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Effects of monetary policy and fiscal policy on profitability of Nepalese commercial banks

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Abstract

This study examines the effects of monetary policy and fiscal policy on the profitability of Nepalese commercial banks. Net interest income and return on equity are dependent variables. The selected independent variables are bank rate, cash reserve ratio, open market operations, foreign debt and capital expenditure. To achieve this, the study adopts a combination of descriptive and causal-comparative research designs, relying on secondary data collected from the fiscal year 2013/14 to 2022/23. The findings of the study indicate that an increase in the bank rate tends to negatively impact net interest income; however, it has a positive influence on return on equity. Similarly, both the cash reserve ratio and open market operations demonstrate a negative relationship with net interest income, while positively affecting return on equity. On the fiscal policy side, the study reveals that higher levels of foreign debt and increased capital expenditure are associated with a positive impact on net interest income but a negative impact on return on equity. In conclusion, the study underscores the importance of a balanced approach to both monetary and fiscal policies to ensure the long-term sustainability and profitability of the Nepalese banking sector. It highlights that policymakers need to be mindful of the broader macroeconomic implications as well as the specific effects their decisions may have on the financial system.

Keyword: Bank rate, Cash reserve ratio, Open market operations, Fiscal deficit, Capital expenditure, Net interest income, Return on equity

JEL classification: E42, E52, E58

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INTRODUCTION

Monetary policy involves the use of monetary instruments to regulate or control the volume, the cost, the availability and the direction of money and credit in an economy to achieve some macroeconomic objectives such as price stability, full employment and sustainable economic growth (Mishkin, 2013). The banking system is considered as the most important channel of implementing monetary policy. The monetary instruments including discount rate, open market operation, reserve requirements, etc. do not affect economic activities directly. They influence economic activities through their effects on available resources in the banking sector. In a similar way, fiscal policy is the use of government's revenue collection, debt and expenditures to influence the economy (Keynes, 2007). A government's main source of revenue is through tax collection while borrowings are made in addition to the revenue to meet all the government expenditure. The tax structure adopted by any government therefore has an effect on its economy mainly through varying interest rates which is an important source of profits for the banks. The relationship between a government's fiscal position and the profitability of commercial banks operating in a country is potentially of great importance to economic policy-makers. Blinder (2006) explains that if the government runs a budget deficit then it would be forced to compete with the private sector for funds. This competition for funds in turn drives up real interest rates resulting in a decline in investment as it is an interest-sensitive component of private spending. The private sector consists of individual or group owned businesses other than government owned or operated which also obtain services and funds from financial institutions mostly commercial banks. Governments use fiscal policy to influence the economy by adjusting spending levels and revenue (Afonso & Sousa, 2011). Traditionally fiscal policy is seen as an instrument of demand management.

Profitability is the most common measure of firm performance. The measures of profitability are used to assess how well management invests the firms' total capital and raises funds. Profitability is generally the most important to the firm's total shareholders. Profits serve as a cushion against adverse conditions such as losses on loans, or losses caused by unexpected changes in interest rates (Gitogo et al., 2013). Profitability is a guide of the net outcome activities and policies commenced by commercial banks and maintains its stability and growth (Greuning & Bratanovic, 2009). To measure the profitability, there is a variety of ratios used of which Return on Asset and Net Interest Margin are the major ones. Return on assets is a profitability ratio

that provides how much profit a company is able to generate from its assets. In other words, return on assets (ROA) measures how efficient a company's management is in generating earnings from their economic resources or assets on their balance sheet while net interest margin shows bank management's ability when it becomes a manager of productive assets to obtain net interest income (Saleh & Afifa, 2020). Risks are an inevitable consequence of being in business. The bank's aim is therefore to achieve an appropriate balance between risk and return and minimise potential adverse effects on its performance. Profitability in the banking world is very important for owners, depositors, government and society (Audhya, 2014). Profitability is important for banks and is used to measure the effectiveness of a bank in generating profits by utilising its total assets (Agustiningrum, 2013). High and sufficient profits are the central point to help the banks grow and survive. When the profit is low and insufficient, the banks face many problems.

The banking sector is the prime participant in the financial system of any country in the world. Economic development and growth in any country highly rely on the robust banking system of the respective country. To maintain a sound banking system, participants or commercial banks must ensure liquidity, profitability and efficiency. The main activities of commercial banks are to collect deposits from surplus sectors and distribute funds in deficit sectors. For smoothing the banking activities, banks should ensure proper trade-off between profitability and liquidity. Commercial banks require profitability for the long-run survival in the market and liquidity necessary for short-term surviving in the competitive market. Profitability confirms the bank's long-term solvency and liquidity ensures short-term solvency. The monetary policy indicates the amalgamation of measures arranged to manage the supply, outlay and value of money in a particular territory. It can also be defined as the mechanism of overseeing the volume of funding facilities to keep stability in price and budgetary progress in a country (Chowdhury et al., 2006). Again, in another way, monetary policy attributes to the response of a country's central bank to control the volume of currency with the help of various instruments like open market operation; cash reserve ratio and bank rate, moral suasion, forthright monitoring of bank's credit, and sincere supervision of lending and borrowing interest rate (Loayza & Schmidt-Hebbel, 2002).

