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Original Research

ANALYZING THE IMPACT OF MACROECONOMIC FACTORS ON THE PROFITABILITY OF COMMERCIAL BANK IN RWANDA. A CASE STUDY OF BANK OF KIGALI (2013-2024)

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Abstract

This paper investigated the impact of macroeconomic factors on the profitability of commercial banks in Rwanda, with specific focus on Bank of Kigali (BK) Plc during the period 2013–2024. The study was guided by the general objective which was to analyze how inflation, interest rates, and exchange rates influence the profitability of commercial banks, measured through indicators such as Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM). The research relied exclusively on secondary data obtained from BK Plc annual reports and publications from the National Bank of Rwanda. Statistical, regression, and descriptive methods were applied to analyze the data. Findings revealed that exchange rate depreciation negatively affects profitability, while interest rates and inflation exhibit a positive but varying effect on ROA. Overall, the results suggested that macroeconomic variables play a significant role in shaping bank performance, although other internal factors remain important. The study concluded that BK Plc has demonstrated financial resilience despite macroeconomic fluctuations, but sustained profitability requires robust risk management and adaptive strategies. Researchers recommended that BK should strengthen foreign exchange risk management, aligning lending practices with macroeconomic conditions, diversifying revenue sources, and enhancing collaboration with policymakers to ensure a stable banking environment. This research contributed to existing literature by providing empirical evidence on how macroeconomic factors affect bank profitability in Rwanda and offers practical insights for bank managers, policymakers, and academicians.

Keywords: Macroeconomics, Profitability, Commercial Banks, Return on Asset (ROA), Return on Equity (ROE)

Introduction

Commercial banks play a pivotal role in the economic development of any country by acting as financial intermediaries that mobilize savings and allocate capital for investment. Through their core functions of accepting deposits, providing loans, and facilitating payments, banks channel funds from savers to borrowers, enabling productive economic activities. Their profitability is not

only a reflection of their internal efficiency and risk management but also a key indicator of the overall health and stability of the financial system (Athanasoglou, Brissimis, & Delis, 2008). In developing economies like Rwanda, commercial banks are especially critical because they provide the much-needed financial infrastructure that supports entrepreneurship, infrastructure projects, and the expansion of small and medium enterprises (SMEs). This financial support fosters job creation and economic inclusion, which are essential for poverty reduction and sustainable development (National Bank of Rwanda [BNR], 2023).

Worldwide, numerous studies have established that macroeconomic conditions significantly affect the performance and profitability of commercial banks. Among these, inflation, interest rates, and exchange rate fluctuations are particularly influential. High inflation, for example, can erode the real value of banks' assets and liabilities, impacting their net worth and operational costs if not anticipated accurately. Inflation can also lead to uncertainty that discourages long-term lending and investment (Demirgüç-Kunt & Huizinga, 1999). Interest rates influence banks' core lending and deposit activities, affecting the net interest margin, which is the difference between interest earned on loans and interest paid on deposits a principal source of bank income. Volatile interest rates can create risks for asset-liability management and affect loan demand. Similarly, exchange rate volatility matters greatly for banks operating in open economies or those involved in foreign currency transactions; currency depreciation can increase the cost of foreign debt and heighten credit risk exposure (Perry, 1992).

In the United States of America, the profitability of commercial banks is strongly influenced by macroeconomic factors such as interest rates, inflation, and exchange rates. These factors impact banks' lending volumes, interest income, credit risk, and investment returns. For instance, the Federal Deposit Insurance Corporation (FDIC) reported that U.S. commercial banks earned a net income of $257 billion in 2023, reflecting a 2.7% increase compared to the previous year despite pressures from rising interest rates (FDIC, 2024). This growth is partly attributed to the Federal Reserve's tightening monetary policy, where interest rate hikes were aimed at controlling inflation, which had surged to 9.1% in mid-2022 but was brought down to approximately 3.4% by the end of 2023 (U.S. Bureau of Labor Statistics [BLS], 2024). While higher interest rates generally improve banks' interest income by increasing lending rates, they can simultaneously depress loan demand and increase defaults, creating a complex environment for profitability. The average net interest margin in the U.S. rose from 2.54% in 2022 to 3.30% in 2023, indicating improved earnings from core banking operations, but banks must also balance this with managing credit risk and operational costs (Federal Reserve Bank of St. Louis, 2024).

In many African countries, commercial banks operate in environments heavily influenced by macroeconomic instability, making them particularly vulnerable to fluctuations in inflation, interest rates, and exchange rates. For example, in Nigeria, persistently high inflation reaching 28.9% in December 2023 along with sharp depreciation of the naira, has created a challenging banking environment (Central Bank of Nigeria [CBN], 2024). Inflation increases operational costs and erodes consumers' purchasing power, which can reduce loan repayment capacity and increase non-performing loans. Currency depreciation raises the local currency cost of servicing foreign-

denominated debts, exposing banks to significant exchange rate risk. Despite these macroeconomic headwinds, Nigerian banks have maintained profitability, achieving an average Return on Equity (ROE) of 15.8% in 2023, largely supported by elevated interest margins and prudent risk management practices (Nigerian Exchange Group, 2024).

This study investigates how inflation, interest rates, and exchange rates affect commercial banks' profitability, focusing on BK Plc in Rwanda. The findings aim to support policymakers, bank managers, and investors by providing insights into managing economic risks and enhancing bank performance in a developing economy.

Statement of Problem

Commercial banks are pivotal to Rwanda's economic development, acting as key financial intermediaries that facilitate savings, investment, and economic growth. However, their profitability is highly sensitive to macroeconomic fluctuations. In recent years, Rwanda has experienced notable changes in macroeconomic conditions, including variations in inflation, interest rates, and exchange rates. These dynamics pose challenges to the sustainability and performance of the banking sector. Despite Rwanda's stable macroeconomic environment compared to many Sub-Saharan African countries, commercial banks still face profitability pressures, suggesting that macroeconomic factors may be exerting significant influence (National Bank of Rwanda, 2023).

The problem this research seeks to address is the lack of a comprehensive understanding of how key macroeconomic variables affect the profitability of commercial banks in Rwanda. While several studies have examined this relationship in other countries, limited empirical evidence exists specific to Rwanda's unique economic context. Bank profitability is critical not only for shareholders but also for ensuring financial system stability, credit creation, and long-term economic resilience. When macroeconomic shocks occur such as high inflation or currency depreciation they can erode bank earnings, reduce credit quality, and undermine investor confidence (IMF, 2023).

This research intended to investigate the extent to which macroeconomic factors such as inflation rate, interest rate, and exchange rate impact the profitability of commercial banks in Rwanda, with a particular focus on Return on Assets (ROA) and Return on Equity (ROE) as profitability indicators. Understanding these relationships is vital for bank managers, policymakers, and regulators to develop informed strategies that mitigate risk and enhance performance. The growing complexity of Rwanda's financial sector underscores the urgency of this issue, especially as the country seeks to position itself as a regional financial hub (World Bank, 2022). Thus, this study tries to fill this empirical gap by analyzing the impact of macroeconomic factors on the profitability of commercial banks with a special reference to BK Plc.

