SELECTED MACROECONOMIC INDICATORS AND STOCK MARKET PERFORMANCE: AN ARDL APPROACH

BY

NOEL O ABUKUTSA

MASTER OF SCIENCE IN COMMERCE

(FINANCE AND INVESTMENT OPTION)

KCA UNIVERSITY

2025

SELECTED MACROECONOMIC INDICATORS AND STOCK MARKET PERFORMANCE: AN ARDL APPROACH

BY

NOEL O ABUKUTSA

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE IN COMMERCE (FINANCE AND INVESTMENT) IN THE SCHOOL OF BUSINESS AT KCA UNIVERSITY

NOVEMBER 2025

DECLARATION AND APPROVAL

I affirm that this dissertation is my original work and has not been published or submitted elsewhere for a degree. I also verify that it contains no material authored or published by others, except where proper attribution is given and the original author is acknowledged.

Student Name: Abukutsa Noel Owano Reg. No. 22/00766

Sign…  Date: 06 November 2025……

APPROVAL

I do hereby confirm that I have examined the master's dissertation of **ABUKUTSA NOEL OWANO.**

Sign: _____ Date: _06 November 2025_____

Prof. Christine N. Simiyu

Dissertation Supervisor

SELECTED MACROECONOMIC INDICATORS AND STOCK MARKET PERFORMANCE: AN ARDL APPROACH

ABSTRACT

The market for securities significantly stimulates economic growth through financial intermediation, cost efficiency improvements, the market valuation process, and risk allocation. Stocks are among the most economically volatile assets, and any sudden change in stock prices can have a significant impact on an economy. The worldwide economic downturn has seen equity indices plunge, volatile currencies, and falling prices of essential commodities. Many African stock markets are facing challenges, primarily due to low external demand rather than weak internal fundamentals. The primary objective was to determine the short and long run relationships between selected macroeconomic indicators and stock market performance in Kenya using monthly time series data from January 2008 to December 2024. The ARDL model was employed, with inflation, lending interest rates, exchange rates, and foreign portfolio investment as independent variables. The money supply served as a control variable to account for its potential association with the NSE 20 Share Index, ensuring that underlying monetary conditions did not confound the observed relationships between the independent variables. The study found that lending interest and exchange rates have a significant short and long run relationship with the NSE 20 Share Index. Long-run ARDL results indicated a positive relationship with loan rates, with a coefficient of 317.18, suggesting that moderate adjustments in loan rates can enhance market performance. The short-run relations were negative with a coefficient of -53.99, indicating higher borrowing costs and decreased liquidity. Exchange rate depreciation had a consistently negative relationship with a long-run coefficient of -29.94 and a short-run coefficient of -17.19, degrading stock performance. The study recommends that CBK should carefully manage interest rates for stability and market growth, the government of Kenya should stabilize exchange rates, policymakers should uphold inflation targeting for price control, and CMA should create investor-friendly policies that attract and retain international investors.

Keywords: *Autoregressive Distributed Lag, Stock Market Performance, Macroeconomic Indicators, Kenya*

ACKNOWLEDGEMENT

I convey my heartfelt thankfulness to God for divine direction, power, and wisdom in allowing me to complete this dissertation. His gifts and grace have provided the foundation for my endurance and devotion during this journey. I thank **Prof. Christine N. Simiyu**, my supervisor, for guiding me in preparing the dissertation.

TABLE OF CONTENTS

DEDICATION

I dedicate this dissertation to God for guiding and blessing me throughout the process. I also cherish the memories of my late mother, **Rephah K. Abukutsa**, who taught me the importance of education. Additionally, I thank my academic supervisor, **Prof. Christine N. Simiyu,** for her unwavering support during the preparation of this dissertation.

LIST OF FIGURES AND TABLES

ACRONYMS AND ABBREVIATIONS

ARDL	Autoregressive Distributed Lag
CBK	Central Bank of Kenya
CMA	Capital Market Authority
CPI	Consumer Price Index
DSE	Dhaka Stock Exchange
EMH	Efficient Market Hypothesis
FPI	Foreign Portfolio Investment
GDP	Gross domestic product
ISE	Istanbul Stock Exchange
KNBS	Kenya National Bureau of Statistics
NSE	Nairobi Securities Exchange
USD	United States Dollar
VAR	Vector Autoregression
VECM	Vector Error Correction Model
WB	World Bank

TERMS AND DEFINITIONS

Autoregressive distributed lag: An econometric technique used to analyze the dynamic relationship between a response variable and one or more predictor variables (Pesaran, Shin, and Smith, 2001).

Exchange Rate: The conversion rate of one currency for another (International Monetary Fund, 2023).

Extended broad money: Encompasses the entire money supply within an economy, including currency, demand deposits, quasi-money, and other liquid assets, such as securities owned by non-bank financial institutions (Central Bank of Kenya, 2023).

Foreign Portfolio Investment: Investing in financial assets in a foreign country without attempting to gain direct control or management of the entities involved (Corporate Finance Institute, n.d.).

Inflation Rate: 'The rate at which the overall price level of products and services in an economy rises over time' (Mankiw, 2021).

Interest rate: The cost of acquiring borrowed funds (Mankiw, 2021).

Stock Market Performance: Overall trend and condition of stock markets over a specific period, reflecting investor confidence, economic health, and business profitability (Oriwo, 2012.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The securities market is vital for boosting economic growth through financial intermediation, improved cost efficiency, market valuation processes, and risk distribution (Nyasha & Odhiambo, 2020). Stock markets attract investors seeking returns through value appreciation and dividends (Ndegwa, 2016). Stocks are among the most volatile assets, with rapid changes in stock prices significantly affecting the economy (Barakat, Elgazzar, & Hanafy, 2016). It effectively promotes capital investment and resource allocation, supporting economic growth (Butali, 2020). According to Williams and Taylor (2024), a stable macroeconomic environment fosters investor confidence, which in turn boosts growth in the stock market.

The Efficient Market Hypothesis (EMH) and Arbitrage Pricing Theory (APT) are essential concepts in finance that offer crucial frameworks for evaluating market efficiency and asset return patterns. In 1969, Fama, Fisher, Jensen, and Roll studied market efficiency by analyzing how US stocks listed on the NYSE responded to corporate dividend announcements. According to EMH, dividend announcements and modifications are significant because they reflect management's expectations about future financial outcomes. In competitive and efficient markets, stock prices tend to vary unpredictably, as they encompass all available relevant information. APT asserts that if two portfolios carry the same risk level, their expected returns should be identical. If discrepancies arise, arbitrageurs will act to exploit price differences and restore market equilibrium.

Globally, the London Stock Exchange (LSE) provides a platform for trading in capital and financial markets. The stock market encourages local savings and the allocation of funds (Koech, 2021). Carruthers (2024) analyzed daily data to examine stock returns from four

London Stock Exchange indices—'FTSE All-Share, FTSE SmallCap, FTSE 100, and FTSE 350 for two periods'. He found no abnormal returns during the initial period. In the following period, three indices reported extremely low returns in the last three trading days. According to Agwu and Haydar (2023), 'macroeconomic indices influence the performance of the London stock market'. Smith and Jones (2023) investigated 'how inflation and interest rates affect the S&P 500 index and FTSE 100 index'. They found that rising inflation negatively affected stock returns, while lower interest rates supported market growth. Additionally, Brown, Smith, and Jones (2024) explored 'the relationship between GDP growth and stock market trends in the United Kingdom and the United States, discovering that economic growth boosts investor confidence and raises stock prices'. Sahoo, Patnaik, and Satpathy (2020) 'found a negative correlation between GDP, GDP per capita, and the Indian stock market'. Similarly, Bhuiyan and Chowdhury (2020) observed that 'macroeconomic factors affect the United States stock market', with interest rates exerting an adverse effect. Mallik and Chowdhury (2024) found that inflation rate patterns in Bangladesh remained stable over time and that inflation reduces DSE performance. Siang and Rayappan (2023) discovered that 'exchange rates had a slight beneficial impact on the Kuala Lumpur Stock Exchange (KLSE) index, while inflation had a long-term positive effect'. Likewise, Cohen and Levy (2022) examined the Tel Aviv Stock Exchange (TASE) and concluded that GDP growth and monetary policy decisions influence market movements.

Regionally, while specific markets are still emerging, most have relatively well-developed financial infrastructure that supports business activities (Ateya, 2023). According to Kapaya (2020), stock market fluctuations in Tanzania are 'linked to both long-term and short-term economic growth'. Hassan and Ahmed (2023) note that investor confidence in Egypt's stock market closely correlates with economic changes and efforts to control inflation. Okello and Nsubuga's (2023) research in Uganda reveals that currency rate volatility has a significant

impact on stock market returns. Similarly, Hassan and El-Sayed (2023) in Egypt found that inflation and ‘exchange rate volatility significantly influence stock market performance’. Okello and Achieng (2021) found that GDP growth and inflation are important factors contributing to stock market fluctuations in Uganda. Deng, Okello, and Achieng (2023) examined the young stock market in South Sudan, highlighting how political instability and fluctuating exchange rates pose significant challenges to the stock market.

Locally, the Kenyan stock market has witnessed several improvements, including the trading of debt instruments, stocks, bonds, and pension funds (Kiptekwei, 2019). Mwangi and Otieno (2024) identified inflation and interest rates as key factors affecting stock market performance at NSE. Ngele (2023) observed ‘a link between exchange rates and stock market efficiency at NSE from 2013 to 2021’. Additionally, Mwangi and Kamau (2023) found that inflation hurts stock prices, while lower interest rates promote market growth at NSE.

Despite the large volume of literature, numerous crucial gaps remain. The empirical evidence on the NSE is inconclusive, with studies reaching opposing conclusions about the direction and magnitude of macroeconomic relation. While Mwangi and Kamau (2023) found inflation to be harmful to stock prices, Ngele (2023) discovered a weak and statistically negligible link between exchange rates and market efficiency. Most previous studies are based on pre-2020 data and do not take into account the Central Bank of Kenya's 2024 transition to inflation targeting. This policy adjustment may have affected investor expectations and the transmission mechanism of interest rates. While the APT paradigm has been widely used in developed markets, its empirical applicability on the NSE remains unknown, particularly in light of recent macro-financial shocks and structural breaks. These inadequacies highlight the necessity for a new study that incorporates updated data, a strong theoretical framework, and diagnostics that reflect changing market dynamics.

As a result, the purpose of this study was to determine the short- and long-run relationship between inflation, interest rates, and exchange rates, and foreign portfolio investment and stock market performance in Kenya. Using monthly data spanning from January 2008 to December 2024, and the Autoregressive Distributed Lag (ARDL) model, the study employed time series approach to capture both short and long run macroeconomic relations. It also included structural break diagnostics, Cumulative Sum (CUSUM) and Cumulative Sum of squires (CUSUMSQ) techniques, to account for key policy transitions, most notably the Central Bank of Kenya's 2024 shift to inflation targeting. By filling gaps in data coverage, methodological rigor, and theoretical application, the study contributes to a more nuanced understanding of macroeconomic relationships and stock market performance in emerging markets.

1.1.1 Stock market performance

'A stock market is a marketplace where stocks, bonds, and commodity derivatives are traded' (Butali, 2020). It is often considered a barometer of economic growth of a country. (Verma & Bansal, 2021). Its behavior is crucial to any financial system or economy because it offers various investment opportunities (Mutwiri, Omagwa, & Wamugo, 2019). Macroeconomic fluctuations significantly influence stock market dynamics, leading to regular adjustments in stock prices (Keregero, 2023). The stock market has three unique impacts on the economy: higher stock prices generate wealth; lower stock prices reduce the lending interest, leading to increased investment; and a thriving stock market boosts confidence (Laopodis & Papastamou, 2016). Growing confidence encourages both company and consumer spending, while decreased capital costs give businesses extra incentives to increase investment. These factors collectively help accelerate economic growth (Laopodis & Papastamou, 2016). Stock market performance includes the expansion of the share market and increased investment volume. Efficient stock markets enhance corporate governance by promoting financial discipline among investors (Kipchumba, 2017).

This study used the NSE 20 Share Index to evaluate stock market performance in Kenya. The NSE 20 Share Index is a weighted price index of the NSE's 20 most liquid and actively traded stocks, designed to reflect the success of Kenya's leading companies, known as blue-chip stocks (Kariuki & Muthama, 2020). 'This index provided a detailed view of market movements and investor sentiment in the Kenyan stock market' (Mutua & Gikonyo, 2021).

1.1.2 Macroeconomic indicators

Macroeconomic indicators are vital economic drivers because they influence the overall economy (Abdirizak, 2017; Nguyen, Schinckus, & Chong, 2022). Pradhan, Norman, and Bahmani (2020) revealed that the inflation rate influences economic growth. Macroeconomic indicators look at the national economy. To avoid future losses, investors should regularly monitor macroeconomic indicators to anticipate future investment trends and make informed investment decisions (Pradhan et al., 2020). The leading indicators in this study was inflation, lending interest rates, Kenya's exchange rate against the US dollar, and foreign portfolio investment, which are crucial for predicting stock market behavior.

'Interest rate is a key macroeconomic indicator that directly influences economic growth because it reflects the long-term cost of borrowing money '(Rachael & Moses, 2017; Alao, 2023). Lower interest rates reduce borrowing costs, encouraging higher consumption and investment, which can lead to rising stock prices. 'Higher interest rates increase financial costs for borrowing, which can limit firm profitability and thus affect stock market performance' (Chauhan, Gupta, & Shridhar, 2023). Khalid and Khan (2017) observed that interest rates negatively affect Pakistan's stock market indexes. Meanwhile, Smith and Brown (2023) found that interest rate fluctuations influence stock market volatility in the UK and the US. Mensah and Boateng's (2022) analysis of the Ghana Stock Exchange (GSE) demonstrated that fluctuations in interest rates significantly affect stock market performance. The CBK Annual Report (2024) reported that the weighted average loan rate for commercial banks increased to

around 15.15% from 12.79% the previous year, while the weighted average deposit rate rose to 9.85% from 7.29% the year before. The CBK Annual Report (2023) indicated that the average lending rate for commercial banks increased to approximately 13.31% in FY2022/23, up from 12.4% the prior year. This study analyzed Kenya's monthly lending rates to provide a comprehensive overview of the country's lending landscape, thereby contributing to the existing knowledge of financial practices, consumer behavior, and economic policies.

Inflationary pressures hinder stock market growth. Hansen and Newman (2023) characterize inflation as having significant implications throughout economic history. Moderate inflation benefits the stock market, reflecting a healthy level of trade activity; rising inflation can reduce buying power, leading to reduced equity gains (Chauhan et al., 2023). Jones, Smith, and Brown (2022) discovered that inflation rates affect investor sentiment and the performance of stock markets. Their findings suggest that market movements are driven by inflation expectations, which influence both short-term and long-term investment decisions. According to Khalid and Khan (2017), inflation positively affects the volatility of Pakistan's stock market. The CBK Annual Report (2024) indicates that inflation remained within the target range of 5±2.5% in 2023/2024, decreasing from 7.9% in June 2023 to 4.6% in June 2024. The CBK Annual Report (2023) reported that inflation exceeded the target band of 5±2.5% in 2022/23. This study utilized the Monthly Consumer Price Index to determine the inflation rate in Kenya. This provided a timely, comprehensive, and reliable metric necessary for practical economic analysis and policymaking.

‘The exchange rate is the value at which one currency can be converted into another’ (Simiyu & Ngile, 2015). Its volatility influences international trade, competitiveness, inflation, and import/export costs (Chauhan et al., 2023). According to Khalid and Khan (2017), currency rates positively impact Pakistan's stock market. Johnson and Lee (2022) found that a declining Australian dollar increased stock market volatility, especially in import-dependent sectors.

Otieno and Kamau (2024) discovered that currency depreciation boosted market volatility at the NSE. The CBK Annual Report (2024) states that the Kenyan shilling remained relatively stable against the US dollar in 2024. Although the shilling fell by 14.1% during the fiscal year, it recovered with a 17.5% gain in the second half. Kenya's foreign currency market faced challenges in the 2022/23 fiscal year due to global economic disruptions involving currencies, interest rates, and commodity markets, which affected both emerging and frontier economies (Central Bank of Kenya, 2023). The Kenyan shilling declined by 12% against the US dollar in the first half of 2022/23, mainly due to the US dollar's strength, driven by rising US interest rates and increasing global commodity prices. This study analyzed the monthly exchange rate of the Kenyan shilling against the US dollar to determine the short-run and long-run relationship between exchange rate and stock market performance, offering a practical framework for examining currency valuation dynamics, economic trends, and policy impacts.

'Foreign Portfolio Investment is the purchase of financial assets in a foreign country without taking direct control or management of the businesses in question' (Corporate Finance Institute, n.d.). FPI promotes financial integration by linking domestic markets to global capital networks. This integration improves efficiency, transparency, and competition among listed companies (Mann, 2021). The presence of foreign investors encourages adherence to international financial reporting and corporate governance norms, which contributes to financial markets' overall resilience and credibility (KPMG S.A., 2019). In Nigeria, FPI fell progressively from $3.86 billion in 2021 to $3.32 billion in 2022, indicating investor caution in the face of currency volatility and weak policy signals (NBS, 2023). FPI recovered marginally to $3.34 billion in 2023. However, the most significant shift happened in 2024, when it increased by 106.5% to $13.35 billion, owing to high interest rates and foreign exchange changes that boosted investor confidence (Nairametrics, 2024). In Tanzania, FPI remained low throughout the period, contributing for less than 1% of total foreign private

capital. Inflows were $4.9 million in 2021 but fell drastically to $0.2 million in 2022, illustrating the country's undeveloped capital markets (Bank of Tanzania, 2023). While data for 2023 is limited, the dominance of FDI—which is expected to reach $1.72 billion in 2024—indicates that portfolio flows continue to play a minor role in Tanzania's investment environment (UNCTAD, 2024). In Kenya, FPI has been characterized by consistent net outflows. In 2022, the country saw a net portfolio investment outflow of $228.66 million, followed by another outflow of $153.02 million in 2023 (CEIC Data, 2024). This study analyzed monthly net foreign equity investment flows to understand the short-run and long-run relationship between foreign portfolio investment and stock market performance. Recognizing this relationship was essential for creating regulatory policies, guiding investment decisions, and ensuring market stability.

1.1.3 Nairobi securities exchange (NSE)

'Regulated by the Capital Markets Authority of Kenya (CMA)', the NSE contributes significantly to Kenya's economic growth by mobilizing domestic and foreign capital (Nairobi Securities Exchange, 2024). In 1968, the NSE offered 66 public-sector securities, including government issues from Kenya (45%), Tanzania (23%), and Uganda (11%) (Nairobi Securities Exchange PLC, 2024.). Following the CMA Act Amendments of 1994, NSE was compelled to restructure its ownership structure, and stockbrokers' capital requirements increased, therefore boosting market integrity (Nairobi Securities Exchange PLC, 2024). By the turn of the 2000s, the NSE had progressed from informal transactions to a regulated, contemporary exchange with computerized infrastructure and an increasing number of licensed intermediaries. In 2007, NSE implemented a new wide-area network for remote trading, leading to increased connectivity. In 2008, the NSE launched the NASI to address the narrow representation of its 20-share index. NASI assesses overall market performance by weighing the market capitalization of listed enterprises, which includes all listed equities (Nairobi Securities

Exchange PLC, 2024). In 2012, the NSE introduced the FTSE/NSE Government Bond Index, the first of its type in East Africa, allowing fixed-income investors to follow the bond market (Nairobi Securities Exchange PLC, 2024). The year 2014 witnessed the NSE's transition to a public corporation, with shares traded on its platform. Following demutualization, the NSE rapidly extended its product offering. In late 2014, it improved its bond-trading platform to enable online trading of corporate and treasury bonds that are connected with the central bank's settlement system (Nairobi Securities Exchange PLC, 2024).