The goal of monetary policy is to regulate the supply of money by making changes in the interest rates and rate of inflation for overall economic growth and stability. Monetary policy can be expansionary or contractionary policy. An expansionary monetary policy leads to an increase in the total supply of

money in the economy while a contractionary monetary policy leads to a decrease in the total money supply in the economy (Mankiw, 2013). Either of the policies has a vital role in the economy as they both promote economic development. The regulation of economic performance can be observed as change in the macroeconomic variables such as inflation, gross domestic product, and employment. The policy works by controlling the amount of money in circulation via its frequent manipulation of interest rates in order to foster both economic expansion and stability. The link between an economy's total money supply and interest rate often referred to as cost of borrowing money from bank, is maintained by monetary policy. This price of money can be thought of as the cost of borrowing money in an economy (Reddy, 2011).

Malik et al. (2014) investigate the interest rate and its effect on profitability. The study reveals that there is a positive effect of interest rate on bank performance in Pakistan. Similarly, Montes and Perez (2018) analyse the effect of level of interest rate on bank profitability and balance sheet structure. The study reveals that there is a negative effect of low interest rate on bank profitability. Similarly, Toro and Emmanuel (2020) examine the effect of monetary policy on the performance of listed deposit money banks in Nigeria from 2006-2018. The study shows that interest rate has an insignificant impact on net profit margin. According to Mbabazize et al. (2020), monetary policy in terms of its link to the lending rate has a significant causal effect on profitability of banks. Further, Meshack and Nyamute (2016) investigate the effect of monetary policy on the financial performance of commercial banks listed in the Nairobi securities Exchange in Kenya. The study reveals that cash reserve ratio has a negative influence on the financial performance of commercial banks listed on the NSE. In addition, Okheshimi (2020) assesses the impact of monetary policy and commercial banks assets quality in Nigeria: Panel data analysis. The study reveals that cash reserve ratio has no significant relationship with assets quality indicators of commercial banks in Nigeria. Moreover, Toro and Emmanuel (2020) analyse the effect of monetary policy on the performance of listed deposit money banks in Nigeria from 2006-2018. The study shows that cash reserve ratio is insignificant to the net profit margin. In addition, Nguyen et al. (2017) investigate the impact of monetary policy on profitability of banks in Vietnam. The results of the study reveal that there is a positive relationship between monetary policy and bank profitability.

Oudat and Ali (2020) investigates the effect of bad debt, market capitalisation, operation cost, capital adequacy, cash reserves on financial performance.

The study shows that cash reserve ratio has a positive and significant impact on the financial performance. Similarly, Meshack and Nyamute (2016) examine the effect of monetary policy on the financial performance of commercial banks listed in the Nairobi securities Exchange in Kenya. The study reveals that open market operation rates have positive impact on returns of the listed commercial banks. The study also reveals that open market operation rates are positively correlated with the financial performance of the commercial banks. Further, Akeem et al. (2022)investigate monetary policy and financial performance from listed deposit money banks in Nigeria. The study reveals that open market operations have no significant positive effect on profitability. Similarly, Mutai (2019) analyses the monetary policy and performance of selected commercial banks in Kenya. The study reveals a negative correlation between open market operation and performance of commercial banks in Kenya. Further, Makochekanwa (2008) analyses the impact of budget deficit on inflation in Zimbabwe. The study concludes that the budget deficit positively and significantly impacts on inflation. In addition, Odhiambo et al. (2013) investigate the relationship between fiscal deficits and economic growth in Kenya, which reveals that there is a positive relationship between budget deficits and economic growth.

De Bonis and Stacchini (2013) examine whether government debt affects bank credit. The study reveals that government debt to GDP has a negative association with the subsequent growth of bank credit. Similarly, Katsimi and Sarantides (2011) investigate the impact of fiscal policy on profits. The study reveals that capital expenditure has a positive impact on profits. Similarly, De Schoenmaker et al. (2014) analyse the effect of local fiscal policy on firm profitability. The study shows that aggregate public spending has a positive influence on profitability. Further, Orodi (2022) analyses the effects of fiscal policy on the performance of commercial banks in Kenya. The result shows that there is no concrete or direct evidence demonstrating how budgeting affects the performance of commercial banks, despite the budget surplus having a beneficial effect on bank lending. Additionally, taxes have a significant impact on the infrastructure development that is essential for enhancing the performance of businesses. In addition, Zaman et al. (2014) analyse the impact of monetary policy on financial performance of the banks in Pakistan. The study reveals that monetary policy has an inverse effect on bank performance in Pakistani banks. Moreover, Windsor et al. (2023) explore the relationship between bank profitability and interest rate. The study concludes that the effect of decreasing interest rate on bank profitability is minimal. Similarly, Philip (2021) investigates the budget deficit-macroeconomic variables nexus

in Kenya. The study reveals that external debt servicing and current account deficit shocks have negative impact on the budget deficit. Similarly, Bala et al. (2022) analyse the effect of monetary policy on the performance of deposit money banks in Nigeria. The study reveals that bank lending rate and liquidity rate have significant impact on performance in long-run while interest rate is insignificant.