Specific Objectives

This research was guided by the following specific objectives:

1. To assess the trends and changes in the profitability of BK Plc

2. To analyze the impact of macroeconomic factors on the profitability of BK Plc.

Research Questions

Research questions are formulated request for information that defines the problem to be studied, sets boundaries for information collection and outline the objectives of the investigation. They inquire about the relationship among variables that the investigator seeks to know. Salongo Muyoboke et al, (2026) quoting John Creswell, J, W (2014).

The following research questions are formulated to guide this study.

1. What are trends and changes in the profitability of BK plc?
2. Is there any impact of macroeconomic factors on the profitability of commercial banks in Rwanda?

Hypotheses

Muyoboke S.et al, quoting Berg2021 defined hypothesis as a testable statement that predicts the expected relationship between variables in a study. It provides a clear focus for the research by proposing an answer to the research question based on existing literature, theories, or observations (Berg, 2021).

Hypothesis is a provisional answer that a researcher gives to his research question that will guide him during his research process. A research hypothesis is a testable statement predicting a relationship between two or more variables (Creswell, 2014).

During our research, the hypothesis was formulated as follows: “Macroeconomic factors influence profitability of commercial banks in Rwanda”.

Literature Review

Macroeconomics

Macroeconomics is the branch of economics that studies the behavior, performance, and structure of an economy as a whole, focusing on aggregate indicators such as GDP, inflation, unemployment, and national income, as well as the policies that influence them. It examines the interrelationships among different sectors of the economy to understand long-term growth, business cycles, and overall economic stability (Mankiw, 2020).

Macroeconomic Factors

Macroeconomic factors are broad economic conditions that influence the overall performance of an economy, including variables such as interest rate, exchange rate, and inflation. Interest rate represents the cost of borrowing or return on savings, influencing investment and consumption; exchange rate reflects the value of a country’s currency relative to others, affecting trade competitiveness; while inflation measures the general rise in prices, impacting purchasing power and cost of living. Together, these factors play a critical role in shaping economic growth and financial stability (Dornbusch, Fischer, & Startz, 2018).

Exchange Rate

Exchange rate refers to the value at which one currency can be exchanged for another in the foreign exchange market. It determines how much of one currency is needed to purchase a unit of another currency and plays a crucial role in international trade and investment (Mishkin, 2019).

Interest Rate

Interest rate refers to the percentage charged by a lender to a borrower for the use of money over a specified period. It represents the cost of borrowing or the return on investment for lending funds and plays a critical role in influencing economic activity by affecting consumer spending, saving, and investment decisions (Mishkin, 2015).

Inflation

Inflation is the rate at which the general level of prices for goods and services rises over time, resulting in a decrease in the purchasing power of money. When inflation occurs, each unit of currency buys fewer goods and services than before, which can impact consumers' cost of living and savings (Mankiw, 2016). Moderate inflation is common in growing economies, but high or unpredictable inflation can create economic uncertainty and reduce the value of money held by individuals and businesses.

Profitability

Profitability refers to a company's ability to generate earnings or profit from its operations over a specific period. It is a key measure of financial performance, showing how efficiently a business converts its resources into income. In essence, profitability indicates whether a business is financially successful and sustainable in the long term. It is commonly assessed using financial metrics such as gross profit, net profit, return on assets (ROA), and return on equity (ROE) (Atrill& McLaney, 2019).

Commercial Banks

Commercial bank refers to a financial institution that perform the functions of accepting deposits, offering checking account services, giving loans for investment, and offers basic financial products like certificates of deposit and savings accounts to individuals and small businesses with the aim of earning profit (Osolo,2022).

Theoretical Review

Theory on Macroeconomic Factors

Macroeconomic factors are broad economic indicators and conditions that influence the overall performance of an economy, including the operations and profitability of financial institutions. They encompass variables such as interest rates, exchange rates, inflation, gross domestic product, and unemployment levels, which collectively shape economic stability and growth (Mankiw, 2020). These factors are closely monitored by policymakers, businesses, and investors because of their significant role in determining investment decisions, consumer spending, and banking sector performance. In the context of commercial banks, macroeconomic factors directly affect credit demand, loan repayment capacity, and profitability. *(Mankiw, 2020).*

Theory on Interest Rate

The interest rate is a key macroeconomic factor influencing the cost of borrowing, investment decisions, and overall economic activity. According to the Keynesian theory of interest, interest rates are determined by the supply and demand for money, where a higher money supply tends to lower rates, stimulating investment and economic growth (Keynes, 1936). In banking, high interest rates can increase lending income but may also reduce borrowing demand, thereby impacting profitability. Conversely, low interest rates can boost loan uptake but compress interest margins. The Fisher Effect further explains that nominal interest rates incorporate expected inflation, meaning banks must adjust rates to maintain real returns (Fisher, 1930). Thus, understanding interest rate dynamics is essential in evaluating their impact on commercial bank profitability. *(Keynes, 1936; Fisher, 1930).*

Theory on Exchange Rate

The exchange rate, defined as the price of one country's currency in terms of another, directly affects the value of foreign transactions and competitiveness in international trade. The Purchasing Power Parity (PPP) theory posits that exchange rates adjust to equalize the price of identical goods across countries, reflecting relative inflation rates (Cassel, 1918). In banking, exchange rate fluctuations can impact foreign currency deposits, cross-border loans, and the valuation of international assets. Depreciation of the local currency may increase export competitiveness but can also raise the cost of imported goods, influencing inflation and monetary policy responses. Stable exchange rates are therefore critical in ensuring predictable financial flows and mitigating foreign exchange risk for commercial banks. (Cassel, 1918).

Theory on inflation

Inflation, the sustained increase in the general price level of goods and services, erodes the purchasing power of money and affects interest rate settings, investment returns, and operational costs. The Quantity Theory of Money asserts that inflation is largely driven by excessive growth in money supply relative to economic output (Friedman, 1963). For banks, moderate inflation can improve profitability if interest rates adjust accordingly, but high inflation may destabilize loan repayment capacity, increase default risk, and reduce real returns on assets. Additionally, inflation expectations influence both borrowing behavior and bank pricing strategies, making accurate forecasting essential for financial stability. In this regard, managing inflation remains a central concern for monetary authorities and the banking sector alike. (Friedman, 1963).

Situation of Macroeconomic Factors in Rwanda

Rwanda's macroeconomic environment has shown considerable improvement over the past two decades, driven by sound fiscal and monetary policies, political stability, and structural reforms. Inflation has remained relatively stable, although it has occasionally been affected by external shocks such as global commodity price fluctuations and climate-related events that impact food production (IMF, 2023).

