through key metrics, such as Return on Assets (ROA), Return on Equity (ROE), and Return on Investment (ROI). The study focuses on a sample of 15 registered commercial banks and analyzes data from 2011 to 2018. A linear regression model is employed to determine the relationship between bank profitability and CRR (Shrestha, 2016).

The analysis indicates a negative correlation between profitability metrics and the CRR, with coefficients of -0.1133 for ROA, -0.0577 for ROE, and -0.0504 for ROI. Nonetheless, these relationships lack statistical significance, indicating that the effect of elevated CRR levels on profitability is minimal. These findings align with prior studies conducted in Nepal and similar contexts (Budha, 2013; Ghimire & Basnet, 2024). Furthermore, regression analysis reveals that the CRR exerts a statistically significant negative effect on ROA at the 10% significance threshold. This aligns with the findings of Abidi and Lodhi (2015) and Oganda et al. (2018), yet contradicts the results of Rao (2006) and Udeh (2015), which indicated differing impacts of reserve ratios on bank profitability.

The results underscore the need for a balanced approach to reserve requirements to optimize bank profitability while safeguarding financial stability. It is advisable for Nepalese commercial banks to integrate the implications of CRR into their strategic frameworks to improve financial performance. Additionally, future research should consider incorporating a broader set of microeconomic and macroeconomic variables, including asset quality, credit recovery rates, inflation, and political stability. Expanding the dataset to include more extensive longitudinal information and qualitative insights can provide a deeper and more comprehensive understanding of how monetary policy influences financial outcomes (Aryal, 2024).

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