In the context of Nepal, Pokharel (2009) emphasises the importance of open market operations as one of the major instruments of monetary policy. These tools typically have as their primary short-term objective the realisation of a predetermined short-term interest rate target. The monetary policy of 2015/16 mainly focuses on increasing the capital for the commercial banks and other financial institutions as well as maintaining the stability of price, promoting economic growth and financial sector stability, increasing the financial access and leading to overall economic growth. The fiscal year 2015/16 is considered as an important milestone in context of Nepal. This is because it leads to formulation of new constitution. The investment climate also seems to be favourable through timely implementation of government budget along with political transition. It is assumed that these, together with the anticipated increase in agricultural production citing the favourable monsoon, would be helpful in achieving the government's projected economic growth (Nepal, 2015). Similarly, Bhattarai (2020) argues that the Nepal Rashtra Bank (NRB)'s monetary policy needs greater flexibility, especially in terms of adapting to external shocks such as remittance volatility and trade imbalances. The study recommends adopting inflation targeting frameworks to increase effectiveness.

Paudel and Sapkota (2019) explore the fiscal multiplier in Nepal and finds that government expenditure has a positive but modest impact on GDP growth, suggesting limited effectiveness of fiscal policy unless linked with capital investment efficiency. Further, Adhikari and Sharma (2021) analyse the policy response and finds that although the NRB quickly introduces refinancing schemes and liquidity support, the fiscal side struggles with disbursement and lacks targeted stimulus. Post-COVID inflation, fuelled by supply-side issues and global energy prices, exposes the limitations of monetary policy in managing imported inflation. In addition, Shrestha (2023) discusses the impact of global inflation and rupee depreciation, arguing that Nepal needs to strengthen automatic stabilisers and diversify its remittance-dependent economy. The monetary policy is too conservative, stating that NRB's cautious stance may hinder the required pace of private sector growth. Better co-

ordination between fiscal and monetary policies can only enhance aggregate demand. Similarly, Pyakuryal (2024) states that the growing fiscal deficit and increasing public debt might pose risks to long-term stability.

Despite the extensive literature on the impact of monetary and fiscal policies on the banking sector, there remains a significant research gap in understanding their combined effects on the profitability of Nepalese commercial banks. Previous studies largely focus on either monetary policy (e.g., interest rates, money supply, and central bank regulations) or fiscal policy (e.g., government spending, taxation, and budget deficits) in isolation, with limited empirical analysis on how these policies interact to shape banking sector performance in Nepal (Adhikari, 2018; Sharma & Acharya, 2020).

Furthermore, much of the existing research is conducted in developed or emerging economies, with findings that may not be fully applicable to Nepal's unique economic structure, regulatory framework, and banking landscape (Paudel, 2019). The Nepalese financial system operates under distinct challenges, including liquidity constraints, high non-performing assets, and fluctuating macroeconomic conditions, which necessitate a localised examination of policy effects. Additionally, the existing literature does not sufficiently address how commercial banks of different sizes respond differently to policy changes. Larger banks may have more diversified revenue streams and capital buffers, while smaller banks may be more vulnerable to policy shocks (Dahal, 2022). A comparative analysis based on bank size, ownership structure (private vs. public banks), or financial health is missing from the literature.

The above discussion shows that empirical evidence varies greatly across the studies on the effects of monetary policy and fiscal policy on profitability of commercial banks. Though there are above mentioned empirical evidences in the context of other countries and in Nepal, no such findings using more recent data exist in the context of Nepal. Therefore, in order to support one view or the other, this study is conducted.

The major objective of the study is to examine the effects of monetary policy and fiscal policy on profitability of Nepalese commercial banks. Specifically, it examines the relationship of bank rate, cash reserve ratio, open market operations, foreign debt, and capital expenditure with profitability of Nepalese commercial banks.

The remainder of this study is organised as follows: Section two describes

the sample, data and methodology. Section three presents the empirical results and the final section draws the conclusion.

RESEARCH METHODOLOGY

Research Design

The study adopts a descriptive and correlational research design. This quantitative approach is chosen because the study uses data for individual units (banks) over a period of time. Panel data based multivariate regression analytical procedures are suitable to estimate the effect of common policies and interventions that cut across the units being studied.