Despite these gains, Rwanda's macroeconomic landscape continues to face vulnerabilities. External shocks, such as the COVID-19 pandemic and geopolitical tensions affecting global supply chains, have disrupted trade, tourism, and foreign investment inflows (African Development Bank, 2023). Moreover, Rwanda's current account deficit remains a concern due to a high reliance on imported capital and intermediate goods, though the government has undertaken various industrialization and export diversification strategies to address this (World Bank, 2023). Exchange rate pressures and rising global interest rates have also posed challenges for monetary policy, particularly in managing inflation and preserving foreign reserves (IMF, 2023).

Theory on the Profitability of Commercial Banks

The profitability of commercial banks is a central topic in financial and economic literature, often explained through theories focusing on the structure, conduct, and performance of banks. According to the Structure-Conduct-Performance (SCP) paradigm, banks operating in less competitive environments are likely to earn higher profits due to their market power, enabling them to charge higher interest rates and pay lower interest on deposits (Smirlock, 1985). This theory posits that a highly concentrated banking market results in more profitable banks, especially when barriers to entry are high. Additionally, the efficient structure hypothesis suggests that only the most efficient banks are able to survive and thrive in competitive markets, thus achieving superior profitability (Berger, 1995).

Profitability is also influenced by bank-specific factors such as capital adequacy, asset quality, management efficiency, earnings, and liquidity commonly assessed using the CAMEL framework. Higher capital ratios are associated with greater financial strength and resilience, leading to increased profitability (Athanasoglou, Brissimis, & Delis, 2008). Effective risk management and cost control are also critical for profitability, as inefficient operations and poor loan performance can erode earnings. These internal factors interact with external macroeconomic variables such as inflation, exchange rate and interest rates to affect bank profitability (Kosmidou, 2008).

Furthermore, the theory of intermediation explains that banks are profitable because they perform the essential role of transforming deposits into loans, earning a margin on the interest spread. According to this theory, banks that efficiently manage the maturity mismatch and credit risk between their assets and liabilities tend to achieve better profitability outcomes (Diamond & Dybvig, 1983). Profitability, therefore, is a function of both operational efficiency and the bank's ability to navigate external economic conditions. As such, modern empirical studies incorporate both microeconomic (bank-specific) and macroeconomic factors when assessing the determinants of bank profitability (Pasiouras & Kosmidou, 2007).

Profitability Measures

Profitability measures are essential tools used to evaluate a firm's ability to generate earnings relative to its revenue, assets, equity, and other financial metrics. In the literature, several financial

ratios are widely used to assess profitability, including Return on Assets (ROA), Return on Equity (ROE), and Net Profit Margin (NPM). ROA measures how efficiently a company utilizes its assets to produce profit, while ROE assesses the return generated on shareholders' equity, reflecting the company's efficiency in using the equity invested by owners. NPM, particularly relevant in the banking sector, indicates the percentage of revenue remaining after all expenses, reflecting a company's overall profitability and operational efficiency. These indicators are commonly employed in empirical studies to assess bank performance and profitability (Dietrich &Wanzenried, 2011).

Return On Asset (ROA)

Profitability is a key indicator of a bank's financial performance and long-term sustainability. Among the various measures used to assess profitability, Return on Assets (ROA) is widely regarded in the literature as a critical metric. ROA indicates how efficiently a bank uses its assets to generate earnings, thereby reflecting management's effectiveness in utilizing the bank's total resources. According to Athanasoglou, Brissimis, and Delis (2008), ROA provides a clearer view of profitability because it relates net income to the total asset base, offering a normalized measure of performance regardless of the bank's size. It is particularly useful for comparing profitability across banks with varying asset scales and business models.

Numerous empirical studies have adopted ROA as a central measure when analyzing the determinants of bank profitability. For example, Flamini, McDonald, and Schumacher (2009) used ROA in their analysis of Sub-Saharan African banks and found it to be significantly influenced by factors such as operational efficiency, asset quality, and macroeconomic conditions. Similarly, Demirgüç-Kunt and Huizinga (1999) highlighted that higher ROA values are associated with well-capitalized and efficiently managed banks, implying that internal bank-specific factors play a vital role. These findings support the relevance of ROA in evaluating the performance of commercial banks, especially in emerging economies.

Formula:

$$\boldsymbol{ROA} = \frac{Net\ Income}{Total\ Assets} \times 100$$

Return On Equity (ROE)

Return on Equity (ROE) is another widely used profitability metric in banking literature, reflecting the return generated on shareholders' equity. It measures how effectively a bank is using its equity capital to generate profits. According to Naceur and Goaied (2001), ROE serves as an indicator of financial efficiency and is particularly relevant for investors evaluating the performance of banking institutions. A high ROE suggests that a bank is generating significant income relative to its equity, which is attractive to shareholders. Unlike ROA, which assesses asset efficiency, ROE provides insight into the bank's capacity to deliver returns to its owners.

ROE has been extensively applied in empirical research focused on banking profitability. Molyneux and Thornton (1992) showed that European banks with higher levels of capital and

efficient cost structures tended to have better ROE. Moreover, Bourke (1989) emphasized that well-capitalized banks are better positioned to absorb shocks, thereby sustaining profitability and ensuring stable returns to equity holders. These studies underline the importance of ROE as a tool for evaluating the sustainability of a bank's profit-making capacity in relation to its equity base.

Formula:

$$\boldsymbol{ROE} = \frac{\text{Net Income}}{\text{Shareholder's Equity}} \times 100$$

Net Profit Margin (NPM)

Net Profit Margin (NPM) is a widely used measure of profitability that reflects the proportion of net income generated from total revenue after accounting for all expenses, taxes, and interest. It indicates a firm's ability to control costs and effectively convert sales into actual profit, making it a key indicator of operational efficiency and financial health (Gitman & Zutter, 2015). A higher NPM suggests stronger cost management and pricing strategies, while a lower NPM may point to rising costs, declining sales prices, or inefficiencies. In banking, NPM serves as a critical measure for evaluating how well the institution manages interest income, fee-based revenue, and operational expenses relative to total income (Mishkin & Eakins, 2018).

Formula:

$$\boldsymbol{NPM} = \frac{\text{Net Income}}{\text{Revenues}} \times 100$$

Impact of Macroeconomic Factors on the Profitability of Commercial Banks

Macroeconomic factors such as interest rate, exchange rate, and inflation exert significant influence on the profitability of commercial banks. These variables shape the external environment in which banks operate and determine their capacity to generate sustainable returns. Since banking performance is closely linked to the general economic climate, fluctuations in these macroeconomic indicators can either enhance or erode profitability, depending on the direction and magnitude of the changes. Understanding the theoretical underpinnings of these impacts is essential for both policymakers and bank managers in developing strategies to mitigate risks and leverage opportunities created by macroeconomic dynamics (Mishkin & Eakins, 2018).