In 2016, the CMA formally recognized the NSE as a Self-Regulatory Organization, giving it some regulatory authority. In 2017, all-important indices rose significantly: one analysis reported that the NASI gained ~28.4%, the NSE25 gained ~21.3%, and the NSE20 gained ~16.5% (Cytonn Study, 2018). In February 2019, the NSE amended its listing standards to accommodate new asset classes, including green bonds (Nairobi Securities Exchange PLC, 2024). Crucially, in July 2019, the exchange introduced NEXT, its derivatives market, making it just the second African bourse to provide exchange-traded derivatives (after Johannesburg) (Nairobi Securities Exchange PLC, 2024). NEXT initially offered single-stock and index futures on specific NSE equities, allowing for hedging and new speculative products. In 2021, the NSE launched an Unquoted Securities Platform (USP) for trading private company shares and introduced mini-contracts for the FTSE NSE 25 Index futures, catering to retail investors (Nairobi Securities Exchange PLC, 2024). In 2023, the NSE upgraded its indexes with a 10-share index and a bond market index (Nairobi Securities Exchange PLC, 2024). The fixed-income category also experienced growth; for example, in 2023, the NSE introduced a bond futures index to enhance monitoring of government debt. Market capitalization increased from USD 3.3 billion in early 2023 to over USD 9 billion by year-end 2023, representing a 176% rise in local currency (World Federation of Exchanges, 2024).

1.2 Statement of the Problem

The global economic slowdown has had a profound influence on financial markets, with significant equity indices plummeting, currencies remaining volatile, and important commodity prices declining (Kinuthia & Etyang, 2014). In 2022, the Morgan Stanley Capital International(MSCI) World Index declined by 17.7%, while the MSCI Emerging Markets Index fell by 19.7%, indicating widespread investor pessimism (World Federation of Exchanges, 2023). The S&P 500 fell 18.1%, and the Nasdaq Composite fell 33%, their worst annual results since 2008 (Dimensional, 2023). In August 2024, global markets experienced another significant selloff, with the S&P 500 declining 2.9%, the Nasdaq losing 4.5%, and the Euro Stoxx 50 falling 2.7%, driven by concerns about a recession and poor earnings reports (VT Markets, 2024). Currency markets mirrored the uncertainty. In 2023, the Kenyan Shilling, South African Rand, and Nigerian Naira each lost almost 22% of their value versus the US dollar (Stears, 2023). By mid-2024, the Kenyan Shilling had devalued by 20%, adding to inflationary pressures and lowering investor confidence (Techish, 2024). These changes underscore the severity of the downturn and reinforce the notion that nearly every financial and economic indicator has shifted from being overly optimistic to uncertain and chaotic. Many African stock markets have struggled, but some have stayed resilient. In 2023, Kenya's All-Share Index dropped by 19%, making it the worst-performing market worldwide due to dollar shortages and international investor withdrawal (Kenyan Wall Street, 2023). However, in 2024, the Nairobi Securities Exchange All Share Index (NSE ASI) recovered with a 62.89% return in USD terms, beating global indices and indicating regained investor confidence (Afridigest, 2025). Despite the rebound, volatility remains high, and external demand continues to have a more substantial impact on performance than internal fundamentals (Nyongesa & Muchoki, 2016). The stock market supports economic growth by connecting borrowers and lenders, promoting savings, and enabling efficient resource distribution (Mureithi, Mukhongo, &

Datche, 2019). These dynamics underscore the importance of stabilizing financial indicators to promote long-term growth.

The stock market plays a vital role in Kenya's financial system by enabling capital formation and investment. The NSE serves as a reflection of economic trends and investor confidence, acting as a crucial indicator of financial stability. Nonetheless, factors such as inflation, interest rates, exchange rates, and FPI significantly influence stock market performance (Central Bank of Kenya, 2023). Despite Kenya's efforts to stabilize the economy, fluctuations in macroeconomic indices continue to impair stock market performance. Inflation has been variable, which has hurt investor confidence and stock market stability (Kingdom Securities, 2024). Similarly, the CBK's interest rate adjustments to combat inflation have influenced investment decisions, with higher rates deterring equity investments (CBK, 2023). Exchange rate volatility is a significant problem, as currency depreciation has led to capital flight and limited foreign investment inflows (KIPPRA, 2024). The equity market turnover decreased by 6.35% to KShs. 88.2 billion, down from Kshs. 94.2 billion in 2022 (Nairobi Securities Exchange PLC, 2023).

Numerous studies have explored how macroeconomic volatility affects stock market performance in various contexts. For instance, Ordue, Ityavyar, and Tarnongo (2024) analyzed Nigerian stock market data from 1986 to 2022 and found that inflation and GDP have a significant influence on long-term market trends. Conversely, interest rates and currency rates have only minor short-term impacts. However, their findings are limited to Nigeria, leaving a gap in understanding other African markets. Similarly, Keregero (2023) examined macroeconomic factors influencing stock returns on the Dar es Salaam Stock Exchange between 2011 and 2021. The findings indicated a positive correlation between inflation, broad money supply, interest rates, and stock returns, whereas exchange rates showed a negative correlation. Nonetheless, this research is restricted to Tanzania. Gure and Mutswenje (2023)

examined the influence of macroeconomic variables on stock market activity in Kenya, with a particular focus on inflation, and found that inflation is a key driver of market activity. However, it only considered inflation and overlooked other important macroeconomic indicators, such as foreign portfolio investment, interest rates, and exchange rates, which also affect stock market performance. This study sought to fill this gap by including macroeconomic indicators like FPI, inflation rate, lending interest rate, and exchange rate.

Although many studies have analyzed the Kenyan market using time series models, few have employed the ARDL approach spanning from 2008 to 2024 using monthly data. This study aimed to address this gap, thus improving the understanding of both short-term and long-term relationships among key macroeconomic indicators—such as inflation, interest rates, exchange rates, and foreign portfolio investment as independent variables, and money supply as a control variable—and stock market performance in Kenya.

1.3 Objectives of the Study

1.3.1 General objective

To determine the short-run and long-run relationship between selected Macroeconomic Indicators and Stock Market Performance in Kenya.

1.3.2 Specific objectives

i. To investigate the short-run and long-run relationship between Kenya's inflation rate and the stock market performance.
ii. To examine the short-run and long-run relationship between Kenya's lending interest rates and the stock market performance.
iii. To assess the short-run and long-run relationship between Kenya's exchange rate against the US Dollar and Stock Market Performance.
iv. To examine the short-run and long-run relationship between foreign portfolio investment (FPI) and Stock Market performance.

1.4 Research Hypotheses

i. There is no short-run and long-run relationship between Kenya's inflation and the Stock Market Performance in Kenya.

ii. There is no short-run and long-run relationship between Interest Rates and Stock market performance in Kenya.

iii. There is no short-run and long-run relationship between Kenya's exchange rate against the US Dollar and Stock Market Performance in Kenya.

iv. There is no short-run and long-run relationship between foreign portfolio investment and Stock Market Performance in Kenya

1.5 Significance of the Study

1.5.1 Policy makers

The findings of this study aimed to provide insight into the short-run and long-run relationship between selected macroeconomic indicators and stock market performance in Kenya. The findings provide a solid platform for Kenyan stock market expansion policies.

1.5.2 Investors in the Nairobi Securities Exchange

This study benefits investors whose NSE transactions are affected by the selected macroeconomic variables. Therefore, the study supplied empirical data to help investors make informed decisions.

1.5.3 Academicians and researchers

This study assists academicians and researchers in identifying study subjects and components that warrant further investigation, as well as analyzing empirical literature to find study gaps. This also provides valuable insights into the short-run and long-run relationship between selected macroeconomic indicators and stock market performance.

1.6 Delimitation of the Study

This study aimed to investigate the short-term and long-term relationships between selected macroeconomic indicators and stock market performance in Kenya from 2008 to 2024. It utilized monthly secondary data collected from the websites of the KNBS, NSE, and CBK. Macroeconomic indicators included inflation, interest rates, the exchange rate (Kes. against USD), and Foreign Portfolio Investment (FPI) as independent variables, and money supply as a control variable, in relation to the NSE 20 Share Index.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter examines the theories that relate macroeconomic indicators to stock market performance, focusing on inflation, interest rates, exchange rates, foreign portfolio investment, and the NSE 20 share index.

2.2 Theoretical Literature

Theoretical literature establishes essential concepts for the subject. Several hypotheses about macroeconomic indicators and stock market performance have been proposed.

2.2.1 Efficient market hypothesis (EMH)

A stock market is considered efficient when share prices quickly and accurately reflect all relevant information (Malkiel, 1989). This means that information efficiency prevents investors from achieving above-average returns based on such information, as it is already embedded in market prices (Malkiel, 1989). EMH suggests that financial markets are "informationally efficient," meaning asset prices reflect all existing information. Consequently, consistently earning above-average returns (alpha) with publicly available data is challenging (Fama, 1970).

Fama (1970) determined that prices follow a random pattern, which is compatible with the weak version of EMH. In their influential study, Fama and French (1992) examined the relationship between stock returns and market efficiency. Although they identified some irregularities, their findings essentially confirmed that market prices behave according to EMH, especially over the long term, even if short-term deviations occasionally occur. Cowles' analysis of investment performance revealed that professional investment managers did not outperform a simple permanent portfolio strategy, implying market efficiency (Cowles, 1933).

Later studies suggested that observed market anomalies might be attributed to risk factors rather than inefficiencies (Berk & DeMarzo, 2017). Jensen's (1978) studies demonstrated that, after factoring in risk, mutual funds did not regularly beat the market. Samuelson proposed a theoretical underpinning for the random walk hypothesis, arguing that rational investors would quickly incorporate new knowledge into prices, leading to unexpected price fluctuations (Samuelson, 1965). Malkiel (2003) conducted a detailed analysis of mutual funds, showing that, after accounting for expenses, most funds did not outperform the market.

Over the years, the EMH has faced substantial criticism and empirical difficulties. One of the most common complaints is the occurrence of market anomalies, such as the January effect, the weekend effect, and the value effect, which suggest that specific trading techniques may yield abnormal returns (Thaler, 1987; Rozeff & Kinney, 1976). Behavioral finance shows that psychological factors often drive irrational market behavior (Shleifer, 2000; Naseer & Bin Tariq, 2015). These biases can lead to consistent deviations from rational decision-making, resulting in financial losses. Despite the existence of mispricing, arbitrageurs may face limitations that prevent them from eliminating these inefficiencies. Short-selling restrictions make it difficult to short certain stocks. Noise trader risk, where irrational investors may distort prices relative to their core valuation, is another concern. Insider trading can undermine the effectiveness of the EMH by allowing persons with privileged information to profit from market inefficiencies (Seyhun, 1992). Many cognitive biases, including overconfidence, herding, and anchoring, can influence investment decisions and lead to market anomalies (Shiller, 2000). Andrew Lo proposed the Adaptive Market Hypothesis (AMH) as a medium ground between EMH and behavioral finance. This implies that market efficiency changes with time and among different market sectors. Investors adjust their tactics based on market conditions, resulting in periods of efficiency and inefficiency (Lo, 2004). Other critiques include the difficulty of precisely measuring and verifying market efficiency, the role of

transaction costs and institutional frictions, and the assumption that investors make decisions logically and rationally (Shiller, 2003). Furthermore, some regard the 2008 global financial crisis as a challenge to the EMH because it failed to forecast the collapse and ensuing market turbulence. According to Banz (1981), small-cap companies often beat large-cap equities. According to Fama and French (1992), value equities with low price-to-book ratios typically beat growth stocks. According to Jagadeesh and Titman (1993), stocks that have performed well recently are more likely to continue doing so in the coming years. Similarly, the value effect, which favors inexpensive stocks over overvalued ones, undermines the semi-strong form of EMH (Fama & French, 1992).

This theory was helpful in this study because it facilitated the determination of the short-run and long-run relationships between selected macroeconomic indicators and stock market performance in Kenya. It demonstrated whether the Kenyan stock market effectively processes macroeconomic information, influencing investor decisions and market patterns.

2.2.2 Monetary theory of inflation

This theory contends that variations in the money supply are fundamental drivers of inflation. Economist Milton Friedman believed that "money is the key factor" and that monetary policy was a more effective tool for economic stabilization. Monetarist theorists argue that changes in the money supply have the greatest, though not the only, influence on short-term economic output and price volatility. In the long run, they primarily affect the price level rather than real output (Totonchi, 2011; Shaikh, Muhammad, & Khan, 2022). According to monetarists, a rise in the money supply usually leads to an increase in prices. If the money supply doubles, prices will rise correspondingly (Shaikh et al., 2022). (Jahan & Papageorgiou, 2014). In the mid-twentieth century, economist Milton Friedman revived the QTM by claiming, "Inflation is always and everywhere a monetary phenomenon. Friedman’s focus on the inflationary impact of the monetary supply system disagreed with the Keynesian consensus of the time (Jahan &

Papageorgiou, 2014). Friedman's Influence fostered the development of Monetarism, an economic school of thought that stresses the need to control inflation through the supply of money (Jahan & Papageorgiou, 2014). Monetarists advocate a steady money growth rule, recommending that the central bank raise the money supply at a consistent rate aligned with the economy's long-term growth prospects. This strategy aims to ensure price stability and reduce the adverse effects of discretionary monetary policy (Jahan & Papageorgiou, 2014). This approach aims to maintain price stability and minimize the damage caused by discretionary monetary policy (Jahan & Papageorgiou, 2014). Monetarist theory had its most significant impact in the 1970s and early 1980s, particularly in the US and the UK. For instance, the Federal Reserve had relied on monetarist principles to curb rampant inflation under Chairman Paul Volcker through constrictive monetary supply expansion and achieved substantial declines in inflation rates (Jahan & Papageorgiou, 2014).

Although it has influenced economic thought for many years, the Monetary Theory of Inflation has shortcomings. According to critics, expectations, productivity, and economic growth all influence price levels (Mankiw, 2020). Cagan (1956) linked excessive money supply expansion to the hyperinflation observed in Germany. Friedman (1980) expanded on this idea by incorporating expectations into the analysis, resulting in the concept of "adaptive expectations." According to this concept, people form inflation expectations based on experiences, which guide their economic behavior. Empirical evidence shows that the connection between the money supply and inflation is not always consistent. Following the 2008 financial crisis, central banks increased the money supply without triggering inflation, suggesting that other factors influence price levels (Blanchard & Galí, 2010; Jahan & Papageorgiou, 2014). The theory mainly emphasizes demand-side factors, often neglecting supply-side factors, which can affect inflation (Jahan & Papageorgiou, 2014). Strict focus on monetary supply targets might have adverse economic effects. For instance, during Margaret

Thatcher's tenure as UK Prime Minister, strict monetarist policies led to high unemployment and economic downturn, raising concerns about their sustainability (Lankester, 2024). Another criticism is that the Monetary Theory of Inflation cannot explain stagflation, a phenomenon characterized by high inflation alongside high unemployment and sluggish economic growth (Krugman, 2018). Critics argue that velocity is unpredictable, especially in the short term, due to changes in financial innovation, expectations, and interest rates. As velocity fluctuates, the link between an increase in the money supply and inflation becomes less clear (Goodhart, 1989). Critics also contend that the money supply is not exogenous (controlled by the central bank). They suggest that corporate and consumer demand for money can influence the money supply through the banking system, making precise control difficult for central banks (Moore, 1988). Overall, the Monetary Theory of Inflation mainly addresses demand-side concerns. This challenge spurred the development of alternative theories, including Keynesian and New Keynesian models, which emphasize aggregate demand and supply as key determinants of inflation.

This theory was helpful in this study because it facilitated the investigation of the short-run and long-run relationships between Kenya's inflation rate and stock market performance.

2.2.3 Keynesian theory of interest rate

John M. Keynes stated that the interest rate balances the demand for liquid wealth with the available money supply, compensating for the loss of liquidity (Appelt, 2016). His theory of liquidity preference suggests that during periods of uncertainty, individuals tend to favor holding liquid forms of wealth, which in turn dampens investment and slows economic activity (Keynes, 1936). He contended that lower interest rates encourage investment by decreasing borrowing costs, thus boosting economic progress, while higher interest rates discourage investment and limit economic activity. Monetary authorities can influence interest rates and economic output by adjusting the money supply (Blinder, 1997). Keynes outlined three reasons

for holding money. The transactions motive, saving money for everyday purchases, which is positively correlated with income; the precautionary motive, saving money for unexpected events or emergencies, which is also favorably correlated with income; and the speculative motive, saving money to take advantage of future interest rate fluctuations, which is the most important motivator in Keynes' theory. Individuals assume that high interest rates will fall, while low interest rates will climb. This motive is inversely related to interest rates (Keynes, 1936). This theory arose in response to the classical theory of interest rates, which assumed full employment and an equilibrium between savings and investment (Keynes, 1936). Keynes contended that, contrary to classical theory, the equilibrium interest rate might not always result in full employment. Instead, he felt that interest rates may be influenced by people's liquidity preferences and projections of future economic situations. Several empirical investigations have investigated different parts of Keynes's interest rate theory. Evidence supports his thesis of a diminishing relationship between interest rates and investment, particularly in the United States, where lower rates have generally been associated with increased private sector investment (Bernanke & Gertler, 1995).

Despite its significant influence on economic thought, Keynesian theory has been heavily criticized. Notably, Milton Friedman questioned Keynes's view of interest rates as the fundamental predictor of investment (Friedman, 1968). Friedman argued that the money supply is more important in determining interest rates and affecting economic dynamics, meaning that monetary policy should take precedence over fiscal policy (Friedman, 1968). The emergence of New Classical Economics introduced the concept of rational expectations, which posits that individuals make decisions based on all available information. Proponents of this approach argued that Keynesian models failed to account for how future expectations shape economic behavior, resulting in ineffective fiscal and monetary policies (Lucas, 1976). Other critics have maintained that economic fluctuations are driven by real factors, such as changes in technology

or productivity, rather than by monetary influences. For example, Kydland and Prescott (1982) asserted that advancements in productivity and technological shocks are central to determining interest rates and the broader business cycle. Critics argue that Keynes' premise of a fixed money supply, managed entirely by the central bank, is unrealistic. Several factors influence the money supply in modern economies, including bank lending, international capital flows, and financial institutions (Friedman, 1968). Some economists, notably those from the classical and neoclassical schools, believe that Keynesian theory overlooks the role of supply and demand for loanable funds in influencing interest rates. They feel that saving and investing decisions are equally important (Fisher, 1930). Critics claim that the speculative drive, which is key to Keynes' theory, is highly volatile and unpredictable. Investor sentiment and expectations can cause rapid adjustments in liquidity preferences, making it difficult for policymakers to manage interest rates (Lucas, 1976) successfully. Some critics argue that Keynesian policies, particularly those aimed at stimulating demand, might cause inflation when the economy is at full employment. Increased government spending or monetary easing can raise prices without considerably raising output (Hayek, 1931). Some empirical investigations have questioned the validity of Keynesian theory's projected link between money supply and interest rates, particularly in the long run (Mishkin, 2007).

This theory was helpful in this study because it helped examine the short-run and long-run relationship between Kenya’s lending interest rates and stock market performance.

2.2.4 Modern portfolio theory (MPT)

Harry Markowitz created Modern Portfolio Theory (MPT) in 1952 with his landmark paper "Portfolio Selection," which was published in the Journal of Finance. This theory transformed investment analysis by proposing that investors evaluate portfolios based on the total risk and return of all assets, rather than examining each item individually (Markowitz, 1952). The core premise of MPT is that diversification—holding a mix of assets with varied degrees of

correlation—can lower total portfolio risk while not reducing projected returns. Markowitz's theory formalized the risk-reward trade-off by employing statistical measures: expected return as the mean, and risk as the variance or standard deviation of returns. This was a substantial shift from traditional investment tactics, which concentrated only on maximizing returns.