Study population and the sample selection

At the time of this study, there are a total of 20 registered commercial banks. These 20 commercial banks form the study population. Out of the 20 commercial banks, 10 of these are studied because of data availability and consistency over the study period. The study employs a convenience sampling method. Table 1 shows the list of commercial banks selected for the study along with the study period and number of observations. The study is based on the 100 observations.

Table 1: Data

Table 1 presents the list of commercial banks selected for the study along with study period and number of observations

S.N.	Name of the banks	Study period	Observations
1	Rastriya Banijya Bank Limited	2013/14–2022/23	10
2	Nepal Bank Limited	2013/14–2022/23	10
3	Agricultural Development Bank Limited	2013/14–2022/23	10
4	Everest Bank Limited	2013/14–2022/23	10
5	Standard Chartered Bank Nepal Limited	2013/14–2022/23	10
6	Machhapuchchhre Bank Limited	2013/14–2022/23	10
7	Nepal SBI Bank Limited	2013/14–2022/23	10
8	Siddhartha Bank Limited	2013/14–2022/23	10
9	Prime Commercial Bank Limited	2013/14–2022/23	10
10	NMB Bank Limited	2013/14–2022/23	10
	Total observations		100

Econometric Model

The model used in this study assumes that profitability depends upon monetary policy and fiscal policy. The dependent variables selected for the study are net interest income and return on equity. Similarly, the selected independent variables are bank rate, cash reserve ratio, open market operations, foreign debt, and capital expenditure. Therefore, the models take the following forms:

$$NII = \beta_0 + \beta_1 BR_{it} + \beta_2 CRR_{it} + \beta_3 OMO_{it} + \beta_4 FD_{it} + \beta_5 CE_{it} + \varepsilon_{it} \quad (1)$$

$$ROE = \beta_0 + \beta_1 BR_{it} + \beta_2 CRRit + \beta_3 OMO_{it} + \beta_4 FD_{it} + \beta_5 CE_{it} + \varepsilon_{it} \quad (2)$$

Where,
NII = Net interest income as measured by the difference between interest revenue and interest expenses, Rs. in billion.
ROE = Return on equity as measured by the ratio of net income to total equity, in percentage.
BR = Bank rate set by NRB, in percentage.
CRR = Cash reserve ratio, in percentage.
OMO = Total money absorb from market in a fiscal year in, Rs. in billion.
FD = Total foreign debt mobilized in year, Rs. in billion.
CE = Total capital expenditure, Rs. in billion.

Explanation of Selected Variables

The selection of independent variables for this study is guided by a thorough review of related literature and established economic theories, ensuring both theoretical relevance and practical applicability. Previous scholarly work helps identify key monetary and fiscal policy variables that have significant impacts on banking profitability, which is the focus of this study. Where necessary, modifications are made to tailor the variables to the specific context of Nepal's banking sector, while also considering the availability and reliability of data.

The bank rate is a fundamental monetary policy instrument directly set by NRB. The bank rate serves as a benchmark for lending rates in the economy, influencing the cost of credit and overall financial conditions. Its inclusion is essential as it directly affects banks' interest income and lending behaviour. Similarly, the cash reserve ratio determines the proportion of deposits that commercial banks must hold as reserves with the central bank, thereby impacting their liquidity position. A higher CRR restricts banks' lending capacity, while a lower CRR increases liquidity available for credit extension. Thus,

CRR is a critical monetary policy variable influencing bank profitability. Similarly, OMOs are employed by the NRB to regulate liquidity in the banking system through the buying and selling of government securities. By affecting short-term interest rates and money supply, OMOs serve as an important tool for monetary control, justifying their inclusion in the model. Further, foreign debt and capital expenditure represent fiscal policy components that have indirect but substantial effects on banking stability. Foreign debt influences the country's external financial obligations and may affect macroeconomic stability, while capital expenditure reflects government investment in infrastructure and public services, which can impact economic growth and, consequently, the banking sector's performance.

Overall, the chosen variables comprehensively capture the major channels through which monetary and fiscal policies affect the banking system, making them appropriate for inclusion in the empirical analysis. The following section describes the independent variables used in this study along with the hypothesis formulation:

Bank Rate

The bank rate is the interest rate charged by the central bank when providing loans to banks and financial institutions on acceptable collateral. The bank rate is known by a number of different terms depending on the country, and has changed over time in some countries as the mechanisms used to manage the rate have changed. Whenever a bank has a shortage of funds, it can typically borrow from the central bank based on the monetary policy of the country. According to Windsor et al. (2023), the effect of decreasing bank rate on bank profitability is minimal. Similarly, Zaman et al. (2014) reveal that monetary policy has an inverse effect on bank performance in Pakistani banks. Similarly, there is a negative effect of low interest rate on bank profitability. Further, Toro and Emmanuel (2020) show that bank rate is insignificant on net profit margin. In addition, Rao (2006) states that there is a negative impact of bank rate on the firms' profitability. In addition, monetary policy in terms of its link to the bank rate has a significant effect on profitability of banks (Mbabazize et al., 2020). Based on it, this study develops the following hypothesis:

H1: There is a negative relationship between bank rate and banks' profitability.