Interest rate is a key determinant of bank profitability, as it directly affects the interest income generated from loans and advances as well as the interest expense paid on deposits. Higher interest rates can increase banks' net interest margins when lending rates rise faster than deposit rates, thereby improving profitability. However, excessively high interest rates can reduce credit demand, increase loan defaults, and ultimately erode bank earnings. Conversely, low interest rates may stimulate borrowing but compress net interest margins, negatively affecting banks' returns. The interest rate environment also influences investment portfolio returns, with higher rates

increasing yields on new investments but reducing the market value of fixed-income securities already held by banks (Saunders & Cornett, 2019).

Exchange rate fluctuations have a profound impact on bank profitability, particularly in economies with significant exposure to international trade, remittances, or foreign-denominated debt. For banks, a depreciation of the domestic currency can lead to an increase in the value of foreign currency denominated assets, such as overseas investments or loans issued in foreign currencies, thereby boosting nominal income. However, it also increases the cost of foreign liabilities and the repayment burden of borrowers with foreign currency loans, heightening default risk and non-performing loan ratios. In addition, currency depreciation may lead to higher import costs, fueling inflationary pressures that can further affect banks' operating environment. Conversely, appreciation of the domestic currency can reduce the domestic value of foreign earnings, potentially lowering profitability for banks involved in cross-border activities. Banks with inadequate foreign exchange risk hedging mechanisms may experience significant volatility in earnings due to exchange rate movements. Therefore, effective foreign currency exposure management, including the use of derivatives and diversification strategies, is crucial for sustaining profitability in a volatile foreign exchange market (Klein & Shambaugh, 2015).

Inflation influences the banking sector through its effect on interest rates, credit demand, operational costs, and the real value of financial assets and liabilities. In a moderate and stable inflation environment, banks can adjust lending and deposit rates to maintain or expand their net interest margins, often resulting in higher nominal profitability. Inflation may also stimulate borrowing in the short term as businesses and individuals seek to invest before costs rise further. However, high and volatile inflation can erode the real value of interest income and capital, reduce the predictability of cash flows, and discourage long-term lending. Furthermore, persistent inflation tends to increase the operational costs of banks including wages, utilities, and technology investments thereby exerting downward pressure on profits. From a credit risk perspective, rising inflation can reduce the purchasing power and repayment capacity of borrowers, resulting in higher default rates and increased loan loss provisions. Moreover, inflationary uncertainty can lead to tighter monetary policy and higher interest rates, which, while potentially improving interest margins, may also suppress credit demand and economic growth. Consequently, banks operating in inflation-prone economies must adopt prudent asset-liability management strategies to safeguard profitability (Perry, 1992).

Research Methodology

Researchers used different methods to analyze the data after collection so as to come out with relevant conclusion. For a better analysis and synthesis of data that collected, researchers used the following methods: analytical, statistical, regression analysis, comparative and descriptive methods.

Techniques of Data Collection

To collect data, researchers used the documentary technique. As said by BRENDA SPAT 1991:301 a second source of data can be any document written both after and about the primary source. The documentary sources have played a very important role because this work is not unique in macroeconomic area. Annual reports from Bk Plc and other archival records from NBR have been used.

Population of the Study

According to Morrson,2010, the study population is a set of people, services, elements and events, group of things or households that are being investigated or that a research is concerned (Morrison, 2010). The population size for this study was composed of financial report documents from different financial years under our time scope.

Findings

The research question 1 was What are trends and changes in the profitability of BK plc?

The trends outlined below form a foundation for assessing the relationship between profitability and macroeconomic factors.

Return On Assets (ROA): This ratio measures how efficiently a bank is using its assets to generate profits. A rising ROA signals improved asset utilization.

$$\boldsymbol{ROA} = \frac{Net\ Income}{Total\ Assets} \times 100$$

The figures indicate that from 2013 to 2024, Bank of Kigali experienced strong financial growth, with both net income and total assets increasing substantially. Net income rose more than sixfold, while total assets grew nearly six times, reflecting expansion in operations and financial capacity. Despite this growth, the Return on Assets (ROA) remained relatively stable within a narrow range of 3.0% to 3.7%, suggesting the bank maintained consistent efficiency in generating profits from its assets throughout the period.

Return On Equity (ROE): This indicates the return generated on the shareholder's equity, reflecting the bank's ability to generate profit from its equity capital. High ROE suggests effective management and strong financial returns for investors.

$$\boldsymbol{ROE} = \frac{\text{Net Income}}{\text{Shareholder's Equity}} \times 100$$

Net Profit Margin (NPM): This metric assesses the difference between net income generated and revenues.

$$\boldsymbol{NPM} = \frac{\text{Net Income}}{\text{Revenues}} \times 100$$

Table 1: BK Plc Net Income, Total Assets, and ROA (2013-2024)

YEAR	Net Income (RWF)	Total Assets (RWF)	ROA (%)
2013	14.8 Billions	422.4 Billions	3.5
2014	18.3 Billions	482.6 Billions	3.7
2015	20.5 Billions	561.2 Billions	3.6
2016	20.8 Billions	638.3 Billions	3.2
2017	23.3 Billions	719.3 Billions	3.2
2018	27.4 Billions	877.4 Billions	3.1
2019	37.3 Billions	1,019.1 Billions	3.6
2020	38.4 Billions	1,304.0 Billions	3
2021	51.9 Billions	1,590.4 Billions	3.2
2022	59.7 Billions	1,854.0 Billions	3.2
2023	74.8 Billions	2,127.3 Billions	3.5
2024	91.0 Billions	2,521.6 Billions	3.6

Source: BK Plc annual reports (2013-2024)

The figures indicate that from 2013 to 2024, Bank of Kigali experienced strong financial growth, with both net income and total assets increasing substantially. Net income rose more than sixfold, while total assets grew nearly six times, reflecting expansion in operations and financial capacity. Despite this growth, the Return on Assets (ROA) remained relatively stable within a narrow range of 3.0% to 3.7%, suggesting the bank maintained consistent efficiency in generating profits from its assets throughout the period.