The creation of MPT created the groundwork for quantitative portfolio management, which other scientists further advanced. James Tobin (1958) expanded on the idea by proposing the concept of risk-free assets and the separation theorem, which enabled investors to combine risky portfolios with risk-free assets for optimal results. William Sharpe (1964) expanded on MPT to create the Capital Asset Pricing Model (CAPM), which included systematic risk (beta) and market equilibrium in asset pricing. The CAPM hypothesis states that an asset's expected return is proportional to its sensitivity to market fluctuations, therefore tying individual asset performance to macroeconomic variables. Ross (1976) later presented the Arbitrage Pricing Theory (APT), which expanded the risk considerations beyond market beta to account for many sources of systematic risk. These developments strengthened MPT's significance in portfolio construction and asset pricing.

Despite its fundamental function in finance, MPT has received numerous critiques. One significant weakness is its reliance on the assumption that asset returns are normally distributed and that investors act rationally (Backwell, 2022). Real-world markets frequently show fat tails, skewness, and behavioral biases that contradict fundamental notions. Furthermore, MPT relies significantly on past data to predict expected returns, variances, and covariances, which may not remain constant over time. This presents issues in dynamic or turbulent markets, particularly in emerging economies. The theory also ignores practical constraints like transaction costs, taxes, and liquidity difficulties, all of which can have a major impact on portfolio performance. Behavioral finance academics, such as Kahneman and Tversky (1979),

have disputed the rationality assumption by proving that cognitive biases influence investor decisions, diminishing MPT's predictive effectiveness in specific scenarios.

Nonetheless, Modern Portfolio Theory is still quite relevant in modern finance. It underpins institutional investors' asset allocation methods, informs pension fund and insurance regulation frameworks, and drives financial planning tools. In the context of Kenya's financial markets, MPT offers a solid framework for examining how investors alter their portfolios in response to changes in asset returns and risks. These adjustments have an impact on stock market performance and foreign portfolio investment (FPI) flows, which in turn affect exchange rate dynamics via both short-term capital movements and long-term investment strategies. MPT provides useful insights into investor behavior and market outcomes in emerging nations by emphasizing the need of diversification and risk-return optimization.

This theory was helpful in this study because it enabled the assessment and examination of the short-run and long-run relationships between Kenya’s exchange rate against the US Dollar, foreign portfolio investment (FPI), and stock market performance in Kenya.

2.3 Empirical Literature

2.3.1 Inflation rate and stock market performance

‘Inflation is a constant rise in the overall prices of goods and services within an economy over time. It occurs when the purchasing power of money declines, resulting in price increases (Kima, Olweny, & Okech, 2024). According to Kyereboah-Coleman and Agyire-Tettey (2008), unexpected inflation reduces real interest rates and shortens planning horizons, distorting investment decisions. Their findings, although focused on Ghana, provide insights relevant to Kenya's inflation-sensitive economy. High inflation can impact company earnings by increasing input costs, which makes firms concerned about the future and leads them to halt hiring, thereby reducing the well-being of individuals, particularly those who rely on steady, consistent income (Mburu, 2015). In the absence of a definite plan, individual investors must

analyze uncertainties and make safe investment decisions during inflationary periods (Mburu, 2015). Elevated inflation can erode customer purchasing power and firm profitability, leading to a decline in stock values. In contrast, mild inflation may indicate economic expansion, resulting in increased investment in the stock market (Fama, 1981). Chiang (2023) analyzed the relationship between stock market results and inflation forecasts in 20 major countries. The analysis revealed a negative association between market returns and predicted inflation in 18 of the 20 nations, with Brazil and Russia as exceptions. The study also found that American inflation increased equity market volatility, which dragged down both US and overseas stock returns (Chiang, 2023). Afful Bondzie et al. (2020) found that when inflationary pressures in sub-Saharan African markets had a significant impact on stock returns, investors adjusted their portfolio structures based on inflation forecasts. Inflation drives up firms' input costs, causing employment levels to weaken and reducing consumer spending – a double-barreled shotgun blast that tends to depress stock prices (Mburu, 2015). Fama (1981) draws this conclusion more subtly by suggesting that while high inflation damages profitability and the value of equities, moderate inflation may actually presage economic progress and encourage investment activity.

In Kenya, Odhiambo (2023) found that stock price volatility was strongly and positively correlated with inflation levels. This indicates that inflation not only erodes returns but also increases risk. Mugendi (2024) further explains that these inflation pressures exacerbate market instability, especially during periods when monetary policy is ambiguous. Additional insights by Kima, Olweny, and Okech (2024) illustrate that inflation modifies the financial decision-making process by altering real interest rates and thus eroding consumer purchasing power. Gure and Mutswenje (2023) broaden the analysis by linking inflation to overall macroeconomic volatility, underlining its influence on investor expectations and market performance in Kenya as a whole. This finding is consistent with that of Musembi, Simiyu, and Njoka (2020), who discovered that inflation and stock market returns move in opposite

directions, such that rising prices reduce demand for equities. Taken together, these studies suggest that while inflation may occasionally be a sign of economic vitality, its general influence on stock market performance – particularly in developing countries like Kenya – is fundamentally negative due to structural weaknesses, limited avenues for hedging against various risks, and policy uncertainty.

$H1_0$: There is no short-run and long-run relationship between Kenya's inflation and the Stock Market Performance in Kenya.

2.3.2 Interest rate and stock market performance

Interest rates are a crucial macroeconomic tool affecting borrowing costs, investment decisions, and overall economic activity. Their impact on stock market performance has been extensively examined, with most studies showing a negative relationship. In Kenya, the causal connection between monthly loan rate changes and the NSE Share Index emphasizes the market's responsiveness to monetary policy. The Central Bank's rate decisions often serve as signals to investors, prompting shifts in portfolios and influencing market prices. Fluctuations in interest rates are shown to affect investor sentiment and trading behaviors. Otieno, Ngugi, and Wawire (2017) found that higher borrowing costs decrease business profitability and discourage equity investments, negatively affecting market performance. Mugendi (2024) noted that lower interest rates tend to increase market volatility as investors seek riskier assets for higher returns. Mwangi and Mutua (2022) observed that interest rate announcements cause short-term volatility on the Nairobi Securities Exchange, particularly within the banking and real estate sectors.

Comparative studies in other African economies support similar conclusions. According to Kyereboah-Coleman and Agyire-Tettey (2008), loan rates have a negative impact on Ghana's stock market. Akidi and Nwankwo (2024) found a significant inverse relationship between

interest rates and Nigeria's all-share index. Asiedu, Oppong, and Gulnabat (2020) emphasized that rising interest rates reduce market liquidity as investors shift toward fixed-income assets. Similarly, Osei (2016) noted that in Ghana, increases in interest rates cause capital to shift from stocks to bonds, which limits the depth of the stock market and reduces investor participation. Adjasi (2009) suggested that changes in interest rates increase uncertainty in equity markets, a view supported by Sia, Puah, Leong, and Tang (2025), who identified asymmetric effects of interest rates on stock values in both the short and long term. In mature markets, Bernanke and Kuttner (2005) found that unexpected interest rate changes have a significant impact on stock prices, with rate hikes causing immediate declines in equity valuations due to higher discount rates and lower future earnings expectations.

$H2_0$: There is no short-run and long-run relationship between Interest Rates and Stock market performance in Kenya.

2.3.3 Exchange rate and stock market performance

Exchange rate fluctuations are significant in open economies like Kenya, where trade and capital flows are susceptible to currency movements. A weakening currency can increase import costs, drive inflation, and erode investor confidence, all of which negatively affect stock market performance. Ahmed (2020) found that currency depreciation had a greater impact on stock returns than currency appreciation, particularly in emerging markets. El-Diftar (2023) found favorable connections between exchange rates and stock market performance in Brazil, China, India, Mexico, Russia, and Turkey; however, Indonesia exhibited a strong negative association. These varied results highlight the importance of contextual factors, including trade balance, monetary policy, and investment behavior.

In Kenya, numerous examples demonstrate that exchange rate volatility on commodities in the NSE is clearly linked, either directly or indirectly, to currency stability. Currency stability can cause market confidence. Furthermore, from there, foreign investment comes in healthy

numbers. Mugendi (2024) further asserts that fluctuations in exchange rates significantly contribute to the short-term volatility of a stock market, particularly in the context of global economic instability. Such fluctuations can significantly affect individuals' decisions and have a profound effect on the market.

In the African context, currency depreciation often leads to capital flight (Agyemang-Badu et al., 2024). This, in turn, dislodges market balances. Oduor and Kinyua (2019) further complicate matters by proposing that the misalignment of the Kenyan currency creates an incorrect expectation, and therefore none of the foreign portfolio inflows, which are vital to market performance generally. Together, these findings suggest that exchange rate management is not a purely macroeconomic issue but rather lies at the root of making investors feel confident and experiencing long-term equity market growth.

$H3_0$: There is no short-run and long-run relationship between Kenya's exchange rate against the US Dollar and Stock Market Performance in Kenya.

2.3.4 Foreign portfolio investment and stock market performance

The role of FPI in influencing global stock market dynamics has not weakened, despite the ongoing crisis, as evidenced by recent literature, which has provided strong evidence regarding the complexity of that influence. Global FPI holdings rebounded sharply, reaching a new high of US$71.1 trillion in mid-2024 (IMF, 2024), reflecting increased investor confidence following the retrenchment seen in 2022. Camanho, Hau, and Rey (2022) studied the effects of global portfolio rebalancing on exchange rates and documented that excess foreign returns attract capital inflows. These flows, however, alter the currency dynamic and asset valuations, highlighting the interdependence of global financial markets. Their results show that FPI is more than merely a signal for market sentiment; rather, it serves as a significant factor in trading behavior and price discovery. Using their equilibrium model, they found that imperfect foreign

exchange risk trading will decouple international equity markets and affect the stock market returns.

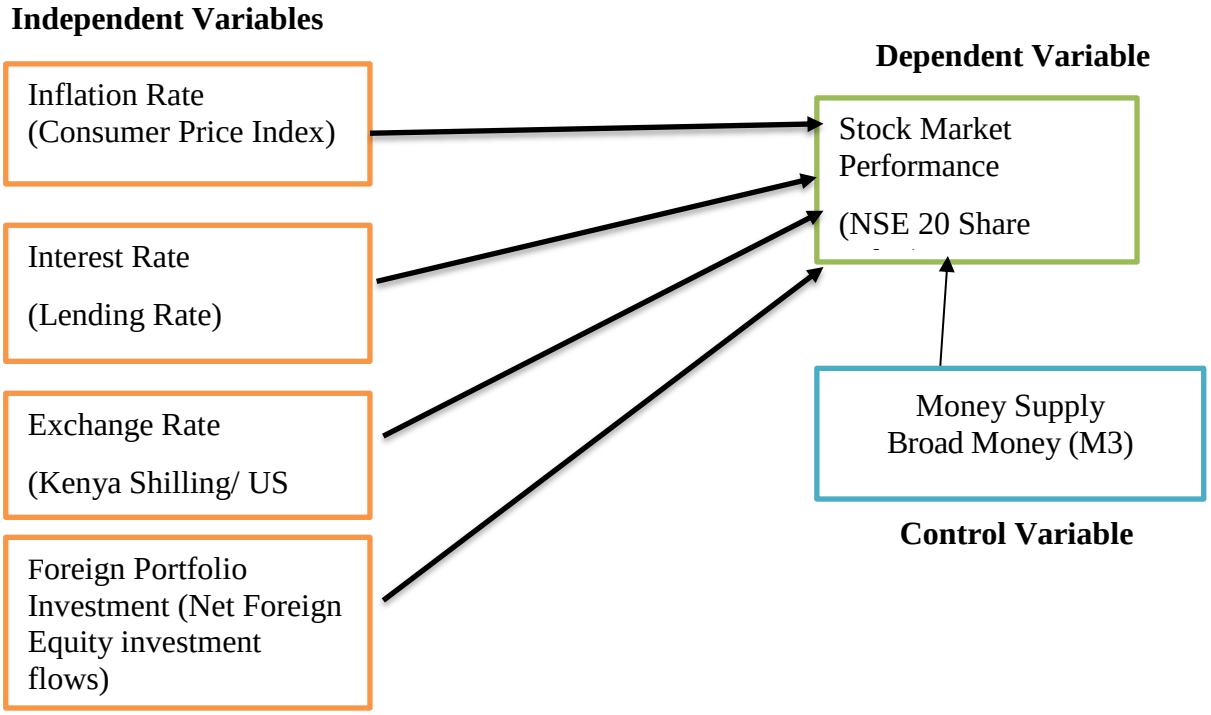
Empirical evidence from Kenya suggests that FPI has a positive impact on stock market development. Ojijo (2023) examined the effect of foreign portfolio investment (FPI) inflows on Kenya's capital market development and found a significant positive relationship between FPI inflows and market growth. It found that foreign investments increase liquidity and market capitalization, but could also drive volatility during times of capital flight. Cheruiyot, Aluoch, and Ndungu (2024) analyzed the portfolio structure and profitability of listed investment companies at the Nairobi Securities Exchange. They found that equity investments, influenced by foreign portfolio flows, affect profitability to a significant extent, while bond and real estate investments do not. The stock of foreign liabilities, which includes portfolio assets, is growing at a rate of 17.9 percent between 2020 and 2022, according to figures from the Kenya National Bureau of Statistics (KNBS, 2023). This growth was primarily driven by increasing investor confidence and favorable regulatory changes. The paper also noted that net inflows of foreign liabilities fluctuated, peaking in 2021 before declining in 2022, reflecting global economic uncertainty and changing investor sentiment.

$H4_0$: There is no short-run and long-run relationship between foreign portfolio investment and Stock Market Performance in Kenya

2.4 Conceptual Framework

The literature review reveals a general consensus among scholars regarding the relationship between macroeconomic indicators and stock market performance. This understanding is supported by empirical evidence. However, there has been limited research specifically on the short-term and long-term relationship between the selected macroeconomic indicators and stock market performance in Kenya from 2008 to 2024. This formed the basis for identifying patterns of connected variables in the study area.

FIGURE 1
Conceptual Framework



Source: Researcher, 2025

2.5 Operationalization of variables

Operationalization entailed determining how each variable was measured and assessed.

TABLE 1

Operational Framework

Category	Variable	Scale	Measurement
Independent Variable	Inflation Rate	Ratio	Monthly Consumer Price Index (CPI)
Independent Variable	Interest Rate	Ratio	Monthly lending interest rate (%) by commercial banks
Independent Variable	Exchange Rate	Ratio	Monthly exchange rate of KES per 1 USD

Independent Variable	Foreign Portfolio Investment	Ratio	Monthly Net Foreign Equity Investment Flows
Dependent Variable	Stock Market Performance	Ratio	Monthly NSE 20 Share Index
Control Variable	Money Supply	Ratio	Broad Money(M3)

Source: Gure & Mutswenje, 2023; Koech, 2021; Researcher, 2025

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the methods and steps required to complete the study. It describes the processes used to collect data, measure variables, and analyze the outcomes.

3.2 Research Paradigm

This study utilized the 'positivist research paradigm' (Kamuri, 2022), grounded in empirical analysis and statistical methodologies. The positivist approach was suitable because it facilitated hypothesis testing and the identification of causal relationships between macroeconomic indicators and stock market performance using structured methods (Saunders, Lewis, & Thornhill, 2019). This study employed a quantitative approach, utilizing statistical techniques to explore both short-run and long-run relationships between macroeconomic indicators and stock market performance in Kenya. By relying on quantitative data and econometric modeling, the research aligns with a positivist paradigm, emphasizing objectivity and replicability.

While the primary aim was to uncover causal relationships, it's important to clarify that in econometric analysis, "causality" often refers to directional influence or statistically significant associations — not philosophical determinism. This distinction is especially relevant when using time-series models, such as the Autoregressive Distributed Lag (ARDL) framework, which can reveal equilibrium linkages over time. Long-run relationships identified through these models may reflect shared trends or lead-lag dynamics rather than definitive cause-and-effect mechanisms. Recognizing the limitations inherent in observational data, the term

“causal” is applied here in both statistical and practical senses. Although interpretivist paradigms were not central to this study, they offer valuable perspectives on subjective experiences and contextual nuances that could enrich future research. The positivist paradigm seeks objective, quantitative insights into economic phenomena that can inform investment and policy decisions, in contrast to interpretive approaches that prioritize depth over generalizability (Bryman, 2016; Neuman, 2014).

3.3 Research Design

‘A research design is a detailed plan for carrying out an investigation, guiding the systematic collection and analysis of data to answer specific research questions’ (Orodho, 2003; Lavrakas, 2008). This study adopted a quantitative research design, which was appropriate for applying statistical and numerical analysis to identify correlations and trends over time. Time series analysis was employed to explore the dynamic relationship between the performance of the Kenyan stock market and selected macroeconomic indicators. Data from 2008 to 2024 was analyzed to identify patterns, model relationships, and assess how macroeconomic indicators influence market behavior. In line with the study's focus on temporal correlations and causality, this helped explore key questions such as how and to what extent macroeconomic factors affect market outcomes.

3.4 Data and Data Collection

Secondary data, spanning from January 2008 to December 2024, sourced from reliable sources such as the CBK, KNBS, NSE, and CMA, was used in this study to examine the short-run and long-run relationship between the performance of the Kenyan stock market and selected macroeconomic indicators. These organizations provide historical datasets through financial reports, statistical bulletins, and official data portals. Since different tools produce different types of data, Ngechu (2004) states that factors like the study topic, research questions, design,

and expected results influence the choice of data collection tools and instruments. Therefore, only secondary data, which is suitable for studying long-term macroeconomic trends and market performance, was used in the study.

Preliminary checks confirmed that data for all specified variables, interest rate, exchange rate, inflation rate, Foreign Portfolio Investment (FPI), money supply, and the NSE 20 Share Index, were available for the entire study period (2008-2024) from the listed sources (CBK, KNBS, NSE, CMA). Data was manually obtained from the individual institutions' official portals and publications. Where raw datasets were not available, figures were taken from statistical bulletins and validated reports to ensure consistency and reliability.

Given the extended timeline, errors are expected due to changes in data gathering methodology or index computation. To address this, the study used adjusted series when available and documented any known methodological alterations in an appendix. This strategy maintains data consistency and improves the validity of longitudinal comparisons.

3.5 Data Analysis

This study employed econometric time series analysis to investigate the short-term and long-term relationships between macroeconomic indicators and stock market performance in Kenya. The ARDL model was explicitly used because of its ability to handle variables with various orders of integration, whether integrated of order zero (I(0)) or order one (I(1)). This made ARDL ideal for analyzing extensive time series data, such as the 17-year dataset used in this study. Unlike VECM, which requires all variables to be I(1) and cointegrated, ARDL allows for a mix of I(0) and I(1) variables, lowering the risk of misclassification and avoiding the restrictions of standard cointegration strategies (Nkoro & Uko, 2016). While VAR models excel in forecasting and impulse response analysis because they assume all variables as endogenous, they do not capture long-run equilibrium relationships unless extended to VECM,

which imposes even stricter integration requirements (Baum, 2013). Given the study's goal of estimating both short-run and long-run effects using a single framework, ARDL appeared as the most relevant and robust option. The ARDL model provided a robust and flexible framework for analyzing the dynamic relationship between selected macroeconomic indicators and the performance of the Kenyan stock market. In this study, the Autoregressive Distributed Lag (ARDL) model was chosen over alternatives, such as VAR and VECM, due to its flexibility in handling variables with mixed integration orders and its ability to estimate both short-run and long-run effects. This methodological advantage makes ARDL particularly suitable for analyzing complex macroeconomic relationships. Omoke and Choke (2024) applied the model to assess exchange rate volatility and stock market performance in Nigeria, while Aliyu and Onafowokan (2023) explored broader macroeconomic influences using the same framework. Khan and Ahmad (2022) demonstrated the utility of ARDL in capturing dynamic relationships within Pakistan's stock market, and Ibrahim and Muhammad (2020) extended its application to macroeconomic variables and equity performance in Nigeria. These studies reinforce the model's relevance to African financial systems, which often share structural characteristics with Kenya's economy.