Cash reserve ratio

The cash reserve ratio is a specified minimum fraction of the total deposits of customers, which commercial banks have to hold as reserves either in cash or as deposits with the central bank. The cash reserve ratio is set according to the guidelines of the central bank of a country. According to Meshack and Nyamute (2016), the cash reserve ratio has a negative influence on financial performance. Similarly, Hoque et al. (2020) reveal that the cash reserve ratio has a negative impact on return on equity. Further, the cash reserve ratio has a negative but a significant effect on return on equity (Akinleye & Oluwadare, 2022). Further, Akeem et al. (2022) reveal that cash reserve ratios have a significant and positive effect on the profitability. Moreover, Okheshimi (2020) reveals that the cash reserve ratio has an insignificant relationship with assets quality indicators of commercial banks. Based on it, this study develops the following hypothesis:

H2: There is a negative relationship between cash reserve ratio and banks' profitability.

Open Market Operation

According to Meshack and Nyamute (2016), open market operation rates are positively correlated with the financial performance of the commercial banks. Similarly, Mutai (2019) reveals a negative correlation between open market operation and performance of commercial banks. Open market operations rates have no significant relationship with assets quality indicators of commercial banks (Okheshimi, 2020). Similarly, Akeem et al. (2022) reveal that open market operations have an insignificant but positive effect on the profitability of banks. Based on it, this study develops the following hypothesis:

H3: There is a positive relationship between open market operation and banks' profitability.

Foreign debt

Foreign debt remains one of the major challenges facing low-income nations due to the constant budget deficit, unfavourable balance of payment and most importantly the inevitable need for industrialisation. Soludo (2003) affirms that the adverse balance of payment and budget deficit are the two major issues that lead to the acquisition of foreign loans. Yudha et al. (2023) examine the effect of foreign debt, liquidity, firm size, and exchange rate on hedging

decision. The study states that foreign debt has a significant effect on hedging decisions. Depreciation of the exchange rate can cause debt in the form of the amount of foreign currency owned by the company to become larger in a relatively short period, which can damage the financial balance of the company. Similarly, Tuzcuoglu (2020) examines the impact of financial fragility on firm performance: an analysis of BIST companies. The study states that the change in the BIST 100 index can be concluded as the most influential indicator for firm performance in terms of profitability, bankruptcy risk and share price development. Moreover, fluctuations in the real exchange rate in one period may signal for changes in share prices in the coming period. Based on it, this study develops the following hypothesis:

H4: There is a positive relationship between foreign debt and banks' profitability.

Capital expenditure

Capital expenditures are budgeted expenses incurred by the government of any economy to ensure the certainty of projects execution which are of economic benefit to the government, citizens and economy of the country. According to Katsimi and Sarantides (2011), capital expenditure has a positive impact on profits. Similarly, De Schoenmaker et al. (2014) shows that aggregate public spending has a positive influence on profitability. Government spending in the Kuwaiti economy deteriorates the performance of the banking system (Isek et al., 2020). Similarly, Kchikeche and El Mahmah (2022) reveal that government spending affects bank performance. In addition, there is no concrete or direct evidence demonstrating how budgeting affects the performance of commercial banks, despite the budget surplus having a beneficial effect on bank lending (Orodi, 2022). Based on it, this study develops the following hypothesis:

H5: There is a positive relationship between capital expenditure and banks' profitability.

RESULTS AND DISCUSSION

Descriptive Statistics

Table 2 presents the descriptive statistics of selected dependent and independent variables during the period 2013/14 to 2022/23.

Table 2: Descriptive statistics

Table 2 shows the descriptive statistics of dependent and independent variables of 10 Nepalese commercial banks for the study period from 2013/14 to 2022/23. The dependent variables are NII (Net interest income as measured by difference between interest revenue and interest expenses, Rs. in billion), and ROE (Return on equity as measured by the ratio of net profit to total equity, in percentage). The independent variables are BR (Bank rate set by NRB in percentage), CRR (Cash reserve ratio, in percentage), OMO (Total money absorb from market in a fiscal year in, Rs. in billion), FD (Total foreign debt mobilized in year, Rs in billion) and CE (Total capital expenditure, Rs. in billion).