Return On Equity (ROE): This indicates the return generated on the shareholder's equity, reflecting the bank's ability to generate profit from its equity capital. High ROE suggests effective management and strong financial returns for investors.

$$\boldsymbol{ROE} = \frac{\text{Net Income}}{\text{Shareholder's Equity}} \times 100$$

Table 2: BK Plc Net Income, Shareholder's Equity, and ROE (2013-2024)

YEAR	Net Income (RWF)	Shareholder's equity (RWF)	ROE (%)
2013	14.8 Billions	70.8 Billions	20.9
2014	18.3 Billions	89.5 Billions	20.4
2015	20.5 Billions	99.2 Billions	20.6
2016	20.8 Billions	108.5 Billions	19.1
2017	23.3 Billions	122.8 Billions	18.9
2018	27.4 Billions	194.7 Billions	14.1
2019	37.3 Billions	220.8 Billions	16.8
2020	38.4 Billions	259.3 Billions	14.8
2021	51.9 Billions	285.3 Billions	18.1
2022	59.7 Billions	319.1 Billions	18.7
2023	74.8 Billions	365.9 Billions	20.4
2024	91.0 Billions	438.5 Billions	20.7

Source: BK Plc annual reports (2013-2024)

The data shows a consistent upward trend in both net income and shareholders' equity for BK Plc from 2013 to 2024, indicating strong financial growth and capital accumulation over the years. Return on Equity (ROE) generally remained high, fluctuating between 14.1% and 20.9%, with a notable dip in 2018 due to a sharp rise in equity outpacing profit growth. However, the bank quickly recovered, with ROE returning to above 20% by 2023–2024, reflecting improved profitability and efficient use of shareholders' funds.

Table 3: BK Plc Net Income, Revenues, and NPM (2013-2024)

YEAR	Net Profit (RWF)	Revenues (RWF)	NPM (%)
2013	14.8 Billions	53.8 Billions	27.5
2014	18.3 Billions	58.2 Billions	31.4
2015	20.5 Billions	63.7 Billions	32.1
2016	20.8 Billions	76.9 Billions	27
2017	23.3 Billions	44.2 Billions	52.7
2018	27.4 Billions	50.1 Billions	54.6
2019	37.3 Billions	121.0 Billions	30.8
2020	38.4 Billions	139.6 Billions	27.5
2021	51.9 Billions	174.2 Billions	29.7
2022	59.7 Billions	184.3 Billions	32.3
2023	74.8 Billions	224.4 Billions	33.3
2024	91.0 Billions	258.7 Billions	35.1

Source: BK Plc annual reports (2013-2024)

The data shows that BK Plc's Net Profit Margin (NPM) experienced fluctuations from 2013 to 2024, with notable peaks in 2017 (52.7%) and 2018 (54.6%), largely driven by relatively high profits against lower revenues. While margins dipped in certain years such as 2016 (27%) and 2020 (27.5%), the overall trend indicates strong profitability, supported by consistent growth in both net profit and revenues, especially from 2019 onwards, culminating in a 35.1% NPM in 2024. This reflects the bank's ability to maintain cost efficiency and profit growth despite variations in revenue growth rates.

Impact of Macroeconomic Factors on Profitability of Commercial Banks

In this study, we have used variables like annual inflation, annual interest rate, and the average exchange rate in order to measure the impact of macroeconomic factors on profitability of commercial bank. The macroeconomic factors affect the economy by influencing profitability. But before that, it is better to analyze the evolution of those variables in Rwanda such as inflation, average exchange rate and interest rate.

Evolution of Inflation, Interest Rate, Exchange Rate in Rwanda

This part of the study analyzes trends of different variables that are used in the following part of the study:

Table 4: Average Exchange rate (ER)

YEAR	ER(RWF/USD)
2013	646.636789
2014	682.426668
2015	719.593347
2016	787.345100
2017	831.501483
2018	861.093416
2019	899.462350
2020	943.271368
2021	988.882638
2022	1,030.589548
2023	1,160.135035
2024	1,318.128265

Source: National Bank of Rwanda (2013-2024)

As the exchange rate of Rwanda compared to USD increased since 2013 up to 2024 it means that the value of the Rwandan franc is depreciating relative to the US dollar.

From 2013 up to 2017, the interest rate was increasing. In 2018 it decreased, from 2019 up to 2021 it increased again, it decreased gradually since 2022 up to 2024.

Normally, the high interest rate is a sign of refusal by commercial banks to offer credits to borrower, most of the time, that results from the discount rate charged by the central bank to commercial banks. That desire is always associated by a desire of the central bank to reduce money in circulation and stabilize economy in order to avoid inflation. The low interest rate is assign that commercial banks are giving loans to those who need them and event is associated by the central bank which reduces the discount rate charged to commercial banks in order to increase money in circulation with a desire of stimulating production.

Table 5: Lending Interest Rate (IR)

YEAR	INF
2013	98.60
2014	100.70
2015	105.30
2016	113.00
2017	113.71
2018	115.00
2019	122.74
2021	129.71
2022	157.76
2023	167.94
2024	179.3

Source: National Bank of Rwanda (2013-2024)

From 2013 up to 2017, the interest rate was increasing. In 2018 it decreased, from 2019 up to 2021 it increased again, it decreased gradually since 2022 up to 2024.

Normally, the high interest rate is a sign of refusal by commercial banks to offer credits to borrower, most of the time, that results from the discount rate charged by the central bank to commercial banks. That desire is always associated by a desire of the central bank to reduce money in circulation and stabilize economy in order to avoid inflation. The low interest rate is assign that commercial banks are giving loans to those who need them and event is associated by the central bank which reduces the discount rate charged to commercial banks in order to increase money in circulation with a desire of stimulating production.

Table 6: Annual Inflation (INF)

YEAR	IR
2013	16.930
2014	17.660
2015	17.030
2016	17.210
2017	17.190
2018	16.140
2019	16.470
2020	16.520
2021	16.760
2022	16.410
2023	15.800
2024	15.750

Source: National Bank of Rwanda (2013-2024)

As it can be seen, from 2013 up to 2024, the annual inflation of Rwanda was generally increasing. This increase is due to different causes which may be internal and external. The continual increase in prices discourages production of a given country. Normally, other things being equal, increases in domestic price discourages production while decreases in price encourages production.

Table 7: Cumulative Table of Variables Included in the Study

YEAR	ROA	ROE	NPM	INF	ER	IR
2013	3.5	20.9	27.5	98.60	646.636789	16.930
2014	3.7	20.4	31.4	100.70	682.426668	17.660
2015	3.6	20.6	32.1	105.30	719.593347	17.030
2016	3.2	19.1	27	113.00	787.345100	17.210
2017	3.2	18.9	52.7	113.71	831.501483	17.190
2018	3.1	14.1	54.6	115.00	861.093416	16.140
2019	3.6	16.8	30.8	122.74	899.462350	16.470
2020	3	14.8	27.5		943.271368	16.520
2021	3.2	18.1	29.7	129.71	988.882638	16.760
2022	3.2	18.7	32.3	157.76	1,030.589548	15.800
2023	3.5	20.4	33.3	167.94	1,160.135035	16.410
2024	3.6	20.7	35.1	179.3	1,318.128265	15.75

Econometric Analysis of the Impact of Macroeconomic Factors on Profitability of Commercial Banks

In this part of the study, we use econometric tools in order to analyze the impact of macroeconomic factors on profitability of commercial banks. The annual inflation, annual exchange rate and the

interest rate are used as independent variables in order to measure their impact on profitability. Then, we want to check whether macroeconomic factors affect profitability or not.