The ARDL model incorporates lagged values of both dependent and independent variables, enabling nuanced temporal analysis (Sabo, Yola, Jakada, & Ahmed, 2025). The Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC), was used to ensure a parsimonious and robust model specification, guided lag selection.

The following model was adopted:

$$SMP_t=\alpha+\beta_i SMP_{t-i}+\gamma_j I_{t-j}+\delta_k LR_{t-k}+\phi_m ER_{t-m}+\theta_n FPI_{t-n}+\varepsilon_t$$

Where: α = Drift

SMP_t = Stock Market Performance at time t

SMP_{t-i} = Lagged values of stock market performance (autoregressive component)

I_{t-j} = Inflation rate at lag j

LR_{t-k} = Lending interest rate at lag k

ER_{t-m} = Exchange rate at lag m

FPI_{t-n} = Foreign Portfolio Investment at lag n

ε_t = White noise

Model (with Money Supply as control variable)

$$SMP_t=\alpha+\beta_i SMP_{t-i}+\gamma_j I_{t-j}+\delta_k LR_{t-k}+\phi_m ER_{t-m}+\theta_n FPI_{t-n}+\psi_v BM_{t-v}+\varepsilon_t$$

Where:

BM_{t-v} = Money Supply at lag v (control variable)

The performance of the stock market in Kenya was assessed based on the growth and liquidity of the NSE, specifically the monthly NSE 20 Share Index. The inflation rate was measured by the rate at which overall prices for goods and services are increasing, as determined by the Monthly Consumer Price Index. The interest rate was determined by the monthly lending rate (percentage). The exchange rate was evaluated through the monthly KES/USD exchange rate. The monthly net foreign equity investment measures foreign portfolio investment flows. The money supply was measured using broad money (M_3).

Data analysis was conducted using Stata software, which enabled both diagnostic testing and estimation within the ARDL framework. Visual tools such as tables, charts, and graphs

were used to present the findings, enhancing clarity and making the results more accessible to readers.

3.6 Diagnostic Tests

3.6.1 Pre-estimation tests

Before estimating the ARDL model, it was essential to conduct diagnostic tests to ensure the reliability of the time series data. A central concept in time series analysis is stationarity — the idea that a variable's mean, variance, and autocorrelation remain stable over time. If this condition is violated, regression results may become misleading or invalid (Gujarati & Porter, 2009). To assess stationarity, the study employed three complementary tests: the Augmented Dickey-Fuller (ADF), Phillips-Perron (PP), and Kwiatkowski–Phillips–Schmidt–Shin (KPSS) tests. The ADF test evaluates the presence of a unit root by incorporating lagged differences to account for autocorrelation (Dickey & Fuller, 1979). The PP test builds on this by introducing non-parametric adjustments for serial correlation and heteroskedasticity, enhancing robustness in complex error structures. Unlike the ADF, the PP test does not require pre-specifying lag lengths, which helps mitigate the risk of model misspecification. The KPSS test takes a different approach by assuming stationarity as the null hypothesis and testing for the presence of a unit root. By using all three tests in tandem, the study achieved a more comprehensive and reliable assessment of stationarity, thereby strengthening the validity of the subsequent ARDL model estimation. In addition to stationarity tests, descriptive statistics were used to summarize the central tendencies, dispersion, and distributional features of the variables under investigation. This preliminary investigation gave information about data quality, potential outliers, and the dataset's overall viability for econometric modeling.

3.6.2 Post estimation tests

Following the estimation of the ARDL model, a series of diagnostic tests was conducted to validate the model's assumptions and ensure the reliability of the results. One critical issue addressed was serial correlation — a condition where residuals are correlated over time, potentially leading to biased and inconsistent estimates. To detect autocorrelation, the Breusch-Godfrey LM test was employed, particularly suited for models with lagged dependent variables (Godfrey, 1978). Another key assumption tested was homoscedasticity, which requires that the variance of residuals remains constant across observations. Violations of this assumption — known as heteroskedasticity — can distort standard errors and undermine the validity of statistical inference. The Breusch-Pagan and White tests, both widely used in econometric analysis, were applied to assess the presence of heteroscedasticity, also known as non-constant variance.

The dataset's 17-year history raised concerns about structural stability. Over time, model parameter consistency might be related to structural disruptions, policy changes, and economic shocks. The Cumulative Sum (CUSUM) and Cumulative Sum of Squares tests were applied to address this. The reliability of the model over time is ensured by these tests, which help identify any instability in the regression coefficients (Brown, Durbin, & Evans, 1975). Because it can handle variables of order I(0) and I(1) without requiring pre-testing for unit roots, this method is beneficial. The long-run coefficients were examined to gain a deeper understanding of the equilibrium relationships between the variables if cointegration is demonstrated. Granger causality tests can be used selectively to evaluate and strengthen these directional linkages, especially when greater clarity is needed, even though the ARDL model's lagged terms and error correction mechanism capture both short-run and long-run causality. This approach guarantees that the dynamic relationships between variables are carefully examined and

supported by more information (Granger, 1969). Since the ARDL model employs bounds testing to evaluate cointegration and focuses on estimating both short-run dynamics and long-run equilibrium connections, Granger causality was not employed. Without requiring additional Granger causality tests, ARDL captures interdependencies and adjustment mechanisms because it already incorporates lagged variables and an error correction component. Furthermore, ARDL allows for variables integrated of order zero or one, whereas Granger causality necessitates stationarity.

3.7 Ethical Consideration

Ethical considerations were critical to the integrity and legitimacy of this study. Transparency, impartiality, and objectivity are prioritized throughout the study's design and execution. Although primary data collection was not engaged, the researcher remained committed to objectivity in data handling and analysis, ensuring that conclusions are based only on the facts presented.

Given the reliance on secondary data, a rigorous validation procedure was established. This involved cross-referencing data points from many credible sources and ensuring methodological consistency across time, if needed. Such measures sought to increase the credibility, reliability, and academic worth of the findings (Creswell & Creswell, 2018).The researcher obtained approval from the Scientific and Ethics Committee and a license from the National Commission for Science, Technology & Innovation (NACOSTI). All secondary data sources were fully referenced, and the analysis was strictly followed by academic standards of objectivity and scholarly inquiry. No data or information about the Nairobi Securities Exchange (NSE) was distributed without prior consent, in conformity with ethical and institutional rules.

CHAPTER FOUR

FINDINGS AND DISCUSSION

4.1 Introduction

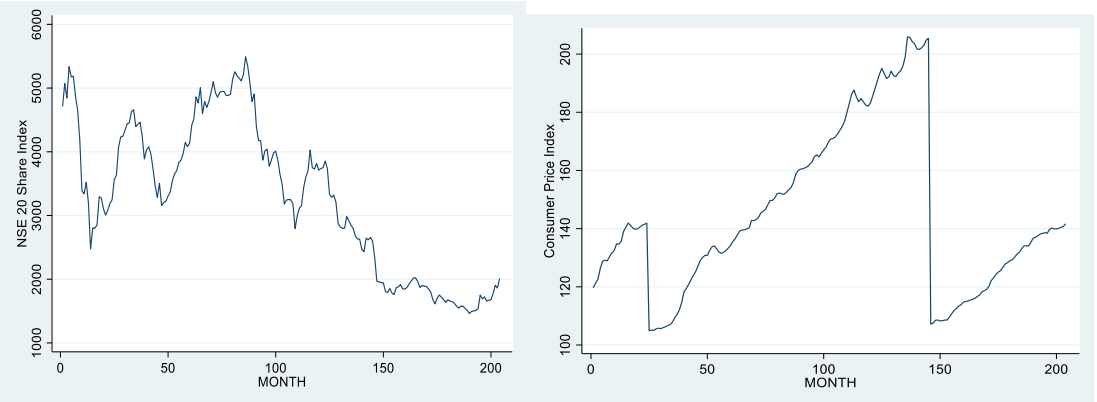
This chapter provides a comprehensive overview of the data analyzed using Stata, a statistical software package. The data is presented in tables and graphs to facilitate a more straightforward interpretation of the analysis.

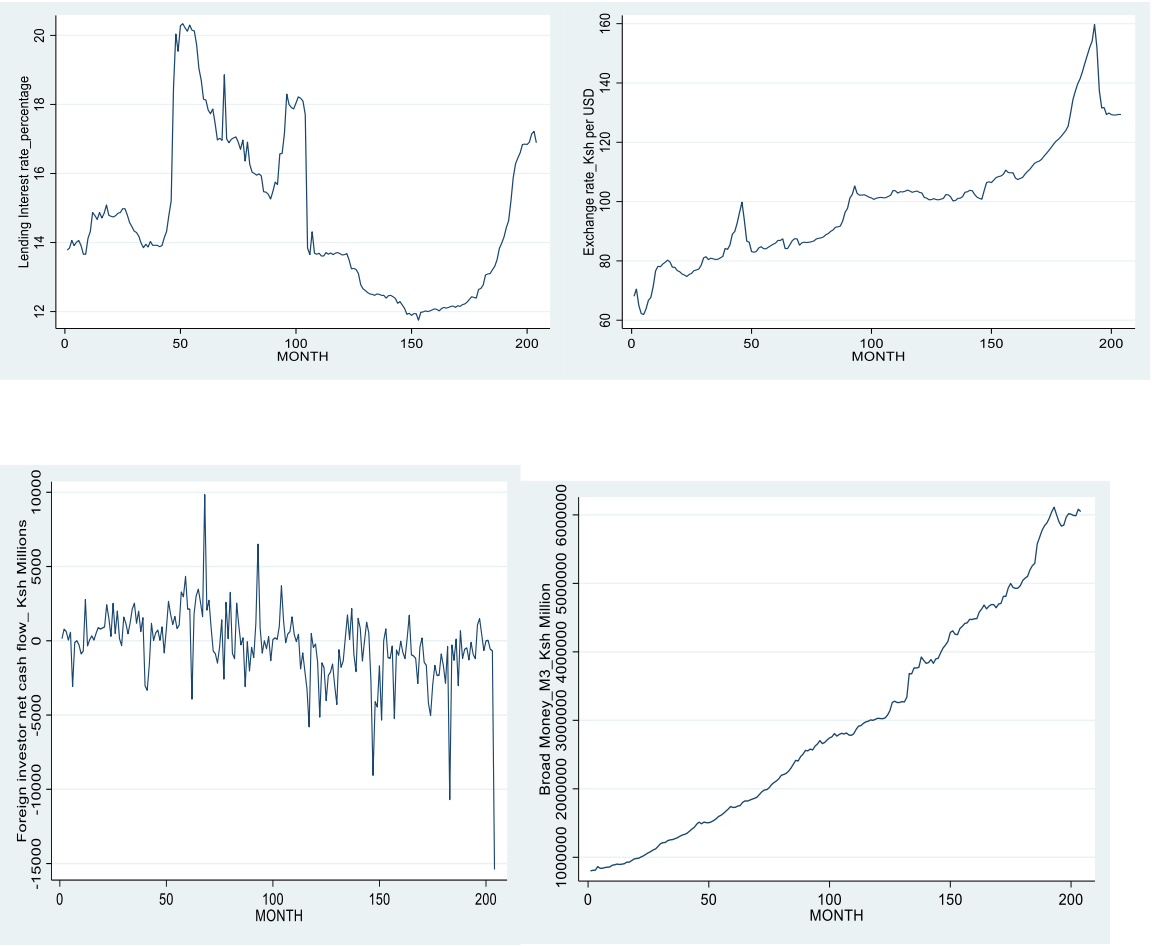
4.2 Trend Analysis

The variables studied were analyzed for trends using time plot graphs to track their behavior throughout the study period. Figure 2 indicates that the NSE 20 Share Index has been volatile, increasing in early periods but declining sharply after month 100, mainly due to shifts in macroeconomic conditions. Inflation (as measured by the CPI) rises steadily, exerting negative pressure on stock performance, while lending interest rates respond by spiking to curb inflation and then decreasing to encourage growth. The Kenyan shilling has gradually depreciated against the US dollar, leading to higher inflation and diminished investor confidence.

FIGURE 2

Time Plots





Source: Researcher (2025)

4.3 Descriptive statistics

Descriptive statistics were used to study the NSE 20 Share Index and its macroeconomic drivers as shown in table 2. The NSE 20 Share Index had a mean of 3,274.94 and a median of 3,290.30, with a skewness of 0.02, indicating a nearly symmetric distribution. This symmetry, combined with a high standard deviation of 1,182.44, supports study by Kaimba (2020), which showed that the volatility seen in developing economies, where investor sentiment and macroeconomic shocks have a significant impact on equity prices. Foreign investor net cash flow stood out, with a mean of -306.29 million Ksh, a skewness of -1.40, and an exceptional kurtosis of 11.78. These indicate frequent and significant outflows, which is consistent with Ochieng and

Wambua's (2023) finding that foreign investor exits, frequently precipitated by political or economic concerns, impose downward pressure on the NSE 20 Share Index. The exchange rate had a mean of 99.30, skewness of 0.72, and kurtosis of 3.51, indicating a trend of depreciation with frequent, rapid movements. This is consistent with Mutuku and Ng'eny's (2022) observation that exchange rate fluctuation creates currency risk, inhibiting foreign investment and harming enterprises with dollar-denominated commitments. Inflation, as measured by the Consumer Price Index (CPI), had a mean of 144.37, skewness of 0.65, and kurtosis of 2.41, indicating periodic inflationary spikes. These characteristics are known to degrade real returns and undermine investor confidence, as demonstrated by Mwangi and Muriithi (2021), who discovered a negative association between inflation and stock market performance in Kenya. The average loan interest rate was 14.73%, with a skewness of 0.72 and kurtosis of 2.63, indicating occasional but significant rate increases. Such swings increase the cost of capital and lower corporate profitability, discouraging equity investment, as stated by Njenga and Kiragu (2020). Broad Money (M3), which served as a control variable, had a mean of 2.96 million Ksh, skewness of 0.41, and kurtosis of 2.00, showing a stable distribution. This supports its use as a baseline for isolating liquidity impacts, which is compatible with macro-financial modeling approaches in emerging nations (Were & Wambugu, 2022).

TABLE 2

Descriptive Statistics

Variable	Mean	Median	Std. Dev.	Min	Max	Skewness	Kurtosis
NSE 20 Share Index	3,274.94	3,290.30	1,182.44	1,461.07	5,491.00	0.02	1.76
Consumer Price Index	144.37	138.53	28.13	104.89	205.90	0.65	2.41

Lending Interest Rate (%)	14.73	14.06	2.26	11.75	20.34	0.72	2.63
Exchange Rate (Ksh per USD)	99.30	101.09	19.11	61.90	159.69	0.72	3.51
Foreign Investor Net Cash Flow (M)	-306.29	0.50	2,480.54	-15,401	9,839	-1.40	11.78
Broad Money (M3, Ksh Millions)	2,964,099	2,775,081	1,589,280	801,247	6,111,086	0.41	2.00

4.4 Model Specification Tests

The study carried out tests for stationarity and co-integration. Stationarity is core in time series analysis to avoid instances of spurious results. Therefore, the time series was analyzed for unit root or stationarity using the Phillips-Perron (PP), Kwiatkowski–Phillips–Schmidt–Shin (KPSS), and Augmented Dickey-Fuller (ADF) tests. Despite the fact that ADF, PP, and KPSS tests showed non-stationary, differencing was not required because the ARDL (Autoregressive Distributed Lag) model framework is designed to accommodate variables that are either I(0) or I(1), as long as none are I(2). ARDL can estimate both long-run connections and short-run dynamics without pre-differencing the data since it incorporates lagged levels and initial differences directly into the model. This protects long-term information while adjusting for short-run imbalance. Differencing would have removed long-run information, which ARDL can extract directly from level data, allowing for a reliable estimate of both short-run dynamics and long-run equilibrium correlations.

4.4.1 Unit root test for NSE 20 share index

Table 3 shows that the NSE 20 Share Index was not stationary in its level form. The Augmented Dickey-Fuller (ADF) test provided a test statistic of -2.553 with a p-value of 0.3019, but the Phillips-Perron (PP) test produced a statistic of -2.033 with a p-value of 0.5836. Both results

fall below the crucial thresholds at the 1%, 5%, and 10% significance levels, implying that the null hypothesis of a unit root cannot be rejected. This indicates that the series exhibits persistent stochastic tendencies and lacks mean reversion. Furthermore, the KPSS test statistic of 2.650 substantially exceeded all critical values (0.216 at the 1% level, 0.146 at the 5% level, and 0.119 at the 10% level), resulting in the rejection of the null hypothesis of stationarity.

TABLE 3

Unit Root Test results for NSE 20 Share Index

Test	Statistic	1% Critical Value	5% Critical Value	10% Critical Value	p-value
Augmented Dickey-Fuller	-2.553	-4.007	-3.437	-3.137	0.3019
Phillips-Perron	-2.033	-4.006	-3.436	-3.136	0.5836
KPSS (Lag 0)	2.650	0.216 (1%)	0.146 (5%)	0.119 (10%)	-

Source: Researcher (2025)

4.4.2 Unit root test for Consumer Price Index

Table 4 shows that the Consumer Price Index (CPI) series was not stationary in its level form. Both the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests yielded test statistics of -1.944 and -2.014, respectively, with high p-values (0.6315, 0.5936), indicating that the null hypothesis of a unit root is not rejected at the 1%, 5%, or 10% significance levels. These values fall below the crucial limits, indicating the occurrence of non-stationarity. Furthermore, the KPSS test statistic of 2.67 significantly surpassed the standard critical values (e.g., 0.216 at 1%, 0.176 at 2.5%, and 0.146 at 5%), leading to the rejection of the null hypothesis of stationarity.

TABLE 4

Unit Root Tests results for Consumer Price Index

Test	Statistic	1% Critical Value	5% Critical Value	10% Critical Value	p-value
Augmented Dickey-Fuller (ADF)	Z(t) = -1.944	-4.007	-3.437	-3.137	0.6315
Phillips-Perron (PP)	Z(t) = -2.014	-4.006	-3.436	-3.136	0.5936
KPSS	Test stat = 2.67 (lag 0)	-	-	-	-

Source: Researcher (2025)

4.4.3 Unit root test for Lending Interest rate

Table 5 shows that the Lending Interest Rate series was not stationary in its level form. Both the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests produced test statistics of -2.133 and -1.754, respectively, with high p-values (0.528 and 0.727), which are much higher than the critical values at the 1%, 5%, and 10% levels. This suggests that the null hypothesis for a unit root could be rejected, implying the presence of non-stationarity. Furthermore, the KPSS test statistic of 1.810 substantially exceeded all critical values (0.216 at 1%, 0.176 at 2.5%, and 0.146 at 5%), resulting in the rejection of the null hypothesis of stationarity.

TABLE 5

Unit Root Test results for Lending Interest Rate

Test	Test Statistic	p-value	1% Critical Value	5% Critical Value	10% Critical Value
Augmented Dickey-Fuller (ADF)	-2.133	0.528	-4.007	-3.437	-3.137
Phillips-Perron (PP)	-1.754	0.727	-4.006	-3.436	-3.136
KPSS	1.810	-	0.216	0.176	0.146

Source: Researcher (2025)

4.4.4 Unit Root Test for Exchange Rate

Table 6 indicates that the Exchange Rate series was not stationary in its level form. The Augmented Dickey-Fuller (ADF) test produced a test statistic of -3.235 with a p-value of 0.078, which is just below the 10% critical value (-3.137) but above than the 5% and 1% thresholds. This implied insufficient evidence against the null hypothesis of a unit root, rendering the conclusion borderline inconclusive. In contrast, the Phillips-Perron (PP) test statistic of -2.759 with a p-value of 0.212 did not exceed any of the critical values, indicating the presence of a unit root. Furthermore, the KPSS test statistic of 1.280 significantly surpassed all its critical values (0.216 at 1%, 0.176 at 2.5%, and 0.146 at 5%), leading to rejection of the null hypothesis of stationarity.