Variables	Minimum	Maximum	Mean	Std. Deviation
NII	0.81	11.82	4.64	2.38
ROE	3.78	76.96	15.76	9.57
BR	5	8.5	7	0.98
CRR	3	6	4.7	1.19
OMO	60	611	258.92	210.24
FD	18	172.95	87.5	49.2
CE	66.69	270.71	186.79	66.23

Table 2 shows that net interest income values range widely, indicating variability in interest-based earnings. The average net interest income is 4.64, with moderate dispersion (SD = 2.38), meaning some institutions earn much more interest than others. The lower bound (0.81) suggests that some institutions have minimal interest income. Similarly, return on equity shows significant variation, with a high standard deviation and a very large maximum value (76.96), possibly an outlier. While the average return on equity is reasonable at 15.76%, the large spread (SD = 9.57) suggests inconsistent profitability among institutions. Similarly, bank rate has a relatively narrow range, low SD (0.98). It indicates a stable interest rate policy environment with little fluctuation during the observed period. Further, cash reserve ratio shows limited variation and is moderately low on average. This suggests that banks were required to hold 4.70% of their deposits as reserves on average. Variability is also modest. In addition, open market operations has a very large range and a high standard deviation, indicating that central bank activity in the open market was highly inconsistent or reactive, possibly responding to liquidity shocks or policy shifts. Moreover, foreign debt values are also quite spread out (SD = 49.20), with a wide range between institutions or over time. The average of 87.50 suggests moderate public trust in saving mechanisms, but some variability in deposit mobilization. Similarly, capital expansion is relatively high on average (186.79) but with a notable spread, suggesting varying levels of loan issuance or credit disbursement across banks or timeframes. The maximum value (270.71) indicate a period of aggressive lending.

Correlation Analysis

Having indicated the descriptive statistics, Pearson's correlation coefficients are computed and the results are presented in Table 3.

Table 3: Pearson's correlation coefficients matrix

Table 3 shows the bivariate Pearson's correlation coefficients of dependent and independent variables of 10 Nepalese commercial banks for the study period of 2013/14 to 2022/23. The dependent variables are NII (Net interest income as measured by difference between interest revenue and interest expenses, Rs. in billion), and ROE (Return on equity as measured by the ratio of net profit to total equity, in percentage). The independent variables are BR (Bank rate set by NRB in percentage), CRR (Cash reserve ratio, in percentage), OMO (Total money absorb from market in a fiscal year in, Rs. in billion), FD (Total foreign debt mobilized in year, Rs in billion) and CE (Total capital expenditure, Rs in billion).

Variables	NII	ROE	BR	CRR	OMO	DD	FD	CE
NII	1							
ROE	-0.215*	1						
BR	-0.092	0.250*	1					
CRR	-0.471**	0.331**	0.432**					
OMO	-0.542**	0.418**	0.253*	0.440**	1			
FD	0.526**	-0.449**	-0.687**	-0.822**	-0.687**	0.810**	1	
CE	0.528**	-0.445**	-0.407**	-0.387**	-0.858**	0.687**	0.781**	1

Table 3 shows that there is a negative relationship between net interest income and return on equity because of rising interest rates (post-2016) have boosted net interest income but also increased default risks that lead to reduce in return on equity. Bank rate has a negative relationship with net interest income. It indicates that increase in bank rate leads to decrease in net interest income. Similarly, cash reserve ratio has a negative relationship with net interest income. It indicates that higher the cash reserve ratio, lower would be the net interest income. Similarly, open market operation has a negative relationship with net interest income. It indicates that increase in absorption of liquidity from banks leads to decrease in net interest income. In addition, foreign debt has a positive relationship with net interest income. It indicates that higher the foreign debt, higher would be the net interest income. Further, capital expenditure has a positive relationship with net interest income. It indicates that higher the capital expenditure, higher would be the net interest income.

Similarly, the result shows that bank rate has a positive relationship with return on equity. It indicates that higher the bank rate, higher would be the return on equity. Similarly, cash reserve ratio has a positive relationship with return on equity. It indicates that higher the cash reserve ratio, higher would

be the return on equity. Similarly, open market operation has a positive relationship with return on equity. It indicates that increase in absorption of liquidity leads to increase in return on equity. Further, foreign debt has a negative relationship with return on equity. It indicates that increase in foreign debt leads to decrease in return on equity. In addition, capital expenditure has a negative relationship with return on equity. It indicates that higher the capital expenditure, lower would be the return on equity.

Variance Inflation Factor

Variance Inflation Factor (VIF) is a measure used to assess multicollinearity in regression analysis. Multicollinearity occurs when independent variables in a regression model are highly correlated with each other. When multicollinearity is present, it can lead to inflated standard errors of regression coefficients, making the estimates unreliable. VIF helps to detect the extent of multicollinearity in a regression model. Table 4 shows the Variance Inflation Factor analysis.