Statistical Analysis for Different Variables

In order to achieve a good conclusion T and propose important policies the data were analyzed using STATA.

Model Specification

According to Brooks (2019) empirical analysis should focus on the allocation of macroeconomic factors in analyzing the profitability. The model specification on the theory is:

$$\boldsymbol{Y} = \beta_1 + \beta_2 ER_t + \beta_3 IR_t + \beta_4 INF_t + \epsilon_t$$

Where:

- $\boldsymbol{Y}$ represents the profitability measures (ROA, ROE, NPM)
- $\boldsymbol{\beta_1}$ is the intercept
- $\boldsymbol{\beta_2, \beta_3, \beta_4}$ are the coefficient of the independent variables (exchange rate, interest rate, and inflation)
- $\boldsymbol{\epsilon_t}$ is the error term capturing other influences not specifically in the model.

To avoid the bias of using the analytical model in estimation as stated by Cevic and Rahmati (2008) due to possible omission of variables, I add interest rate, exchange rate and inflation to the model.

Coefficient Expected Sign

Table 8: Coefficient Expected Sign

Linear Regression Estimator Model	
Return On Assets (ROA)= Dependent Variable	
Variables (Exogenous)	**Expected Signs**
Inflation (INF)	Positive
Exchange Rates (ER)	Negative
Interest rate (IR)	Positive

Table 9: The Result of the Econometric Test (STATA)

```
. regress ROA INF ER IR
```

Source	SS	df	MS		
Model	.060399469	3	.020133156	Number of obs	11
Residual	.419600531	7	.059942933	F(3, 7)	0.34
				Prob > F	0.8002
Total	.48	10	.048	R-squared	0.1258
				Adj R-squared	-0.2488
				Root MSE	.24483

ROA	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
INF	.0082572	.0119806	0.69	0.513	-.0200725	.0365869
ER	-.0007239	.0015957	-0.45	0.664	-.0044972	.0030493
IR	.1719991	.2032827	0.85	0.425	-.3086882	.6526864
_cons	.1325869	3.844168	0.03	0.973	-8.957426	9.222599

Source: Author's computation using STATA

Based on the above econometric test the regression equation using the above variables will be as follows:

$$\boldsymbol{Y} = 0.1325869 - 0.0007239ER_t + 0.1719991IR_t + 0.0082572INF_t + \epsilon_t$$

From the regression analysis, the results indicate that the exchange rate has a negative effect on the ROA with a coefficient of –0.0007239, meaning that as the Rwandan franc depreciates against the US dollar, the ROA slightly decreases, which may be explained by the weakening of the local currency reducing purchasing power and demand for imports. The interest rate, on the other hand, shows a positive effect with a coefficient of 0.1719991, suggesting that increases in interest rates are associated with an increase in ROA, which could be attributed to higher returns on savings and the influence of monetary policy on the financial sector. Lastly, inflation has a positive relationship with the ROA, as indicated by its coefficient of 0.0082572, implying that rising price levels contribute to an increase in the dependent variable, highlighting how inflationary pressures are transmitted into the performance of the economy or banking sector.

Interpretation of the Results

Exchange Rates

According to the results of this study, the coefficient of the exchange rate is –0.0007239, which shows that the relationship between exchange rate and profitability is negative. This means that when the exchange rate increases, return on assets decreases. The interpretation is that if the exchange rate increases by 1 unit, ROA decreases by 0.0007. This findingssuggest that

depreciation of the Rwandan franc against the US dollar reduces bank profitability, since it increases the cost of foreign transactions and imports.

Interest Rates

According to the results of this study, the coefficient of the interest rate is 0.1719991, which shows that the relationship between interest rate and profitability is positive. This means that when interest rates increase, bank profitability also increases. The interpretation is that if the interest rate increases by 1 unit, ROA increases by 0. 172.This finding suggest that higher lending rates enable banks to generate more income from loans and advances, which improves profitability.

Inflation

According to the results of this study, the coefficient of inflation is 0.0082572, which shows that the relationship between inflation and profitability is positive. This means that when inflation increases, bank profitability also increases, though the effect is small. The interpretation is that if inflation increases by 1 unit, ROA increases by 0.0083. The findings suggest that moderate inflation may allow banks to adjust their lending rates upward, which raises their interest income.

Interpretation of R-squared

R^2 is the summary measure that explains how well the sample regression line fits the data. From the model above, the R^2 of 0.1258 means that only 12.58% of the variation in the profitability of Bank of Kigali (BK) is explained by the three macroeconomic variables used in the model, namely exchange rate, interest rate, and inflation, while the remaining 87.42% of the variation is due to other factors not captured in the model, such as bank-specific management practices, regulatory policies, market competition, and other macroeconomic conditions. The computed coefficient of determination of 0.1258 or 12.58% suggests that exchange rate, interest rate, and inflation have a relatively weak explanatory power on BK's profitability when considered together. This result indicates that although these macroeconomic factors influence bank performance, other variables not included in the model play a much larger role in explaining profitability in the Rwandan banking sector.

Table 10: Coefficient Expected Sign

Linear Regression Estimator Model	
Return On Equity (ROE)= Dependent Variable	
Variables (Exogenous)	**Expected Signs**
Inflation (INF)	Positive
Exchange Rates (ER)	Negative
Interest rate (IR)	Positive

Table 11: The Result of the Econometric Test (STATA)

```
. regress ROE INF ER IR
```

Source	SS	df	MS		
Model	25.9085632	3	8.63618772	Number of obs	11
Residual	16.833255	7	2.40475072	F(3, 7)	3.59
				Prob > F	0.0742
				R-squared	0.6062
				Adj R-squared	0.4374
Total	42.7418182	10	4.27418182	Root MSE	1.5507

ROE	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
INF	.1944589	.0758832	2.56	0.037	.0150237	.3738942
ER	-.0180265	.010107	-1.78	0.118	-.0419257	.0058728
IR	3.234415	1.287557	2.51	0.040	.1898262	6.279004
_cons	-43.48881	24.34829	-1.79	0.117	-101.0634	14.08574

Source: Author's Computation Using STATA

Based on the above econometric test the regression equation using the above variables will be as follows:

$$\boldsymbol{Y} = -43.48881 - 0.0180265ER_t + 3.234415IR_t + 0.1944589INF_t + \epsilon_t$$

Interpretation of the Results

Exchange Rates

According to the results of this study, the coefficient of exchange rate is –0.0180265, which shows a negative relationship between exchange rate and profitability. This means that when the exchange rate increases, ROE decreases. The interpretation is that if the exchange rate increases by 1 unit, ROE decreases by 0.0180265. The findings suggest that if depreciation of the Rwandan franc against the US dollar reduces the equity returns of banks because it raises the cost of foreign-denominated transactions and liabilities, thereby lowering profitability.