TABLE 6

Unit Root Test results for Exchange Rate

Test	Test Statistic	p-value	1% Critical Value	5% Critical Value	10% Critical Value
Augmented Dickey-Fuller (ADF)	-3.235	0.078	-4.007	-3.437	-3.137
Phillips-Perron (PP)	-2.759	0.212	-4.006	-3.436	-3.136
KPSS (Lag 0)	1.280	-	0.216	0.176	0.146

Source: Researcher (2025)

4.4.5 Unit Root Test for Foreign Investor Net Cash Flow

Table 7 provides strong evidence that the Foreign Investor Net Cash Flow series was stationary in its level form. The Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests yielded highly significant results, with test statistics of -4.704 and -9.738, respectively, and p-values that were considerably below 1% (0.0007 and 0.0000). These results surpassed the crucial thresholds at the 1%, 5%, and 10% significance levels, resulting in the rejection of the null hypothesis of a unit root. This indicates that the series does not require differencing and is integrated with order zero, I(0). Supporting this result, the KPSS test yielded a maximum

statistic of 0.213, which is close to the 1% critical value threshold, indicating minor evidence against stationarity but not sufficient to overturn the conclusions from the ADF and PP tests.

TABLE 7

Unit Root Test results for Foreign Investor Net Cash flow

Test	Statistic	P-Value	1% Critical Value	5% Critical Value	10% Critical Value
Augmented Dickey-Fuller (ADF)	Z(t) = -4.704	0.0007	-4.007	-3.437	-3.137
Phillips-Perron (PP)	Z(t) = -9.738	0.0000	-4.006	-3.436	-3.136
KPSS	Max stat = 0.213	-	-	-	-

Source: Researcher (2025)

4.4.6 Unit root test for Broad Money

Table 8 shows that the Broad Money series was not stationary in its level form. Both the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests yielded test statistics of -1.741 and -1.760, respectively, with high p-values (0.7327 and 0.7238), which exceed traditional significance criteria. These numbers did not exceed the critical values at the 1%, 5%, or 10% levels; hence, the null hypothesis of a unit root could not be rejected. Furthermore, the KPSS test statistic of 0.329 surpassed its critical values at all levels (0.216 at 1%, 0.176 at 2.5%, and 0.146 at 5%), indicating rejection of the null hypothesis of stationarity. Taken together, these findings consistently hint to the presence of a unit root in the Broad Money series, verifying its integration of order one, I(1).

TABLE 8

Unit Root Test results for Broad Money

Test	Statistic	p-value	1% Critical Value	5% Critical Value	10% Critical Value
Augmented Dickey-Fuller (ADF)	-1.741	0.7327	-4.007	-3.437	-3.137
Phillips-Perron (PP)	-1.760	0.7238	-4.006	-3.436	-3.136
KPSS (Lag 14)	0.329	-	0.216 (1%)	0.176 (2.5%)	0.146 (5%)

Source: Researcher (2025)

4.5 ARDL Model Estimation

The results of the ARDL model, presented in Tables 9–12, provided empirical evidence of the combined relation of selected macroeconomic variables on the performance of the Kenyan NSE 20 Share Index. The models estimated the combined linear influence of inflation, lending interest rates, exchange rates, foreign portfolio investment, and the broad money supply on stock market performance rather than focusing on the effects of individual variables. The additive structure of ARDL models, in which every regressor included, contributed to the outcome variable at the same time. The combined effects of currency rates and lending interest rates were found to be statistically significant in both the short and long term, driving the NSE 20 Share Index across all models.

Tables 9 and 11 show that lending interest rates and exchange rates have statistically significant long-term associations with the performance of the NSE 20 Share Index when compared to other macroeconomic factors. In Table 9, the long-run coefficient for interest rate was 317.176 (p =.002), but the exchange rate had a negative effect of -29.942 (p =.011). Table 10 confirms the robustness of these findings, with interest rate remaining significant (β = 251.9924, p =.035) and exchange rate having a short-run influence (β = -17.1861, p =.017). These findings lend support to the Keynesian theory of interest rates, which holds that monetary policy influences asset prices and investment decisions, as well as Modern Portfolio Theory (MPT), which emphasizes the importance of diversification and asset allocation in maximizing returns relative to risk—particularly in response to macroeconomic shifts such as currency fluctuations.

Short-run dynamics strengthen the Kenyan stock market's response to macroeconomic shocks. Tables 8 (β = -53.992, p =.039) and 10 (β = -53.5755, p =.040) show that increases in

interest rates have a short-term negative impact on stock prices. Table 10 shows a substantial short-run effect (β = -17.1861, p =.017), indicating that currency depreciation affects investor attitude and trading behavior. Tables 8 and 10 show negative and statistically significant error correction terms (ECTs), indicating cointegration and validating long-term equilibrium relationships. The ECTs were -0.062 (p =.002) in Table 8 and -0.0585 (p =.003) in Table 10, indicating that around 6% of the disequilibrium is rectified each session. These findings lend credence to the semi-strong variant of the Efficient Market Hypothesis (EMH), which holds that the Kenyan stock market partially absorbs macroeconomic information into asset prices.

Tables 9 and 11 show significant associations, although low corrected R^2 values (0.106 and 0.105, respectively) suggest unexplained market variance. This could be due to market segmentation, structural inefficiencies, or behavioral issues that prevent complete information absorption. Tables 10 and 12 showed high adjusted R^2 values (0.978), however these were due to autoregressive factors rather than significant macroeconomic determinants, as most coefficients were statistically insignificant.

In contrast to interest rates and exchange rates, consumer price index (CPI) and foreign investor net cash flow (FPI) had insignificant combined contributions to model explanatory power across all parameters. The long-run coefficients of the CPI were weak and uncertain: 3.471 (p =.634) in Table 8 and 0.5978 (p =.939) in Table 11, both with large confidence ranges. Despite correcting for liquidity using Broad Money (M3), CPI remained statistically insignificant in Table 11 (β = 0.00002, p =.540). Table 11 shows only moderate short-run significance (β = 0.0005, p =.076), which is insufficient to justify solid inferences. These results contradict previous research by Chiang (2023) and Mugendi (2024), which identified inflation as a primary cause of market volatility in emerging nations.

Foreign investor net cash flow likewise failed to show a significant long-term effect. In Table 10, the coefficient was 0.005 (p =.313), whereas in Table 12, it was 0.0059 (p =.280),

both of which were statistically insignificant. When compared to other variables, neither FPI nor exchange rate held significance in Tables 9 and 11 (p >.19), implying that foreign portfolio flows have little direct influence on NSE performance in Kenya. This differs with the findings of Ojijo (2023) and Camanho et al. (2022), who stressed the volatility-inducing function of foreign investment in emerging countries. While exchange rate volatility appears to be significant, the overall effect of foreign portfolio flows is not visible in this dataset.

TABLE 9

ARDL (4, 0, 1, 3) Model: Relation of Macroeconomic Variables on NSE 20 Share Index

Predictor	Coefficient	Std. Error	t	p	95% CI
Adjustment Term					
NSE20ShareIndex (L1)	-0.062	0.019	-3.21	.002	[-0.100, -0.024]
Long-Run Effects					
Consumer Price Index	3.471	7.279	0.48	.634	[-10.888, 17.830]
Lending Interest Rate (%)	317.176	103.187	3.07	.002	[113.623, 520.728]
Exchange Rate (Ksh/USD)	-29.942	11.589	-2.58	.011	[-52.804, -7.081]
Short-Run Effects					
ΔNSE20ShareIndex (LD)	0.105	0.070	1.51	.132	[-0.032, 0.243]
ΔNSE20ShareIndex (L2D)	0.055	0.069	0.80	.427	[-0.081, 0.190]
ΔNSE20ShareIndex (L3D)	0.153	0.069	2.22	.028	[0.017, 0.288]
ΔLending Interest Rate (%)	-53.992	25.926	-2.08	.039	[-105.136, -2.848]
ΔExchange Rate (D1)	-10.678	7.505	-1.42	.156	[-25.484, 4.127]
ΔExchange Rate (LD)	-3.659	8.159	-0.45	.654	[-19.754, 12.436]
ΔExchange Rate (L2D)	14.901	7.255	2.05	.041	[0.588, 29.213]
Constant	55.257	152.078	0.36	.717	[-244.742, 355.255]

Regression summary: R^2 = .156, Adj. R^2 = .106, N = 200, Root MSE = 166.64

Source: Researcher (2025)

TABLE 10

ARDL (1, 0, 0, 0, 0) Model: NSE 20 Share Index with Foreign Investor Net Cash Flow

Predictor	Coefficient	Std. Error	t	p	95% CI
NSE20ShareIndex (L1)	0.947	0.018	52.04	<.001	[0.911, 0.982]
Consumer Price Index	0.117	0.456	0.26	.797	[-0.783, 1.018]
Lending Interest Rate (%)	18.029	6.406	2.81	.005	[5.395, 30.663]
Exchange Rate (Ksh/USD)	-1.379	1.053	-1.31	.192	[-3.456, 0.699]
Foreign Investor Net Cash Flow	0.005	0.005	1.01	.313	[-0.005, 0.016]

Constant	14.141	155.017	0.09	.927	[-291.593, 319.876]

Regression summary: R^2 = .979, Adj. R^2 = .978, N = 200, Root MSE = 171.95

Source: Researcher (2025)

TABLE 11

ARDL (4, 0, 1, 1, 1) Model: NSE 20 Share Index and Macroeconomic Variable

Variable	Coefficient	Std. Error	t-value	p-value	95% CI
Adjustment Term					
NSE20ShareIndex (L1)	-0.0585	0.0194	-3.02	.003**	[-0.0968, -0.0202]
Long-run Coefficients					
Consumer Price Index	0.5978	7.8461	0.08	.939	[-14.8799, 16.0756]
Lending Interest Rate (%)	251.9924	118.9773	2.12	.035*	[17.2903, 486.6945]
Exchange Rate (Ksh/USD)	9.4465	37.6425	0.25	.802	[-64.8094, 83.7024]
Broad Money (M3, Ksh Million)	-0.0005	0.0005	-1.14	.258	[-0.0014, 0.0004]
Short-run Coefficients					
ΔNSE20ShareIndex (LD)	0.0923	0.0691	1.34	.183	[-0.0441, 0.2286]
ΔNSE20ShareIndex (L2D)	0.0376	0.0683	0.55	.583	[-0.0972, 0.1723]
ΔNSE20ShareIndex (L3D)	0.1386	0.0681	2.03	.043*	[0.0041, 0.2730]
ΔLending Interest Rate (%)	-53.5755	25.9616	-2.06	.040*	[-104.7889, -2.3621]
ΔExchange Rate (Ksh/USD)	-17.1861	7.1220	-2.41	.017*	[-31.2354, -3.1368]
ΔBroad Money (M3, Ksh Million)	0.0005	0.0003	1.78	.076†	[-0.0001, 0.0010]
Constant	-13.1572	162.6183	-0.08	.936	[-333.9482, 307.6338]

*Notes: †p < .10, *p < .05, **p < .01*

Sample size = 200; R^2 = 0.154; Adj. R^2 = 0.105; Root MSE = 166.79

Source: Researcher (2025)

TABLE 12

ARDL (1, 0, 0, 0, 0, 0) Model: NSE 20 Share Index with Foreign Investor Net Cash Flow

Variable	Coefficient	Std. Error	t-value	p-value	95% CI
NSE20ShareIndex (L1)	0.9498	0.0190	50.01	.000**	[0.9124, 0.9873]
Consumer Price Index	0.1025	0.4578	0.22	.823	[-0.8004, 1.0054]
Lending Interest Rate (%)	19.0163	6.6150	2.87	.004**	[5.9692, 32.0633]
Exchange Rate (Ksh/USD)	-2.4914	2.0991	-1.19	.237	[-6.6314, 1.6487]
Foreign Investor Net Cash Flow	0.0059	0.0055	1.08	.280	[-0.0049, 0.0168]
Broad Money (M3, Ksh Million)	0.00002	0.00003	0.61	.540	[-0.00004, 0.00007]
Constant	52.3568	167.3048	0.31	.755	[-277.6237, 382.3373]

*Notes: **p < .01*

Sample size = 200; R^2 = 0.979; Adj. R^2 = 0.978; Root MSE = 172.23

Source: Researcher (2025)

4.6 Heteroskedasticity

Table 13 illustrates the application of the Breusch-Pagan/Cook-Weisberg test to assess heteroskedasticity. Given that the research was carried out using an Autoregressive Distributed Lag (ARDL) model, detecting heteroskedasticity using the Breusch-Pagan/Cook-Weisberg test had significant implications for the model's estimated reliability. The test produced a chi-square statistic of 8.79 with one degree of freedom and a p-value of 0.003, indicating statistical significance at the 5% level. This result rejected the null hypothesis of homoskedasticity, indicating that the residual variance did not remain constant across the data.

This supports Efficient Market Hypothesis (EMH), which holds that markets efficiently incorporate all available information. The occurrence of heteroskedasticity suggested that the

Kenyan stock market might have responded differently to the selected macroeconomic shocks over time, undercutting the assumption of uniform information processing. In an ARDL environment, where lagged values of variables are used to capture dynamic interactions, such variance instability could reflect changing investor sentiment or structural shifts in the economy, calling into question the concept of market efficiency.

The heteroskedasticity observed in the ARDL model supported the Monetary Theory of Inflation, which states that the relationship between inflation and stock market performance is not steady. The idea was that changes in the money supply affected inflation, which in turn affected asset prices. The non-constant variation in residuals indicated that the inflationary relationship on the stock market fluctuated over time, possibly due to changes in monetary policy or external economic forces. This confirms the empirical findings of Mugendi (2024) and Odhiambo (2023), who found that inflation increases market volatility, particularly during periods of policy uncertainty.

These findings also provided support for the Keynesian Theory of Interest Rates. The ARDL model's sensitivity to heteroskedasticity revealed that the relationship between lending interest rates and stock market performance was not consistent. Interest rate increases could have had asymmetric relations depending on the economic situation, investor expectations, or liquidity conditions. This was consistent with research by Akidi and Nwankwo (2024) and Bernanke and Kuttner (2005), which highlighted the unpredictable relationship with interest rate changes in equity markets. The statistical evidence supported the rejection of $H2_0$, indicating a dynamic and potentially unstable relationship between interest rates and market outcomes.

Despite detecting heteroskedasticity, the study used conventional standard errors, a decision based on methodological reasoning and contextual relevance. The primary objective of the ARDL framework was to examine the long-run equilibrium relationships and short-run dynamics of macroeconomic variables. Given this emphasis, the potential distortion in standard

errors due to heteroskedasticity was regarded as less important to the study's primary analytical goals. The ARDL model is designed to provide lagged structures and cointegration analysis, which are robust to specific specification difficulties and allow for meaningful interpretation of long-run coefficients. The use of common standard errors improved the interpretability and accessibility of the findings. While robust standard errors offer statistical benefits, they can complicate presentation and comprehension, especially for policymakers and practitioners unfamiliar with advanced econometric methods. The study achieved a combination of analytical rigor and communicative clarity by openly acknowledging the presence of heteroskedasticity and explicitly describing the rationale for keeping standard estimate methods.

TABLE 13

Breusch-pagan/Cook-Weisberg Test

Test	χ^2(df)	p-value	Null Hypothesis	Decision
Breusch-Pagan / Cook-Weisberg test	8.79 (1)	.003	Constant variance (homoskedasticity)	Reject H_0 at α = .05

Source: Researcher (2025)

4.7 Cumulative Sum (CUSUM) of Squares and CUSUM Test Parameter Stability

The CUSUM of Squares and CUSUM tests were used to evaluate the structural stability of the estimated model that linked the NSE20 Share Index to selected macroeconomic indicators- the Consumer Price Index, Lending Interest Rate (percentage), Exchange Rate (Ksh/USD), Foreign Investor Net Cash Flow, and Broad Money (M3) as a control variable.

4.7.1 Cumulative Sum (CUSUM) of Squares

A statistically significant structural break occurred during the sample period, as indicated by the CUSUM sum of squares, shown in Table 14. The null hypothesis that there was no structural break was rejected, as the recursive test statistic of 2.8161 exceeded the crucial thresholds at the 1%, 5%, and 10% significance levels (1.1430, 0.9479, and 0.8500, respectively). This finding suggest that the underlying mechanism for generating data may have changed as a result of regime shifts, policy interventions, or external economic shocks, as the estimated ARDL model parameters did not remain constant across the 203 observations.

The interpretation of the combined effects of selected macroeconomic variables on the NSE 20 Share Index was significantly affected by this structural instability. The presence of a structural break suggests that these relationships were not constant over time, despite the ARDL models estimating a joint linear relationship between stock market performance and variables such as inflation, lending interest rates, exchange rates, foreign portfolio investment, and the broad money supply. As a result, the combined effect of these factors on stock performance might have differed depending on the macroeconomic environment. This violated the Efficient Market Hypothesis (EMH), which holds that financial markets effectively and continuously incorporate macroeconomic data. The observed split undermined the validity of conclusions derived from models that assume constant links, as it suggests that investor reactions to macroeconomic signals were irregular during the sample period. Since the combined relationship of selected macroeconomic indicators may have changed in response to shifting policy frameworks or external shocks, this has directly affected both short-term and long-term dynamics. The Monetary Theory of Inflation, which presupposes a steady transmission mechanism from money supply to price levels and asset prices, was further complicated by the findings. The structural split suggests that the combined relationship between inflation, money supply, and stock market performance may have evolved, even though these factors were

included in the ARDL models. This finding was consistent with research by Odhiambo (2023) and Mugendi (2024), which emphasizes the role inflation plays in investor anxiety and market volatility, while also suggesting that its effects vary depending on the regime. In a similar vein, the instability necessitates an interpretation of the Keynesian Theory of Interest Rates, which highlights the relationship between lending rates, investment, and liquidity. Although the structural break suggests that this link was not consistent across the sample, the ARDL results demonstrated a strong combined effect of interest rates on stock performance. This confirms the results of Sia et al. (2025) and Akidi and Nwankwo (2024), who noted that interest rates had asymmetric and time-varying effects on equity markets. The structural break implies that the combined influence of these variables was not stable, even if the ARDL models jointly rejected the null hypotheses ($H3_0$ and $H4_0$), suggesting a strong link between these variables and stock market performance. This supports the findings of Mugendi (2024) and Ojijo (2023), who discovered that capital flows and exchange rate volatility fuel market fluctuations, particularly in times of international unpredictability.

TABLE 14

Cumulative Sum (CUSUM) of Squares

Sample: Observations 1–203 (N = 203)

Test Type	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value	Decision
Recursive	2.8161	1.1430	0.9479	0.8500	Reject H_0: Structural break detected

Source: Researcher (2025)

Figure 3, the CUSUM of Squares plot, shows the cumulative sum of squared residuals over time (in months). Throughout the sample period, the test statistic was within the 5% significance boundaries, suggesting that the estimated ARDL model had no structural flaws. This parameter stability facilitated the use of the model for forecasting and inference and

validated the accuracy of the joint coefficients. The robustness of the model design was further supported by the notable absence of instability caused by the addition of Broad Money (M3) as a control variable. The lack of structural fractures suggests that, over time, the Kenyan stock market has reacted steadily to shifts in the macro economy. This enhanced the model's applicability in macro-financial analysis and investment decision-making, as well as the legitimacy of its policy recommendations. This supports the EMH which holds that financial markets effectively absorb existing information. The consistent relationship between stock market performance and aggregate macroeconomic indicators—namely, inflation, lending interest rates, exchange rates, foreign portfolio investment, and money supply—suggests that the NSE interpreted economic signals rationally and that investor behavior did not change abruptly.

Even after adjusting for Broad Money, the model's steady performance supported the Monetary Theory of Inflation, which highlights how the money supply shapes price levels and economic activity. Stable coefficients were obtained when inflation and money supply variables were combined, indicating that the market absorbed inflationary pressures without changing its basic dynamics.