Table 4: Variance inflation factor

Variables	Collinearity Statistics	
	Tolerance	VIF
BR	0.857	1.167
CRR	0.879	1.137
OMO	0.871	1.148
FD	0.852	1.173
CE	0.892	1.121

Table 4 shows the multicollinearity test using Variance Inflation Factor. If tolerance is less than 0.1 or variance inflation factor is more than 10 for any independent variables, it is indicated that this variable is highly explained by other variables and might be considered for exclusion from the model. For this study, the tolerance of all the independent variables is higher than standard limit (0.10) and the VIF of all the independent variables were for lower than the cut off value as suggested by Hair et al. (2012) and thus confirming the absence of the multicollinearity.

Regression Analysis

Having indicated the Pearson's correlation coefficients, the regression analysis has been carried out and results are presented in Table 3. More specifically,

it shows the regression results of bank rate, cash reserve ratio, open market operation, foreign debt, and capital expenditure with net interest income of Nepalese commercial banks.

Table 5: Estimated regression results Eq. (1)

The results are based on panel data of 10 commercial banks with 100 observations for the period of 2013/14 to 2022/23 by using the linear regression model: $NII = \beta_0 + \beta_1 BR_{it} + \beta_2 CRR_{it} + \beta_3 OMO_{it} + \beta_4 FD_{it} + \beta_5 CE_{it} + \varepsilon_{it}$ *where the dependent variable is* NII*. The independent variables are* BR*,* CRR*,* OMO*,* FD*, and* CE*.*

Model	Intercept	Regression coefficients of					Adj. $\bar{R}^2$	SEE	F-value
		BR	CRR	OMO	FD	CE			
1	6.203	-0.223					0.002	2.379	0.838
	(3.596)**	-0.916							
2	9.05		-0.938				0.214	2.107	27.963
	(10.519)**		(5.288)**						
3	6.226			-0.006			0.287	2.008	40.759
	(19.486)**			(4.258)**					
4	2.072						0.381	1.869	62.051
	(5.515)**								
5	2.416				0.025		0.269	2.032	37.456
	(5.805)**				(6.12)**				
6	1.096					0.019	0.272	2.028	37.980
	(1.798)**					(6.16)**			
7	7.277	-0.333	-1.056				0.222	2.097	15.087
	(4.744)**	-1.394	(5.394)**						
8	6.339	-0.413	-0.71	-0.005			0.365	1.894	19.979
	(4.532)**	-1.91	(3.714)**	(4.798)**					
9	2.243	-0.385	-0.265	-0.003			0.417	1.815	18.704
	-1.19	-1.856	-1.136	(2.470)*					
10	-2.78	-0.728	-0.011	-0.002	0.018		0.418	1.813	15.237
	-0.562	-1.942	-0.033	-1.176	-1.098				
11	0.353	-0.511	-0.418	-0.01	0.001	0.009	0.415	1.817	12.727
	-0.054	-1.071	-0.65	(2.026)*	-0.034	-0.737			

Notes:

i. Figures in parenthesis are t-values.

ii. The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent level respectively.

iii. Net interest income is the dependent variable.

Table 5 shows that the beta coefficients for bank rate are negative with net interest income. It indicates that bank rate has a negative impact on net interest income. This finding is similar to the finding of Windsor et al.

(2023). Similarly, the beta coefficients for cash reserve ratio are negative with net interest income. It indicates that cash reserve ratio has a negative impact on net interest income. This finding is consistent with the finding of Meshack and Nyamute (2016). Similarly, the beta coefficients for open market operation are negative with net interest income. It indicates that open market operation has a negative impact on net interest income. This finding is not consistent with the finding of Mutai (2019). Further, the beta coefficients for foreign debt are positive with net interest income. It indicates that foreign debt has a positive impact on net interest income. This finding is consistent with the finding of Yudha et al. (2023). In addition, the beta coefficients for capital expenditure are positive with net interest income. It indicates that capital expenditure has a positive impact on net interest income. This finding is similar to the finding of Katsimi and Sarantides (2011).

Table 6: Estimated regression results Eq. (2)

The results are based on panel data of 10 commercial banks with 100 observations for the period of 2013/14 to 2022/23 by using the linear regression model: $ROE = \beta_0 + \beta_1 BR_{it} + \beta_2 CRR_{it} + \beta_3 OMO_{it} + \beta_4 FD_{it} + \beta_5 CE_{it} + \varepsilon_{it}$ *where the dependent variable is* NII *. The independent variables are* BR*,* CRR*,* OMO*,* FD*, and* CE*.*