Interest Rates

According to the results of this study, the coefficient of interest rate is 3.234415, which shows a positive relationship between interest rate and ROE. This means that when interest rates increase, ROE increases. The interpretation is that if the interest rate increases by 1 unit, ROE increases by 3.234415. This findings suggest that banks benefit from higher interest rates because they earn more income from loans and advances, which increases shareholders' returns.

Inflation

According to the results of this study, the coefficient of inflation is 0.1944589, which shows a positive relationship between inflation and ROE. This means that when inflation increases, ROE also increases. The interpretation is that if inflation increases by 1 unit, ROE increases by 0.1944589. These findings suggest that moderate inflation benefits banks because it allows them to raise lending rates, which in turn increases profitability for shareholders.

Interpretation of R-squared

R^2 is the summary measure that tells how well the sample regression line fits the data. From the model above, an R^2 of 0.6062 means that in the long run 60.62% of the variation in theROE was explained by exchange rate, interest rate, and inflation, while the remaining 39.38% is accounted for by other factors not included in the model. The computed coefficient of determination of 0.6062 or 60.62% indicates that more than half of the changes in the ROE are explained by the three macroeconomic variables, suggesting that exchange rate, interest rate, and inflation are important indicators influencing the dependent variable in Rwanda. This result demonstrates that the model is moderately strong in showing how macroeconomic variables contribute to changes in the ROE, while also acknowledging that other economic and institutional factors play a role.

Table 12: Coefficient Expected Sign

Linear Regression Estimator Model	
Net Profit Margin (NPM)= Dependent Variable	
Variables (Exogenous)	**Expected Signs**
Inflation (INF)	Negative
Exchange Rates (ER)	Positive
Interest rate (IR)	Negative

Table 13: The Result of the Econometric Test (STATA)

```
. regress NPM INF ER IR
```

Source	SS	df	MS	Number of obs =	11
				F(3, 7) =	0.74
Model	214.736634	3	71.5788779	Prob > F =	0.5626
Residual	680.048821	7	97.1498316	R-squared =	0.2400
				Adj R-squared =	-0.0857
Total	894.785455	10	89.4785455	Root MSE =	9.8565

NPM	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
INF	-.6582941	.4823158	-1.36	0.215	-1.79879	.4822017
ER	.0731658	.0642403	1.14	0.292	-.0787385	.22507
IR	-6.782096	8.183754	-0.83	0.435	-26.1336	12.56941
_cons	166.1687	154.7585	1.07	0.319	-199.7769	532.1143

Source: Author's computation using STATA

Based on the above econometric test the regression equation using the above variables will be as follows:

$$\boldsymbol{Y} = 166.1687 + 0.0731658ER_t - 6.782096IR_t - 0.6582941INF_t + \epsilon_t$$

Interpretation of the Results

Exchange Rates

According to the results of this study, the coefficient of exchange rate is 0.0731658, which shows a positive relationship between exchange rate and profitability. This means that when the exchange rate increases, NPM increases. The interpretation is that if the exchange rate increases by 1 unit, NPM increases by 0.0731658. The findings suggest that when the exchange rate rises, banks may benefit from gains in foreign currency transactions, which increases their profitability.

Interest Rates

According to the results of this study, the coefficient of interest rate is –6.782096, which shows a negative relationship between interest rate and profitability. This means that when interest rates increase, NPM decreases. The interpretation is that if the interest rate increases by 1 unit, NPM decreases by 6.782096. This findings suggest that higher interest rates raise the cost of borrowing for customers, reducing loan demand, which lowers banks' income and profitability.

Inflation

According to the results of this study, the coefficient of inflation is –0.6582941, which shows a negative relationship between inflation and profitability. This means that when inflation increases, NPM decreases. The interpretation is that if inflation increases by 1 unit, net profit margin decreases by 0.6582941. The findings suggest that high inflation erodes customers' purchasing power, increases costs, and reduces overall banking profitability.

Interpretation of R-squared

R^2 is the summary measure that explains how well the sample regression line fits the data. From the model above, an R^2 of 0.2400 means that 24.00% of the variation in the profitability of Bank of Kigali (BK) is explained by the three macroeconomic variables used in the model, namely exchange rate, interest rate, and inflation, while the remaining 76.00% of the variation is due to other factors not captured in the model, such as bank-specific management practices, regulatory policies, competition in the banking sector, or broader economic conditions. The computed coefficient of determination of 0.2400 or 24.00% suggests that while the selected macroeconomic variables have some influence on BK's profitability, the majority of the variation is explained by other factors, indicating that profitability is determined not only by macroeconomic conditions but also by internal and institutional factors.

Conclusion and Recommendations

This dissertation intended to study how macroeconomic factors influence the profitability of commercial banks in Rwanda, with a particular focus on Bank of Kigali Plc over the period 2013–2024. The task has been accomplished by designing and estimating statistical models that analyze how variables such as inflation, interest rates, and exchange rates affect bank profitability. On the other hand, this study contributed to a better understanding of the relationship between macroeconomic conditions and banking profitability in Rwanda and provides useful insights for policymakers, bank managers, and investors in designing strategies to enhance profitability amid macroeconomic fluctuations. Findings revealed that exchange rate depreciation negatively affects profitability, while interest rates and inflation exhibit a positive but varying effect on ROA. Therefore, the results suggested that macroeconomic variables play a significant role in shaping bank performance, although other internal factors remain important. According to the results, BK Plc has demonstrated financial resilience despite macroeconomic fluctuations, but sustained profitability requires robust risk management and adaptive strategies.

Recommendations

Based on the results and findings of this study, we therefore the researchers provided the following recommendations:

Since the exchange rate has a significant effect on profitability (positive in some models, negative in others), BK should strengthen its foreign currency risk management strategies, including hedging against currency fluctuations to protect net earnings. On the other hand, since

the interest rates have a strong impact on profitability (positive in some models, negative in others), BK should carefully balance lending and deposit rates to maximize interest income while maintaining loan demand as well as implement pricing strategies, adjust interest margins, and manage operational costs to mitigate inflationary pressures.

Apart from these, BK should diversify into fee-based services, digital banking, and investment products to reduce reliance on interest income alone as well as enhancing credit assessment procedures, maintaining adequate provisions, and implementing robust risk monitoring systems.