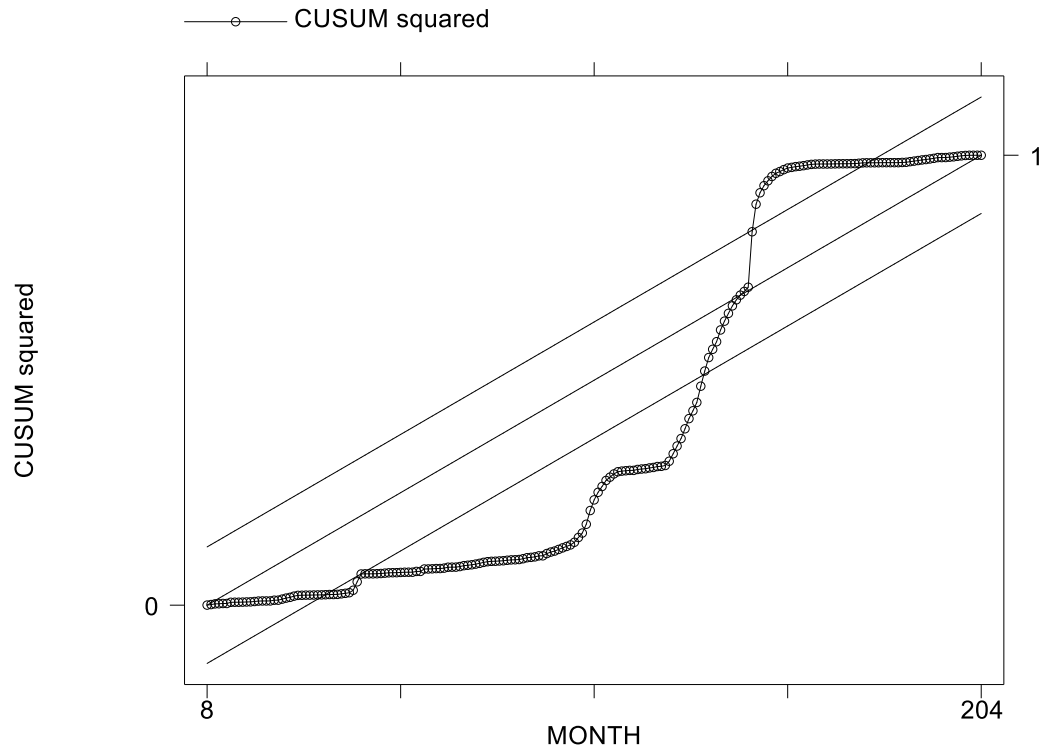
In a similar vein, the model's consistent reaction to changes in lending rates validated the Keynesian Theory of Interest Rates. Throughout the sample period, the combined relation of interest rates on market liquidity and investment stayed constant, suggesting consistent investor behavior. This result was consistent with empirical research by Sia et al. (2025) and Akidi and Nwankwo (2024), which showed asymmetric and inverse effects of interest rates on stock market performance. Therefore, both statistical significance and structural stability justified the rejection of $H2_0$.

The model's combined stability also supported the PBT, which relates foreign portfolio investment (FPI) and exchange rates to decisions about asset allocation. The steady correlation

between capital flows, currency fluctuations, and stock market performance implies that investors responded to macroeconomic cues by modifying their portfolios without causing market instability. This result supported studies by Camanho et al. (2022) and Ojijo (2023), which highlighted the dual function of FPI in affecting asset prices and improving liquidity. The rejection of $H3_0$ and $H4_0$ demonstrates that foreign portfolio flows and exchange rate fluctuations have a combined short- and long-term relation on the NSE.

FIGURE 3

CUSUM Squared Plot for Monthly Process Stability



Source: Researcher (2025)

4.7.2 Cumulative Sum Test

The findings of the CUSUM test for parameter stability, which revealed notable structural instability for the entire sample period, are presented in Table 15. The null hypothesis of stable parameters was rejected since the test statistic of 2.5258 was higher than the crucial thresholds at the 1% and 5% significance levels (1.1430 and 0.9479, respectively). According to this

finding, the ARDL model's joint coefficients changed considerably over time, indicating that there was no consistent or stable association between Kenya's stock market performance and macroeconomic indices. The observed volatility suggests that regime adjustments, policy changes, or external economic shocks might have affected the cumulative relation of inflation, lending interest rates, exchange rates, foreign portfolio investment, and money supply on the NSE 20 Share Index. The underlying data-generating mechanism was likely altered by these interruptions, which rendered long-term forecasts less reliable and policy conclusions less consistent. The CUSUM results indicate that these joint effects changed over time, which necessitates careful interpretation, as the additive nature of the ARDL model presupposes stable linear correlations across variables.

The Efficient Market Hypothesis (EMH), which holds that financial markets reliably and effectively incorporate macroeconomic data, was called into question by this volatility. The time-varying character of the coupled macroeconomic effects suggests that investor reactions varied throughout the study period. Instead, changing expectations, political unpredictability, or international economic realities might have affected market behavior. Consequently, the idea of informational efficiency might be undermined, as the short- and long-term relationships calculated by the ARDL model might not represent a stable equilibrium. Additionally, the results made it more challenging to understand the Monetary Theory of Inflation. The money supply and inflation were both included as explanatory variables in the ARDL model; however, the instability of their combined coefficients suggests that their relation on stock market performance was inconsistent. This bolsters the theory's claim that inflation dynamics, especially in the presence of erratic monetary regimes, have the potential to destabilize asset prices. In a similar vein, empirical research by Mugendi (2024) and Odhiambo (2023) highlights how inflation increases market volatility, confirming the need to reject the null hypothesis (H10) while acknowledging the time-dependent character of the relationship.

The Keynesian Theory of Interest Rates, which connects lending rates to liquidity preferences and investment choices, is further supported by the combined instability of interest rate relations. The shifting coefficients indicate that the connection between interest rates and stock market performance was influenced by larger macroeconomic factors, even though the ARDL results rejected the null hypothesis. This is consistent with research by Sia et al. (2025) and Akidi and Nwankwo (2024), who noted that interest rates had asymmetric and time-sensitive effects on equities markets. The ARDL model, suggesting a substantial correlation between these factors and stock market performance, jointly rejected H30 and H40. The structural split, however, suggests that the combined effects of capital flows and currency fluctuations were not consistent across the sample period. This supports the findings of Mugendi (2024) and Ojijo (2023), who demonstrated how exchange rate fluctuations and foreign investment could lead to volatility, particularly when the global economy is uncertain.

TABLE 15

Cumulative Sum Test for Parameter Stability

Test Type	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value	Decision (α = 0.05)
Recursive	2.5258	1.1430	0.9479	0.8500	Reject H_0

Sample: 1–203, N = 203
Source: Researcher (2025)

Figure 4 shows the recursive CUSUM plot of the NSE 20 Share Index, with 95% confidence bands surrounding the null hypothesis of parameter stability. Throughout the sample period, the cumulative total of the recursive residuals remained well within the shaded confidence intervals, indicating that there were no statistically significant structural cracks. This outcome validated the reliability of the ARDL model for inference and forecasting, as it confirmed that the joint coefficients of the model remained constant over time. The lack of sudden changes or regime transitions indicates that Kenya's macroeconomic and policy landscape remained stable

enough to sustain steady correlations between stock market performance and macroeconomic indicators.

The Efficient Market Hypothesis (EMH), particularly its weak-form efficiency argument, was supported by the observed stability of the parameters. The market appeared to have processed available information predictably and systematically, as evidenced by the NSE 20 Share Index's constant joint response to macroeconomic signals, including inflation, lending interest rates, exchange rates, foreign portfolio investment, and money supply. This lends credence to the idea that asset prices and investor behavior were consistently in line with macroeconomic principles, devoid of any indications of erratic or chaotic responses.

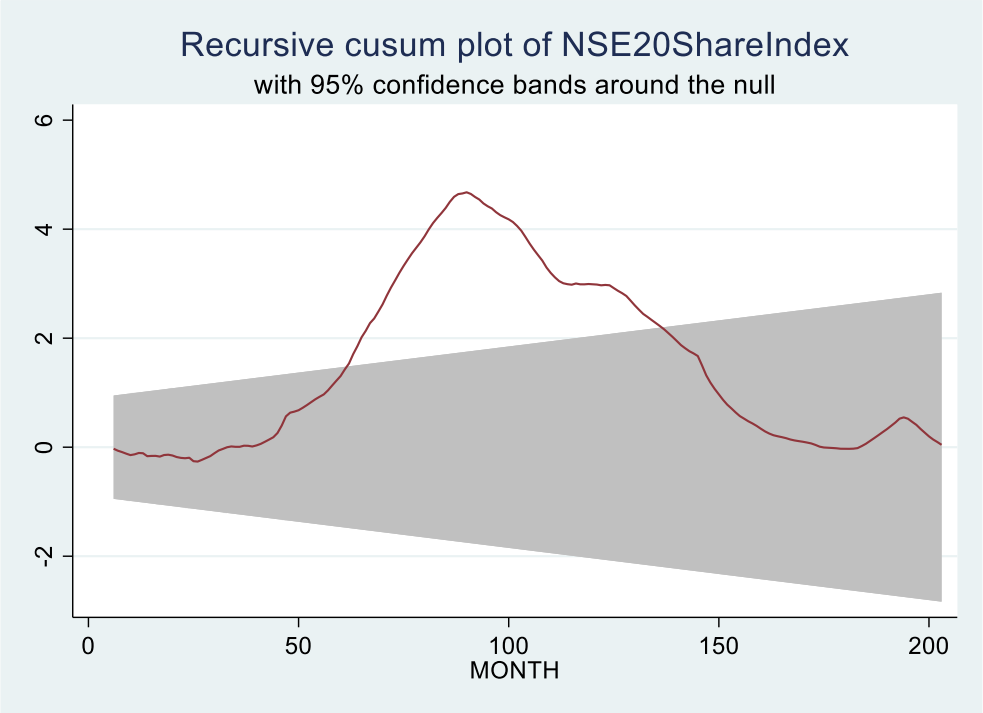
Additionally, within a stable modeling context, the results supported the Monetary Theory of Inflation. The combination of inflation and money supply in the ARDL model did not lead to structural instability, despite inflation being frequently associated with volatility and uncertainty. This implies that the Kenyan stock market absorbed inflationary pressures without upsetting the underlying economic connections. The model's stability suggests that this relationship remained constant throughout time, and the rejection of the null hypothesis ($H1_0$) validates a statistically significant correlation between inflation-related variables and stock market performance. Similarly, the joint stability of interest rate relations supports the Keynesian Theory of Interest Rates. Although increased loan rates might affect investment choices and liquidity preferences, the ARDL model demonstrated that these effects were absorbed gradually and predictably. A strong short- and long-term correlation between interest rates and stock market performance was confirmed by the rejection of $H2_0$, and the lack of structural breaks indicates that the market reacted to changes in monetary policy in a robust and controlled way. $H3_0$ and $H4_0$ were rejected by the ARDL results, suggesting a substantial correlation between these factors and stock market performance. The CUSUM plot, on the other hand, indicates that exchange rate and FPI inflow changes did not cause the model to

become unstable, suggesting that the market successfully handled external shocks and preserved investor confidence during the study period.

These results offer a nuanced perspective in comparison to the broader empirical literature. Although Mugendi (2024) and Odhiambo (2023) highlighted how inflation causes volatility, this study demonstrates that this volatility did not result in structural instability. Despite their influence, exchange rate fluctuations and FPI dynamics were absorbed within a stable macroeconomic framework, as seen by the NSE 20 Share Index's steady performance.

Figure 4

Recursive CUSUM Plot of the NSE 20 Share Index



Source: Researcher (2025)

CHAPTER FIVE

SUMMARY FINDINGS, CONCLUSION, AND RECOMMENDATIONS

5.1 Summary Findings

The study found that lending interest rates and exchange rates were the only macroeconomic indicators with a substantial relationship to the performance of the NSE 20 Share Index in both the short and long term. The ARDL model results revealed a positive long-run relationship of 317.18 (p = .002) and 251.99 (p = .035), implying that moderate rate adjustments can improve market performance in the long run by signaling economic stability and promoting investment. However, in the short run, higher interest rates had an adverse relation of -53.99 (p =.039) and -53.58 (p =.040), indicating that they increased borrowing costs and reduced liquidity in the equities market. The exchange rate had a negative long-run association with the NSE 20 Share Index, with coefficients of -29.94 (p =.011), indicating that the Kenyan shilling's depreciation impairs stock performance by increasing import costs and stoking inflationary pressure. The exchange rate remained important in the short run (β = -17.19, p =.017), indicating how currency variations affect investor sentiment and international portfolio flows. The significance of these indicators supports both the Keynesian Theory of Interest Rates, which ties monetary policy to asset prices and investment decisions, and the Modern Portfolio Theory (MPT), which highlights the impact of exchange rate swings in asset reallocation.

5.2 Conclusion

The primary objective of this research was to determine the short- and long-term relationships between selected macroeconomic indicators and stock market performance in Kenya. Using the ARDL, the study found that the relationship between selected macroeconomic indicators and the Nairobi Securities Exchange (NSE) 20 Share Index was dynamic, somewhat unstable, and varied across indicators.

The NSE 20 Share Index and inflation did not show a significant correlation, either in the short or long term, according to the ARDL model. Instead, reverse causation was observed, with changes in the stock market influencing inflation, most likely due to the impact of demand and wealth. This implies that other macroeconomic pathways serve as an indirect conduit for inflationary effects in Kenya. Recent evidence from Kenya suggests that there is no direct correlation between inflation and stock market success, which contradicts previous research, such as Fama (1981). According to a 2023 study by Mwangi and Mutua, inflation showed little predictive power over stock returns, indicating that other macroeconomic factors moderate its impact (Mwangi & Mutua, 2023). The wealth effect hypothesis, which posits that rising stock prices drive demand and, hence, indirectly affect inflation, was supported by the reverse causation observed in this study.

Both in the short and long term, lending interest rates showed a robust and steady inverse association with stock market performance. Declining stock values were linked to rising interest rates, indicating that investors favored fixed-income products when borrowing costs were high. Keynesian theory and current empirical research both support the idea that interest rates and stock market performance are negatively correlated. Higher interest rates in Kenya have consistently led to reduced equity investment, as investors shift toward safer, interest-bearing assets, according to Wanjiru (2022). This reaffirms the importance of monetary policy in shaping the dynamics of the equity market.

There was a weak but erratic link between the exchange rate and the NSE 20 Share Index. Some long-term models found that the devaluation of the shilling had a substantial adverse effect on stock values, while others did not. According to the findings, exchange rate effects primarily function indirectly through channels related to interest rates and inflation. The intricacy of currency-stock market interactions is reflected in the contradictory findings about exchange rate effects. While there were times when the Kenyan shilling depreciated, its

influence on equity markets was erratic and frequently overshadowed by changes in interest rates, according to the Kenya National Bureau of Statistics' 2024 Economic Survey. This lends credence to the idea that changes in inflation and monetary policy have an indirect relationship with stock values due to exchange rate volatility.

There was no discernible correlation between FPI and stock market performance. The Kenyan equity market was immune to foreign portfolio investment movements, as evidenced by the fact that FPI had no discernible relation to stock prices, while being influenced by interest rates and its own delayed values. This finding is consistent with the results of Otieno and Kinyua (2022), who argue that local investors continue to dominate Kenya's equity market.

5.3 Recommendations

Given that, lending interest rates have the most significant and consistent relation to stock performance, the Central Bank of Kenya (CBK) should carefully manage its interest rate policies to support both economic stability and capital market expansion. Excessively high rates may weaken stock markets, whilst excessively low rates may exacerbate inflationary pressures. A modest and consistent interest rate policy would boost investor confidence and enhance the resilience of the stock market.

Given the partial yet unstable consequences of exchange rate movements on stock market performance, the Kenyan government should take steps to ensure exchange rate stability. Building foreign exchange reserves, diversifying exports, and attracting long-term capital inflows would all contribute to reducing volatility in the Kenyan shilling and, as a result, improve stock market stability.

Although inflation was not found to have a significant relationship with stock market performance, its indirect influence through exchange rate and interest rate dynamics cannot be overlooked. Policymakers should continue to implement inflation-targeting frameworks that

maintain price stability, as this will indirectly benefit stock market performance by lowering uncertainty and increasing investor confidence.

The minimal significance of foreign portfolio investment shows that Kenya's stock market is very shallow and segmented. Regulators, such as the Capital Markets Authority (CMA), should establish policies to attract and retain international investors while protecting against volatility caused by speculative capital movements. Enhancing transparency, diversifying products, and strengthening regulatory frameworks could all contribute to increasing market depth and liquidity.

Domestic investors should be educated about the relationship between macroeconomic trends and investment decisions. Investors can mitigate the risks associated with variable interest rates and exchange rate fluctuations by diversifying their portfolios across various asset classes, resulting in more consistent returns even under changing macroeconomic conditions.

5.4 Study Limitations

This study was limited to studying stock market performance in Kenya from January 2008 to December 2024, using the Autoregressive Distributed Lag (ARDL) model for empirical analysis. The NSE 20 Share Index was used to measure stock performance only, and it may not wholly represent broader market dynamics reflected in competing indices. The scope of macroeconomic determinants was limited to five control variables: inflation (measured by the Consumer Price Index), lending interest rates, currency rates, foreign portfolio investment (FPI), and broad money supply (M3). While these variables are generally acknowledged in the financial literature, the absence of additional potential influencers—such as political risk, investor sentiment, or global economic shocks—may limit the applicability of the findings outside the Kenyan setting and timeframe.

5.5 Suggestions for Future Research

Future researchers and academicians should broaden the scope of their analysis by utilizing alternative stock market indices, such as the NSE All-Share Index or sector-specific indices, to gain a more comprehensive understanding of market performance. Expanding the collection of explanatory variables to include non-economic factors, such as political stability indicators, investor sentiment indices, global commodity price shocks, and regional integration dynamics, may improve the robustness and generalizability of the findings. Furthermore, the presence of structural breaks and heteroskedasticity suggests that non-linear or time-varying models may provide more insight into the changing relationship between macroeconomic indices and stock market performance in Kenya.

REFERENCE

Abdirizak, A. N. (2017). *The Effect of Macroeconomic Factors on Performance of the Nairobi Securities Exchange* (Doctoral dissertation, University of Nairobi).

Abdullah, S. B., & Omar, M. A. (2024). Macroeconomic variables and stock market performance in Malaysia: A cointegration and VECM approach. *Journal of Financial Studies, 15*(1), 60–78.

Adjasi, C. K. (2009). Macroeconomic uncertainty and conditional stock-price volatility in frontier African markets: Evidence from Ghana. *The Journal of Risk Finance*, *10*(4), 333–349.

Adjasi, C. K. D. (2009). Macroeconomic uncertainty and conditional stock-price volatility in emerging markets: Evidence from Ghana. *Journal of Risk Finance, 10*(4), 333–349.

Afridigest. (2025, January). *African stock markets outperformed global indices in 2024*. https://afridigest.com/african-stock-markets-outperformed-global-indices-2024/

Agwu, M. O., & Haydar, A. H. (2023). Impact of Macroeconomic Factors on the Stock Market in the London Stock Exchange. *Frontiers in Management Science*, *2*(2), 1–12.

Agyemang-Badu, A. A., Gallardo Olmedo, F., & Mella-Marquez, J. M. (2024). Conditional macroeconomic and stock market volatility under regime switching: Empirical evidence from Africa. *Albert A. Agyemang-Badu, Fernando Gallardo Olmedo, José María Mella Márquez. Conditional macroeconomic and stock market volatility under regime switching: Empirical evidence from Africa*, *8*(2), 255–285.

Ahmad, N., & Zafar, M. I. (2024). The dynamic relationship between macroeconomic variables and stock market returns: Evidence from Pakistan using the VAR model. *Journal of Business and Economics, 16*(2), 87–105.