Model	Intercept	Regression coefficients of					Adj. $\bar{R}^2$	SEE	F-value
		BR	CRR	OMO	FD	CE			
1	-1.372 -0.203	2.447 (2.56)**					0.053	9.312	6.56
2	3.291 -0.888		2.652 (3.469)**				0.1	9.077	12.036
3	10.827 (7.78)**			0.019 (4.558)**			0.166	8.737	20.771
4	23.921 (14.215)**						0.234	8.374	31.294
5	23.404 (13.29)**				-0.087 (4.980)**		0.194	8.593	24.801
6	27.775 (10.73)**					-0.064 (4.924)**	0.19	8.612	24.241
7	-3.601 -0.544	1.292 -1.255	2.194 (2.596)**				0.106	9.051	6.841
8	-0.696 -0.109	1.043 -1.059	1.119 -1.285	0.015 (3.26)**			0.186	8.633	8.55
9	16.177 -1.865	1.159 -1.215	0.714 -0.667	0.007 -1.288			0.239	8.349	8.77
10	13.608 -0.594	1.335 -0.769	0.585 -0.385	0.007 -1.056	-0.009 -0.121		0.231	8.392	6.946
11	-3.952 -0.131	2.55 -1.115	1.698 -0.571	0.003 -0.351	-0.114 -0.819	-0.051 -0.893	0.229	8.401	5.909

Notes:

i. Figures in parenthesis are t-values.

ii. The asterisk signs (**) and (*) indicate that the results are significant at one percent and five percent level respectively.

iii. Return on equity is the dependent variable.

Table 6 shows that the beta coefficients for bank rate are positive with return on equity. It indicates that bank rate has a positive impact on return on equity. This finding is not similar to the finding of Zaman et al. (2014). Similarly, the beta coefficients for cash reserve ratio are positive with return on equity. It indicates that cash reserve ratio has a positive impact on return on equity. This finding is not consistent with the finding of Hoque et al. (2020). Similarly, the beta coefficients for open market operations are positive with return on equity. It indicates that open market operation has a positive impact on return on equity. This finding is consistent with the finding of Akeem et al. (2022). Further, the beta coefficients for foreign debt are negative with return on equity. It indicates that foreign debt has a negative impact on return on equity. This finding is not consistent with the finding of Tuzcuoglu (2020). In addition, the beta coefficients for capital expenditure are negative with return on equity. It indicates that capital expenditure has a negative impact on return on equity. This finding is not consistent with the findings of Kchikeche and El Mahmah (2022).

Policy Implications

The NRB should carefully manage its policy rate to strike a balance between stimulating bank profitability and ensuring credit accessibility. The analysis reveals that while a higher bank rate may enhance return on equity (ROE), it simultaneously reduces net interest income (NII), which could deter borrowing and constrain loan growth. Therefore, a stable and predictable interest rate environment is essential. Such a framework fosters financial sector confidence, reduces uncertainty, and allows banks to plan their lending and investment strategies more effectively. Similarly, monetary instruments like the Cash Reserve Ratio (CRR) and Open Market Operations (OMO) also exhibit dual effects negatively influencing NII but positively affecting ROE. This suggests that while these tools may help maintain bank capital adequacy and risk-adjusted returns, they also restrict lending capacity. The NRB should thus fine-tune these tools in response to prevailing macroeconomic conditions, ensuring liquidity remains sufficient to support private sector credit without jeopardising profitability.

Government capital expenditure plays an important role in influencing banking sector profitability, as evidenced by its positive relationship with NII. However, the negative correlation with ROE implies that inefficient spending or delayed project execution can reduce the returns accruing to financial institutions. Policymakers must therefore ensure timely and efficient implementation of public investment projects to maximise their multiplier effects

on economic activity and banking sector performance.

An overdependence on domestic borrowing to finance fiscal deficits may exert upward pressure on interest rates, leading to a crowding-out of private sector credit. This scenario not only raises the cost of borrowing for individuals and businesses but also affects banks' lending operations and profitability. The government should focus on achieving fiscal discipline through rational expenditure planning and diversified financing strategies that do not burden the domestic credit market. Perhaps the most crucial recommendation arising from the study is the need for seamless coordination between the fiscal and monetary authorities. Greater synchronisation between NRB and the Ministry of Finance would help in crafting policies that complement each other ensuring adequate liquidity, supporting productive sectors, stabilising inflation, and avoiding fiscal imbalances that could destabilise the banking system. A coordinated approach will also help align policy tools with long-term development goals, particularly in a post-pandemic recovery context.

SUMMARY AND CONCLUSION

The major conclusion of this study is that monetary and fiscal policies have significant and differentiated impacts on the profitability of Nepalese commercial banks. Specifically, Bank rate, CRR, and OMO have negative effects on net interest income but positive effects on return on equity. However, foreign debt and capital expenditure have positive effects on net interest income but negative effects on return on equity. These mixed effects imply that a one-dimensional policy approach may be counterproductive. Instead, a holistic and well-coordinated strategy is needed. So, policymakers should focus on ensuring macro-financial stability, enhancing the transmission of monetary tools, boosting productive fiscal spending, and strengthening risk management and diversification within the banking sector.

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