References

African Development Bank. (2023). African economic outlook 2023: Navigating global shocks. https://www.afdb.org

Alper, D., & Anbar, A. (2011). Bank-specific and macroeconomic determinants of commercial bank profitability: Empirical evidence from Turkey. Business and Economics Research Journal, 2(2), 139–152. https://doi.org/10.20409/berj.2011.20

Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. Journal of International Financial Markets, Institutions and Money, 18(2), 121–136. https://doi.org/10.1016/j.intfin.2006.07.001

Bashir, A., & Hassan, M. K. (2013). The effects of exchange rate volatility on bank profitability: Evidence from emerging markets. Emerging Markets Review, 15, 12–25. https://doi.org/10.1016/j.ememar.2013.01.001

Bernanke, B. S., & Blinder, A. S. (1992). The federal funds rate and the channels of monetary transmission. American Economic Review, 82(4), 901–921. https://doi.org/10.3386/w404

Blaug, M. (1996). Economic theory in retrospect (5th ed.). Cambridge University Press.

Boudon, R. (2002). Statistical methods in social research (20th ed.). Routledge.

Braverman, A., & Gauch, H. G. (1999). The practice of social research (10th ed.). Wadsworth Publishing.

Cassel, G. (1918). Abnormal deviations in international exchanges. The Economic Journal, 28(112), 413–415. https://doi.org/10.2307/2222452

Creswell, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods approaches (4th ed.). SAGE Publications.

Demirgüç-Kunt, A., & Huizinga, H. (1999). Determinants of commercial bank interest margins and profitability: Some international evidence. The World Bank Economic Review, 13(2), 379–408. https://doi.org/10.1093/wber/13.2.379

Diamond, D. W., & Dybvig, P. H. (1983). Bank runs, deposit insurance, and liquidity. Journal of Political Economy, 91(3), 401–419. https://doi.org/10.1086/261155

Dietrich, A., & Wanzenried, G. (2011). Determinants of bank profitability before and during the crisis: Evidence from Switzerland. Journal of International Financial Markets, Institutions and Money, 21(3), 307–327. https://doi.org/10.1016/j.intfin.2010.11.002

Dornbusch, R. (1976). Expectations and exchange rate dynamics. Journal of Political Economy, 84(6), 1161–1176. https://doi.org/10.1086/260506

European Central Bank. (2021). Annual report 2021. https://www.ecb.europa.eu

European Central Bank. (2023). Monetary policy decisions and reports. https://www.ecb.europa.eu

European Commission. (2023). Exchange rate developments and economic impacts. https://ec.europa.eu/info/business-economy-euro

Federal Deposit Insurance Corporation. (2024). Annual report 2023. https://www.fdic.gov

Federal Reserve Bank of St. Louis. (2024). Net interest margin data. https://fred.stlouisfed.org

Flamini, V., McDonald, C., & Schumacher, L. (2009). The determinants of commercial bank profitability in Sub-Saharan Africa (IMF Working Paper WP/09/15). International Monetary Fund. https://www.imf.org

Fosu, A. K. (2019). Macroeconomic stability and growth in Africa: Challenges and prospects. African Development Review, 31(2), 115–130. https://doi.org/10.1111/1467-8268.12345

Gitman, L. J., & Zutter, C. J. (2015). Principles of managerial finance (14th ed.). Pearson.

Gwartney, J., Stroup, R., Sobel, R., & Macpherson, D. (2003). Economics: Private and public choice (11th ed.). South-Western College Publishing.

Gujarati, D. N., & Porter, D. C. (2009). Basic econometrics (5th ed.). McGraw-Hill.

John Maynard Keynes. (1936). The general theory of employment, interest, and money. Macmillan.

Klein, M. W., & Shambaugh, J. C. (2015). Exchange rate regimes in the modern era. MIT Press.

Kothari, C. R. (2004). Research methodology: Methods and techniques (2nd ed.). New Age International Publishers.

Kasekende, L., & Nikolaidou, E. (2017). Macroeconomic policy and financial stability in Africa. African Journal of Economic Policy, 24(1), 55–75.

Kerlinger, F. N. (1986). Foundations of behavioral research (3rd ed.). Holt, Rinehart & Winston.

Kosmidou, K. (2008). The determinants of banks' profits in Greece during the period of EU financial integration. Managerial Finance, 34(3), 146–159. https://doi.org/10.1108/03074350810846020

Krugman, P. R., Obstfeld, M., & Melitz, M. J. (2018). International economics: Theory and policy (11th ed.). Pearson.

Lucas, R. E. (1976). Econometric policy evaluation: A critique. In K. Brunner & A. H. Meltzer (Eds.), The Phillips curve and labor markets (pp. 19–46). Carnegie-Rochester Conference Series on Public Policy. https://doi.org/10.3386/w0456

Lucás, R. E. — [Note: ensure correct spelling "Lucas, R. E."; already listed as item 36.]

Mishkin, F. S. (2015). The economics of money, banking, and financial markets (10th ed.). Pearson Education.

Molyneux, P., & Thornton, J. (1992). Determinants of European bank profitability: A note. Journal of Banking & Finance, 16(6), 1173–1178. https://doi.org/10.1016/0378-4266(92)90061-Y

Muyoboke, S., & Stanislas, N. (2026). School mapping and students' enrolment in public and government aided schools located in Rubavu district, Rwanda (2022–2025). African Journal of Social Issues, 9(1), 870–890. Retrieved from https://www.ajol.info/index.php/ajosi/article/view/322964

Naceur, S. B., & Goaied, M. (2001). The determinants of commercial bank interest margin and profitability: Evidence from Tunisia. University of Tunis Working Paper.

OECD. (2023). African economic outlook: Policy priorities for sustainable growth. https://www.oecd.org

Pasiouras, F., & Kosmidou, K. (2007). Factors influencing the profitability of domestic and foreign commercial banks in the European Union. Research in International Business and Finance, 21(2), 222–237. https://doi.org/10.1016/j.ribaf.2006.03.007

Revell, J. (1979). The impact of inflation on bank profitability. Journal of Banking & Finance, 3(2), 123–136. https://doi.org/10.1016/0378-4266(79)90033-1

Saunders, A., & Cornett, M. M. (2019). Financial institutions management: A risk management approach (9th ed.). McGraw-Hill Education.

Saunders, M., Lewis, P., & Thornhill, A. (2019). Research methods for business students (8th ed.). Pearson Education.

Smirlock, M. (1985). Evidence on the (non)relationship between concentration and profitability in banking. Journal of Money, Credit and Banking, 17(1), 69–83. https://doi.org/10.2307/1992330

U.S. Bureau of Labor Statistics. (2024). Inflation and price indexes 2023. https://www.bls.gov

UNECA. (2021). Economic report on Africa: Macroeconomic trends and challenges. https://www.uneca.org

World Bank. (2022). Rwanda financial sector overview. https://www.worldbank.org

World Bank. (2023). Rwanda macroeconomic update 2023. https://www.worldbank.org

World Bank / Demirgüç-Kunt duplicates noted: (Demirgüç-Kunt & Huizinga entry retained as item 11.)

International Monetary Fund. (2022). World economic outlook: Inflation dynamics post-COVID. https://www.imf.org

International Monetary Fund. (2023). Rwanda: Country report on financial stability. https://www.imf.org.