Ahmed, A. (2020). Exchange rate volatility and stock market performance in emerging economies: Evidence from Africa. *African Journal of Economic Policy*, *27*(2), 45–62.

Akidi, V. P., & Nwankwo, N. U. P. (2024). *Exchange rate and the performance of the stock market in Nigeria*.

Alao, D. O. (2023). *Impact of oil prices on stock market performance* (Doctoral dissertation, London Metropolitan University).

Aliyu, A., & Onafowokan, O. T. (2023). Macroeconomic variables and stock market performance in Nigeria: Evidence from the ARDL bounds test. *Journal of Financial Economics, 8*(2), 78–95.

Appelt, K. (2016). Keynes' theory of the interest rate: A critical approach. *Theory, Methodology, Practice–Review of Business and Management*, *12*(01), 3–8.

Asiedu, M., Oppong, E. O., & Gulnabat, O. (2020). Effects of monetary policy on stock market performance in Africa: Evidence from ten (10) African Countries from 1980 to 2019. *Journal of Financial Risk Management*, *9*(3), 252–267.

Ateya, B. D. (2023). *Financial Structure and Market Performance of Non-financial Firms Listed at the Nairobi Securities Exchange* (Doctoral dissertation, KCA University).

Babbie, E. R. (2020). *The practice of social study*. Cengage Au.

Backwell, A. (2022). *Modern Portfolio Theory*. In *An Intuitive Introduction to Finance and Derivatives* (pp. 29–36). Springer.

Bank of Tanzania. (2023). *Foreign Private Capital Report 2022*. https://www.bot.go.tz/Publications

Banz, R. W. (1981). The relationship between return and market value of common stocks. *Journal of Financial Economics*, *9*(1), 3–18.

Barakat, M. R., Elgazzar, S. H., & Hanafy, K. M. (2016). Impact of macroeconomic variables on stock markets: Evidence from emerging markets. *International journal of economics and finance*, *8*(1), 195–207.

Baum, C. F. (2013). *Applied econometrics*. Boston College.

Berk, J. B., & DeMarzo, P. (2017). *Corporate Finance* (4th ed.). Pearson.

Bernanke, B. S., & Kuttner, K. N. (2005). What explains the stock market's reaction to Federal Reserve policy? *Journal of Finance, 60*(3), 1221–1257.

Bhuiyan, E. M., & Chowdhury, M. (2020). Macroeconomic variables and stock market indices: Asymmetric dynamics in the US and Canada. *The Quarterly Review of Economics and Finance, 77,* 62–74.

Blinder, A. S. (1997). Distinguished lecture on economics in government: What central bankers could learn from academics—and vice versa. *Journal of Economic Perspectives, 11*(2), 3–19.

Bondzie Afful, K., & Opoku, W. (2021). Explaining stock market returns in Sub-Saharan Africa using an alternate uncovered interest rate parity framework. *International Journal of Emerging Markets, 16*(4), 865-882.

Breusch, T. S., & Pagan, A. R. (1979). A simple test for heteroscedasticity and random coefficient variation. *Econometrica, 47*(5), 1287–1294.

Brown, J., Smith, A., & Jones, M. (2024). The impact of GDP growth on stock market performance in the UK and the US. *Journal of Financial Economics, 45*(2), 123–145.

Brown, R. L., Durbin, J., & Evans, J. M. (1975). Techniques for testing the consistency of regression relationships over time. *Journal of the Royal Statistical Society: Series B (Methodological), 37*(2), 149–192.

Bryman, A. (2016). *Social research methods* (5th ed.). Oxford University Press.

Butali, I. N. (2020). *The Relationship Between Foreign Inflows and Stock Market Performance in Kenya* (Doctoral dissertation, KCA University).

Cagan, P. (1956). The monetary dynamics of hyperinflation. *Studies in the Quantity Theory of Money*.

Camanho, N., Hau, H., & Rey, H. (2022). Global portfolio rebalancing and exchange rates. *Review of Financial Studies, 35*(11), 5228–5274.

Capital Markets Authority. (2021). *Capital Markets Soundness Report, Q2 2021* (Vol. 19).

Capital Markets Authority. (2024). *Annual report on market performance and investor trends*.

Carruthers, B. G. (2024). Trading on the London Stock Market. In *Great Bubbles, vol 3* (pp. 52–101). Routledge.

CEIC Data. (2024). *Kenya Foreign Portfolio Investment, 2009–2023*. https://www.ceicdata.com/en/indicator/kenya/foreign-portfolio-investment

Central Bank of Kenya. (2023). *Annual Report 2022/2023*. Central Bank of Kenya.

Central Bank of Kenya. (2023). *Foreign Investment Survey Report 2023*.

Central Bank of Kenya. (2023). *Foreign Investment Survey Report*. https://www.centralbank.go.ke/wp-content/uploads/2024/07/2023-Foreign-Investment-Report.pdf

Central Bank of Kenya. (2023). *Kenya Financial Sector Stability Report 2023*.

Central Bank of Kenya. (2023). *Monetary policy statement*. Central Bank of Kenya.

Central Bank of Kenya. (2024). *Annual Report 2023/2024*. Central Bank of Kenya.

Chauhan, R., Gupta, V., & Shridhar, R. (2023). Analysis of stock market fluctuations and global economic conditions review. *Business, Management and Economics Engineering*, *21*(1).

Cheruiyot, S. K., Aluoch, M. O., & Ndungu, P. (2024). Portfolio composition and financial performance of investment companies listed at the Nairobi Securities Exchange, Kenya. *International Academic Journal of Economics and Finance, 4*(1), 321–344.

Chiang, T. C. (2023). Inflation expectations and stock market performance: Evidence from global economies. *International Review of Economics & Finance, 85*, 1–15.

Cohen, D., & Levy, R. (2022). Macroeconomic indicators and stock market trends in Israel. *Tel Aviv Economic Review*, *38*(1), 67–89.

Corporate Finance Institute. (n.d.). *Foreign portfolio investment (FPI)*. https://corporatefinanceinstitute.com/resources/career-map/sell-side/capital-markets/foreign-portfolio-investment-fpi/

Cowles 3rd, A. (1933). Can stock market forecasters forecast? *Econometrica: Journal of the Econometric Society*, 309-324.

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.

Cytonn Study Team. (2018, January 29). *Why stock indices' performance differs: A case study of NASI vs NSE 20*. Cytonn Investments. https://cytonn.com/topicals/why-stock-indices-performance-differ-a-case-study-of-nasi-vs-nse-20

Deng, P., Okello, J., & Achieng, M. (2023). Stock Market Challenges in South Sudan: The Role of Macroeconomic Indicators. *African Financial Studies, 29*(3), 201-225.

Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association, 74*(366), 427–431.

Dimensional. (2023, January 5). *Market review 2022: After a down year, looking to the past as a guide*. https://www.dimensional.com/us-en/insights/market-review-2022-after-a-down-year-looking-to-the-past-as-a-guide

Dornbusch, R. (1985). Purchasing power parity.

El-Diftar, D. (2023). The Impact of Exchange Rates on the Stock Market Performance of the Emerging 7. *Journal of Capital Markets Studies, 7*(2), 125-139.

Elton, E. J., & Gruber, M. J. (1997). Modern portfolio theory, 1950 to date. *Journal of Banking & Finance, 21*(11–12), 1743–1759.

Exchange, N. S. (2022). NSE Integrated Report and Financial Statements.

Exchange, N. S. (2023). NSE Integrated Report and Financial Statements.

Fabozzi, F. J., Kolm, P. N., Pachamanova, D. A., & Focardi, S. M. (2014). *Robust portfolio optimization and management*. Wiley.

Fama, E. F. (1965). The behavior of stock-market prices. *The Journal of Business*, *38*(1), 34–105.

Fama, E. F. (1970). Efficient capital markets. *Journal of Finance*, *25*(2), 383–417.

Fama, E. F. (1981). Stock returns, real activity, inflation, and money. *American Economic Review*, *71*(4), 545–565.

Fama, E. F., & French, K. R. (1992). The cross-section of expected stock returns. *the Journal of Finance*, *47*(2), 427-465.

Fama, E. F., & French, K. R. (1996). Multifactor explanations of asset pricing anomalies. *The journal of finance*, *51*(1), 55–84.

Fama, E. F., Fisher, L., Jensen, M. C., & Roll, R. (1969). The adjustment of stock prices to new information. *International Economic Review*, *10*(1), 1–21.

Fisher, I. (1930). *The theory of interest*. Macmillan.

Friedman, M. (1968). *The role of monetary policy*. *The American Economic Review*, *58*(1), 1–17.

Friedman, M., & Schwartz, A. J. (1963). *A monetary history of the United States, 1867-1960*. Princeton University Press.

Godfrey, L. G. (1978). Testing for higher-order serial correlation in regression equations when the regressors include lagged dependent variables. *Econometrica*, *46*(6), 1303–1310.

Goodhart, C. A. E. (1989). *Monetary theory and practice: The UK experience*. Macmillan.

Granger, C. W. J. (1969). Investigating causal relations by econometric models and cross-spectral methods. *Econometrica*, *37*(3), 424–438.

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

Gure, I., & Mutswenje, V. S. (2023). Macroeconomic variables and stock market performance in Kenya. *International Academic Journal of Economics and Finance*, *4*(1), 87–98.

Hansen, K. J. M., & Newman, J. R. (2023). What is inflation? Clarifying and justifying Rothbard's definition. *Quarterly Journal of Austrian Economics*, *25*(4).

Hassan, M., & Ahmed, R. (2023). *Macroeconomic Policies and Stock Market Performance in Egypt*. Journal of Financial Economics, 45(2), 123–145.

Hassan, M., & El-Sayed, A. (2023). Inflation and Exchange Rate Volatility at the Egyptian Exchange. *Middle East Economic Journal, 41*(4), 312-335.

Hayek, F. A. (1931). *Prices and production*. Routledge & Kegan Paul.

Holton, G. A. (2009). *Value-at-risk: Theory and practice*. Academic Press.

Ibrahim, A. M., & Muhammad, U. (2020). Macroeconomic variables and stock market performance in Nigeria: An ARDL approach. *Asian Journal of Economics, Business and Accounting*, *16*(4), 1–13.

Ilmanen, A., & Kizer, J. (2012). The death of diversification has been greatly exaggerated. *Journal of Portfolio Management, 38*(3), 15–27.

IMF. (2024). Foreign portfolio investment equity holdings hit a record high in June 2024. *IMF Data Brief*.

International Monetary Fund. (2023). *Exchange rate policies and their impact*. IMF Publications.

Jahan, S., & Papageorgiou, C. (2014). What is monetarism? *Finance & Development*, 51(1). International Monetary Fund.

Jarque, C. M., & Bera, A. K. (1980). Efficient tests for normality, homoscedasticity, and serial independence of regression residuals. *Economics Letters*, *6*(3), 255–259.

Jegadeesh, N., & Titman, S. (1993). Returns to buying winners and selling losers: Implications for stock market efficiency. *The Journal of Finance*, *48*(1), 65–91.

Jensen, M. C. (1978). Some anomalous evidence regarding market efficiency.

Johnson, K., & Lee, T. (2022). Exchange rate fluctuations and stock market volatility in Australia. *Australian Journal of Economics, 36*(2), 89–112.

Jones, L., Smith, K., & Brown, J. (2022). *Inflation and Investor Sentiment in Developed Economies*. International Journal of Economics, 38(4), 89–110.

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, *47*(2), 263–291.

Kaimba, G. N. (2020). *Impact of foreign investor participation on stock market performance: Evidence from the NSE*. University of Nairobi.

Kamuri, S. (2022). *Entrepreneurial Drive and Performance of Value-System Actors Kenya's Leather Industry* (Doctoral dissertation, JKUAT-COHRED).

Kapaya, S. M. (2020). Stock Market Performance and Economic Growth in Tanzania: An ARDL and Bound Testing Approach. *Review of Economics and Political Science*, *5*(3), 187-206.

Kariuki, C. M., & Muthama, J. M. (2020). The impact of macroeconomic factors on the performance of the Nairobi Securities Exchange 20 Share Index. *International Journal of Economics and Finance*, 12(3), 45–58.

Kenya Institute for Public Policy Research and Analysis (KIPPRA). (2024). *Cost of Living and the Role of Markets*.

Kenya National Bureau of Statistics (KNBS). (2023). *2023 Foreign Investment Survey Report*.

Kenyan Wall Street. (2023, June 14). *Kenya's stock market earns the title of worst-performing globally amid dollar shortages*. https://kenyanwallstreet.com/kenyas-stock-market-worst-performing-globally/

Kenyatta, E., & Muthama, J. (2019). Analyzing the relationship between macroeconomic variables and the NSE All Share Index. *African Journal of Economic and Sustainable Development,* 8(2), 112–130.

Keregero, C. M. (2023). Do macroeconomic variables matter in explaining stock market returns in the Tanzanian Stock Exchange Market?. *African Journal of Management Study*, *30*(1), 146-146.

Keynes, J. M. (1936). *The General Theory of Employment, Interest and Money*. Macmillan.

Khalid, W., & Khan, S. (2017). Effects of Macroeconomic Variables on Stock Market Volatility: The Pakistani Experience. *International Journal of Econometrics and Financial Management, 5*(2), 42–59.

Khan, M. (2024). Impact of interest rates on the stock market. *International Journal of Research Publication and Reviews, 5*(2), 1750-1759.

Khan, S., & Ahmad, I. (2022). Impact of macroeconomic variables on stock market performance in Pakistan: An ARDL approach. *International Journal of Finance & Economics, 10*(1), 45–60.

Kima, J., Olweny, T., & Okech, T. (2024). Inflation and investment behavior in Kenya: A macroeconomic perspective. *Journal of East African Economic Studies, 12*(1), 55–72.

Kingdom Securities. (2024). *Economic Outlook - 2024 Kenya*.

Kinuthia, I. K., & Etyang, M. N. (2014). Stock Market Liberalization, Stock Market Performance, and Economic Growth in Kenya. *International Journal of Economics and Finance*, *6*(4), 196-209.

Kipchumba, C. J. (2017). *Stock Market Performance and Economic Growth Nexus: Empirical Evidence From Kenya* (Doctoral dissertation, University of Nairobi).

Kiptekwei, B. D. (2019). *Factors Influencing the Performance of Nairobi Securities Exchange* (Doctoral dissertation, KCA University).

Koech, G. K. (2021). *The Influence of Macroeconomic Factors On The Stock Market Performance in Kenya* (Doctoral dissertation, KCA University).

Koumou, G. B. (2020). Diversification and portfolio theory: A review. *Financial Markets and Portfolio Management*, *34*, 267–312.

KPMG S.A. (2019). *Financial statements 2018*. Nestlé S.A.

Krugman, P. (2010, July 14). *Nobody Understands the Liquidity Trap*. *The New York Times*.

Kydland, F. E., & Prescott, E. C. (1982). Time to build and aggregate fluctuations. *Econometrica: Journal of the Econometric Society*, 1345–1370.

Kyereboah-Coleman, A., & Agyire-Tettey, K. F. (2008). Impact of macroeconomic indicators on stock market performance: The case of the Ghana Stock Exchange. *The Journal of Risk Finance*, *9*(4), 365-378.

Lankester, T. (2024). Inside Thatcher's monetarism experiment. *Financial Times*.

Laopodis, N. T., & Papastamou, A. (2016). Dynamic interactions between stock markets and the real economy: evidence from emerging markets. *International Journal of Emerging Markets*, *11*(4), 715-746.

Lavrakas, P. J. (2008). *Encyclopedia of survey research methods*. Sage Publications.

Lo, A. W. (2004). The adaptive markets hypothesis: Market efficiency from an evolutionary perspective. *Journal of Portfolio Management, Forthcoming*.

Longin, F., & Solnik, B. (2001). Extreme correlation of international equity markets. *Journal of Finance, 56*(2), 649–676.

Lucas, R. E., Jr. (1976). Econometric policy evaluation: A critique. *Carnegie-Rochester Conference Series on Public Policy*, *1*, 19–46.

Malkiel, B. G. (1989). Is the stock market efficient? *Science*, *243*(4896), 1313-1318.

Malkiel, B. G. (2003). The efficient market hypothesis and its critics. *Journal of Economic Perspectives*, *17*(1), 59-82.

Mallik, A., Khan, A. J., & Chowdhury, A. A. K. (2024). Impact of macroeconomic variables on stock market performance: evidence from the Dhaka stock exchange. *Journal of Business Administration*, *45*(1), 47-63.

Mankiw, N. G. (2020). Principles of economics (8th ed.). Cengage Learning.

Mankiw, N. G. (2021). *Principles of economics*. Cengage Learning.

Mann, K. (2021–. Does foreign capital go where the returns are? Financial integration and capital allocation efficiency. *International Journal of Finance and Economics, 26*(3), 3945–3971.

Mark, N. C. (1995). Exchange rates and fundamentals: Evidence on long-horizon predictability. *The American Economic Review*, 201-218.

Markowitz, H. (1952). Portfolio selection. *The Journal of Finance*, *7*(1), 77–91

Markowitz, H. (1959). *Portfolio selection: Efficient diversification of investments*. New York: John Wiley & Sons.

Markowitz, H. M. (1991). Foundations of portfolio theory. *The journal of finance*, *46*(2), 469-477.

Mburu, D. M. (2015). Relationship between exchange rate volatility and stock market Performance.

Mensah, K., & Boateng, S. (2022). Interest rate changes and stock market returns in Ghana. *West African Financial Review*, *27*(1), 45-68.

Michaud, R. O. (1989). The Markowitz optimization enigma: Is 'optimized' optimal? *Financial Analysts Journal, 45*(1), 31–42.

Mishkin, F. S. (2007). *The economics of money, banking, and financial markets* (8th ed.). Pearson Education.

Moore, B. J. (1988). *Horizontalists and verticalists: The macroeconomic of credit money*. Cambridge University Press.

Mugenda, O. M., & Mugenda, A. G. (2003). *Study methods: Quantitative & qualitative approaches* (Vol. 2, No. 2). Nairobi: Acts Press.

Mugendi, J. (2024). Impact of Macroeconomic Variables on Stock Market Volatility in Kenya. *American Journal of Finance*, *10*(1), 59-71.

Mureithi, S., Mukhongo, A., & Datche, E. (2019). Macroeconomic factors affecting the performance of firms listed in the Nairobi Securities Exchange. *The Strategic Journal of Business & Change Management*, *6*(3), 860-874.

Musembi, M. M., Simiyu, E., & Njoka, C. (2020). Effect of inflation on the Performance of the Equity Market in Nairobi Securities Exchange, Kenya. *International Journal of Management and Commerce Innovations*, *8*(01), 448-471.

Mutua, K., & Gikonyo, W. (2021). Market indices and investor perception: Evidence from the Nairobi Securities Exchange. *Journal of African Business*, 22(1), 89-105.

Mutuku, C. M., & Ng'eny, K. (2022). Exchange rate volatility and stock market returns in Kenya. *International Journal of Economics and Finance*, *14*(3), 45–58.

Mutwiri, N. M., Omagwa, J., & Wamugo, L. (2019). *Systematic Risk and Performance of the Stock Market in Kenya* (Doctoral dissertation, Kenyatta University).

Mwangi, P., & Kamau, J. (2023). Inflation, interest rates, and stock market performance in Kenya. *East African Economic Journal, 39*(2), 78-102.

Mwangi, J., & Muriithi, M. (2021). Inflation and stock market performance: A Kenyan perspective. *African Journal of Business and Economic Research*, *16*(2), 112–130.

Mwangi, P., & Otieno, L. (2024). *Macroeconomic determinants of stock market trends in Kenya*. African Economic Review, 29(3), 67-89.

Nairametrics. (2024, July 10). *Foreign portfolio investment in Nigeria surges by 106.5% in 2024*. https://nairametrics.com/2024/07/10/foreign-portfolio-investment-in-nigeria-surges-by-106-5-in-2024

Nairobi Securities Exchange Ltd. (2014). *Annual Report & Financial Statements 2014*. Nairobi: NSE Ltd.

Nairobi Securities Exchange PLC. (2023). *Announcement of audited group results for the year ended 31 December 2024*. Nairobi Securities Exchange PLC.

Nairobi SecuritieInterest Rates on Stock Market Returnstps://www.nse.co.ke/our-story/

Nairobi Securities Exchange. (n.–.). *Publications*. https://www.nse.co.ke/publications/

Naseer, M., & Bin Tariq, D. Y. (2015). The efficient market hypothesis: A critical review of the literature. *The IUP journal of financial risk management*, *12*(4), 48-63.

National Bureau of Statistics (NBS). (2023). *Capital Importation Report Q4 2022*. https://nigerianstat.gov.ng/elibrary

Ndegwa, E. N. (2016). *The Effect of macroeconomic variables on stock market return at the Nairobi Securities Exchange* (Doctoral dissertation, University of Nairobi).

Ndungi, K. M. (2018). *The effect of foreign direct investment on stock market performance in Kenya* (Master's thesis, University of Nairobi).

Neuman, W. L. (2014). *Social research methods: Qualitative and quantitative approaches* (7th ed.). Pearson Education.

Neuman, W. L. (2014). Social study methods: qualitative and quantitative approaches (Vol. Seventh new international edition.; Pearson new international edition.). *Harlow, Essex: Pearson Education Limted*.

Ngechu, M. (2004). Understanding the study process and methods. An introduction to study methods. *Unpublished MBA Thesis, School of Business: University of Nairobi*.

Ngele, K. M. (2023). Macroeconomic variables and stock market performance at Nairobi securities exchange, Kenya.

Nguyen, C. P., Schinckus, C., Su, T. D., & Chong, F. H. (2022). Determinants of stock market returns in emerging markets: The linkage between institutional quality and macro liquidity. *International Journal of Finance & Economics*, *27*(4), 4472–4486.

Njenga, M., & Kiragu, D. (2020). Interest rate movements and equity market activity in Kenya. *ResearchBridge Journal of Finance*, *8*(1), 78–95.

Nkoro, E., & Uko, A. K. (2016). Autoregressive distributed lag (ARDL) cointegration technique: Application and interpretation. *Journal of Scientific and Engineering Research, 5*(4), 63–76.

Nyasha, S., & Odhiambo, N. M. (2020). Determinants of the Brazilian stock market performance. *The Journal of Developing Areas, 54*(1).

Nyongesa, D. N., & Muchoki, M. M. (2016). Cointegration relationship between exchange rate volatility and the performance of the Nairobi Securities Exchange market in Kenya. *Study Journal of Finance and Accounting*, *7*(20), 73-86.

Ochieng, D., & Wambua, P. (2023). Political risk and foreign investor behavior in Kenya's equity markets. *Journal of Emerging Market Studies, 11*(4), 203–219.

Odhiambo, J. A. (2023). *Effect of Inflation Rate on Stock Market Volatility in Frontier Capital Markets: A Case Study of Kenya, Nairobi Securities Exchange* (Doctoral dissertation, University of Nairobi).

OECD. (2025). *FDI in figures, April 2025*. https://www.oecd.org/en/publications/fdi-in-figures-april-2025_d5a76fd0-en.html

Ojijo, C. O. (2023). *Effect of foreign portfolio flows on the growth of capital market in Kenya* [Master's thesis, University of Nairobi].

Okello, J., & Achieng, M. (2021). Macroeconomic indicators and stock market trends in Uganda. *Uganda Economic Review, 25*(3), 134–156.

Okello, J., & Nsubuga, T. (2023). *Exchange Rate Fluctuations and Stock Market Returns in Uganda* East African Journal of Finance, 15(1), 45–67.

Omoke, S. O., & Choke, D. (2024). Exchange rate volatility and stock market performance in Nigeria: An ARDL bounds test approach. *Journal of Economics and Development Studies, 12*(1), 12–25.

Ordue, J. A., Yua, H., Ityavyar, D. V., & Tarnongo, T. J. (2024). Evaluating the Nexus between Macroeconomic Indicators and Stock Market Performance in Nigeria. *International Journal of Developing and Emerging Economies, 12*(1), 67-93.

Oriwo, E. A. (2012). *The relationship between macro economic variables and stock market performance in Kenya* (Doctoral dissertation).

Orodho, J. A. (2003). *Essentials of educRate Changes and Stock Market Volatility in the UK and the the* lishers.

Otieno, D. A., Ngugi, R. W., & Wawire, N. H. (2017). Effects of interest rate on stock market returns in Kenya. *International Journal of Economics and Finance, 9*(8), 40-50.

Otieno, L., & Kamau, J. (2024). ExchangeRate Fluctuations and Stock Market Volatility in Kenya. *Nairobi Financial Studies, 40*(1), 56-79.

Pesaran, M. H., & Shin, Y. (1999). An autoregressive distributed lag modelling approach to cointegration analysis. In S. Strom (Ed.), *Econometrics and Economic Theory in the 20th Century* (pp. 371–413). Cambridge University Press.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics, 16*(3), 289–326.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics, 16*(3), 289–326.

Pradhan, R. P., Arvin, M. B., Norman, N. R., & Bahmani, S. (2020). The dynamics of bond market performance, stock market performance and economic growth. Evidence from the

G-20 countries. *Journal of Economics, Finance and Administrative Science*, *25*(49), 119-148.

Rachael, N., & Moses, W. (2017). The effect of interest rate control on the stock market performance, a case of Nairobi securities exchange market. *International Journal of Current Aspects in Finance (IJCAF)*, *4*(1), 48-54.

Rogoff, K. (1996). The purchasing power parity puzzle. *Journal of Economic Literature*, *34*(2), 647-668.

Ross, S. A. (1976). The arbitrage theory of capital asset pricing. *Journal of Economic Theory*, *13*(3), 341–360.

Rozeff, M. S., & Kinney Jr, W. R. (1976). Capital market seasonality: The case of stock returns. *Journal of Financial Economics*, *3*(4), 379–402.

Sabo, A. Y., Yola, A. T., Jakada, A. H., & Ahmed, B. A. (2025). THE ASYMMETRIC EFFECTS OF MACROECONOMIC VARIABLES ON THE NIGERIAN STOCK MARKET. *Kashere Journal of Management Sciences*, *8*(1).

Sahoo, A. P., Patnaik, B., & Satpathy, I. (2020). Impact of correctly identified variables on the stock market: A study between India and America. *European Journal of Molecular & Clinical Medicine*, *7*(11), 4469-4486.

Samuelson, P. A. (2016). Proof that properly anticipated prices fluctuate randomly. In *The World Scientific Handbook of Futures Markets* (pp. 25–38).

Sarker, M. A., & Uddin, M. H. (2023). Dynamic linkages between macroeconomic variables and stock market returns in Bangladesh: A VECM approach. *International Journal of Economics and Financial Issues*, *13*(3), 11–20.

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

Seyhun, H. N. (1992). The effectiveness of the insider-trading sanctions. *The Journal of Law and Economics*, *35*(1), 149-182.

Shaikh, P. A., Muhammad, F., & Khan, S. K. (2022). The dynamic theories of inflation. *Pakistan Journal of International Affairs*, *5*(2).

Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *The journal of finance, 19*(3), 425-442.

Shiller, R. J. (2000). Irrational Exuberance Princeton University Press USA.

Shleifer, A. (2000). *Inefficient markets: An introduction to behavioural finance*. Oup Oxford.

Sia, P. C., Puah, C. H., Leong, C. M., Yii, K. J., & Tang, M. M. J. (2025). Does inflation or interest rate matter to Indonesian stock prices? An asymmetric approach. *Journal of Economics and Development*, *27*(1), 72-86.

Siang, C. C., & Rayappan, P. (2023). A study on the effect of macroeconomic factors on stock market performance in Malaysia. In *E3S Web of Conferences* (Vol. 389, p. 09037). EDP Sciences.

Simiyu, C. N., & Ngile, L. N. (2015). Effect of macroeconomic variables on profitability of commercial banks listed in the Nairobi securities exchange.

Smith, A., & Brown, B. (2023). *Interest rate changes and stock market volatility in the UK and US*. Global Financial Review, 40–2), 10–-125.

Smith, A., & Jones, M. (2023). Inflation and interest rates in the FTSE 100 and S&P 500 indices. *Global Financial Review, 44*(3), 98-120.

Solnik, B. H. (1974). Why not diversify internationally rather than domestically? *Financial Analysts Journal*, *30*(4), 48–54.

Statman, M. (2013). *Behavioral finance: The second generation*. CFA Institute Research Foundation.

Stears. (2023, November). *FX analysis: Currency pressures persist for key African economies*.https://www.stears.co/premium/article/november-2023-fx-analysis-currency-pressures-persist-for-key-african-economies/

Taylor, A. M. (2001). Potential pitfalls for th– purchasing-power-parity puzzle? Sampling and specification biases in mean-reversion tests of Economic Perspectives *Econometric–*, *69*(2), 473-498.

Taylor, A. M., & Taylor, M. P. (2002). The purchasing power parity debate. *Journal of economic perspectives*, *18*(4), 135-158.

Techish. (2024, January 13). *African markets' resilience in the face of FX volatility and inflationary pressures*. https://tech-ish.com/2024/01/13/african-business-ecosystem-2023-resilience/

Terborgh, G. W. (1926). The purchasing-power parity theory. *Journal of Political Economy*, *34*(2), 197-208.

Thaler, R. H. (1987). Anomalies: the January effect. *Journal of Economic Perspectives*, *1*(1), 197-201.

Tobin, J. (1958). Liquidity preference as behavior towards risk. *The Review of Economic Studies*, *25*(2), 65–86.

Totonchi, J. (2011, July). Macroeconomic theories of inflation. In the *International Conference on Economics and Finance Study* (Vol. 4, No. 1, pp. 459-462)

UNCTAD. (2024). *World Investment Report 2024 – Tanzania Fact Sheet*. https://unctad.org/system/files/non-official-document/wir_fs_tz_en.pdf

Verma, R. K., & Bansal, R. (2021). Impact of macroeconomic variables on the performance of stock exchange: a systematic review. *International Journal of Emerging Markets*, *16*(7), 1291–1329.

VT Markets. (2024, August 7). *The perfect storm: Understanding the 2024 global stock market downturn*. https://www.vtmarkets.net/discover/the-perfect-storm-understanding-the-2024-global-stock-market-downturn-2/

Wahome, K. (2008). *Efficient Capital Markets and Stock Market Performance in Kenya* [Unpublished doctoral dissertation]. University of Nairobi.

Were, M., & Wambugu, A. (2022). Monetary aggregates and asset pricing in Kenya: A macro-financial approach. *Kenya Economic Policy Review*, *9*(2), 56–74.

White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, *48*(4), 817–838.

Williams, D., & Taylor, S. (2024). *GDP growth and stock market expansion in Australia*. Australian Journal of Economics, 22(1), 78–99.

World Federation of Exchanges. (2023). *Full year 2022 market highlights report*. https://www.world-exchanges.org/our-work/articles/full-year-2022-market-highlights-report

World Federation of Exchanges. (2024, February). *Market statistics: February 2024*. https://focus.world-exchanges.org/issue/february-2024/market-statistics

APPENDICES

Appendix I: Data collection sheet

Month	Consumer Price Index	Lending Interest rate_percentage	Exchange rate_Ksh per USD	Foreign investor net cash flow_ Ksh Millions	Broad Money_M3_ Ksh Million	NSE 20 Share Index
Jan-08	119.65	13.78	68.08	143.00	801,247.00	4,712.70
Feb-08	121.28	13.84	70.50	779.00	810,206.00	5,072.40
Mar-08	122.63	14.06	64.92	624.00	811,214.00	4,843.20
Apr-08	126.28	13.91	62.26	45.00	864,105.00	5,336.00
May-08	128.83	14.01	61.90	570.00	839,239.00	5,175.80
Jun-08	129.12	14.06	63.78	-3,076.00	840,679.00	5,185.60
Jul-08	128.92	13.91	66.70	-121.00	850,412.00	4,868.30
Aug-08	130.37	13.66	67.68	3.00	854,952.00	4,648.80
Sep-08	131.67	13.66	71.41	-283.00	859,328.00	4,180.40
Oct-08	132.47	14.12	76.66	-879.00	883,497.00	3,386.70
Nov-08	134.77	14.32	78.18	-692.00	890,233.00	3,341.50
Dec-08	134.69	14.87	78.04	2,775.00	901,132.00	3,521.20
Jan-09	135.60	14.78	78.95	-342.00	895,397.00	3,198.90
Feb-09	139.01	14.67	79.53	66.00	900,031.00	2,474.80
Mar-09	140.49	14.87	80.26	329.00	906,067.00	2,805.00
Apr-09	141.92	14.71	79.63	49.00	928,824.00	2,800.10
May-09	141.16	14.85	77.86	496.00	928,604.00	2,852.60
Jun-09	140.18	15.09	77.85	884.00	950,239.00	3,294.60
Jul-09	139.77	14.79	76.75	791.00	973,623.00	3,273.10

Aug-09	139.94	14.76	76.37	861.00	982,854.00	3,102.70
Sep-09	140.51	14.74	75.61	937.00	986,901.00	3,005.50
Oct-09	141.21	14.78	75.24	2,425.00	1,006,009.00	3,083.60
Nov-09	141.50	14.85	74.74	1,528.00	1,022,339.00	3,189.60
Dec-09	141.88	14.87	75.43	300.00	1,045,533.00	3,247.40
Jan-10	104.89	14.98	75.79	2,517.00	1,067,271.00	3,565.30
Feb-10	105.18	14.98	76.73	489.00	1,084,345.00	3,629.40
Mar-10	104.97	14.80	76.95	1,998.00	1,107,896.00	4,072.90
Apr-10	105.56	14.58	77.25	151.00	1,122,790.00	4,233.20
May-10	105.79	14.46	78.54	-325.00	1,159,595.00	4,241.80
Jun-10	105.61	14.33	81.02	1,601.00	1,198,930.00	4,339.30
Jul-10	105.98	14.29	81.43	1,159.00	1,213,212.00	4,438.60
Aug-10	106.25	14.18	80.44	471.00	1,216,829.00	4,454.60
Sep-10	106.74	13.98	80.91	1,206.00	1,243,601.00	4,629.80
Oct-10	106.97	13.85	80.71	2,147.00	1,254,488.00	4,659.60
Nov-10	107.86	13.95	80.46	2,526.00	1,258,812.00	4,395.20
Dec-10	109.38	13.87	80.57	1,186.00	1,271,638.00	4,432.60
Jan-11	110.57	14.03	81.03	1,987.00	1,285,452.00	4,464.90
Feb-11	112.06	13.92	81.47	622.00	1,306,395.00	4,240.20
Mar-11	114.62	13.92	84.21	1,552.00	1,324,685.00	3,887.00
Apr-11	118.29	13.92	83.89	-3,024.00	1,334,898.00	4,029.00
May-11	119.48	13.88	85.43	-3,334.00	1,351,380.00	4,078.00
Jun-11	120.91	13.91	89.05	-1,597.00	1,380,732.00	3,968.00
Jul-11	122.44	14.14	89.90	1,173.00	1,412,702.00	3,738.00

Aug-11	123.97	14.32	92.79	21.00	1,436,877.00	3,464.00
Sep-11	125.23	14.79	96.36	535.00	1,484,198.00	3,284.00
Oct-11	127.20	15.21	99.78	719.00	1,513,656.00	3,507.00
Nov-11	129.13	18.48	93.68	31.00	1,489,751.00	3,155.00
Dec-11	130.09	20.04	86.66	935.00	1,514,152.00	3,205.00
Jan-12	130.82	19.54	86.34	-812.00	1,505,764.00	3,224.00
Feb-12	130.76	20.28	83.18	795.00	1,504,776.00	3,304.00
Mar-12	132.51	20.34	82.90	2,651.00	1,517,126.00	3,367.00
Apr-12	133.74	20.22	83.19	1,771.00	1,536,287.00	3,547.00
May-12	134.09	20.12	84.38	1,099.00	1,561,573.00	3,651.00
Jun-12	133.06	20.30	84.79	1,639.00	1,595,059.00	3,704.00
Jul-12	131.92	20.15	84.14	828.00	1,613,069.00	3,832.00
Aug-12	131.51	20.13	84.08	1,048.00	1,638,708.00	3,866.00
Sep-12	131.89	19.73	84.61	3,286.00	1,671,318.00	3,972.00
Oct-12	132.46	19.04	85.11	2,965.00	1,703,001.00	4,147.00
Nov-12	133.33	18.70	85.63	4,335.00	1,740,657.00	4,083.00
Dec-12	134.25	18.15	85.99	2,129.00	1,727,686.00	4,133.00
Jan-13	135.62	18.13	86.90	2,133.00	1,729,897.00	4,417.00
Feb-13	136.59	17.84	86.90	-3,927.00	1,747,890.00	4,519.00
Mar-13	137.96	17.73	87.45	1,810.00	1,755,742.00	4,861.00
Apr-13	139.28	17.87	84.19	3,026.00	1,802,280.00	4,765.00
May-13	139.52	17.45	84.15	3,475.00	1,823,398.00	5,006.00
Jun-13	139.59	16.97	85.49	2,602.00	1,820,879.00	4,598.00
Jul-13	139.87	17.02	86.86	1,625.00	1,835,816.00	4,788.00

Aug-13	140.29	16.96	87.49	9,839.00	1,849,974.00	4,698.00
Sep-13	142.82	18.86	87.41	2,063.00	1,861,957.00	4,793.00
Oct-13	142.75	17.00	85.31	2,723.00	1,879,114.00	4,936.00
Nov-13	143.14	16.89	86.10	884.00	1,919,518.00	5,101.00
Dec-13	143.85	16.99	86.31	-690.00	1,957,492.00	4,927.00
Jan-14	145.40	17.03	86.21	-876.00	1,982,595.00	4,856.00
Feb-14	145.95	17.06	86.28	-1,505.00	1,988,090.00	4,933.00
Mar-14	146.61	16.91	86.49	-399.00	2,015,358.00	4,946.00
Apr-14	148.20	16.70	86.72	1,409.00	2,061,693.00	4,949.00
May-14	149.70	16.97	87.41	-2,578.00	2,090,960.00	4,882.00
Jun-14	149.70	16.36	87.61	2,586.00	2,115,138.00	4,885.00
Jul-14	150.60	16.91	87.77	142.00	2,147,000.00	4,906.00
Aug-14	152.02	16.26	88.11	3,253.00	2,197,003.00	5,139.00
Sep-14	152.24	16.04	88.84	-850.00	2,209,260.00	5,256.00
Oct-14	151.92	16.00	89.23	-1,208.00	2,224,507.00	5,195.00
Nov-14	151.85	15.95	89.96	2,535.00	2,256,304.00	5,156.00
Dec-14	152.51	15.99	90.44	1,021.00	2,301,286.00	5,113.00
Jan-15	153.43	15.93	91.36	-273.00	2,358,930.00	5,212.00
Feb-15	154.14	15.47	91.49	201.00	2,415,761.00	5,491.00
Mar-15	155.86	15.46	91.73	-3,085.00	2,406,465.00	5,346.00
Apr-15	158.70	15.40	93.44	-67.00	2,468,893.00	5,091.00
May-15	159.98	15.26	96.39	-2,030.00	2,506,590.00	4,788.00
Jun-15	160.46	15.48	97.71	-447.00	2,560,420.00	4,906.00
Jul-15	160.57	15.75	101.20	-1,127.00	2,554,782.00	4,405.00

Aug-15	160.90	15.68	102.43	1,183.00	2,580,621.00	4,176.00
Sep-15	161.33	16.57	105.28	6,500.00	2,567,111.00	4,173.00
Oct-15	162.13	16.58	102.79	889.00	2,623,802.00	3,869.00
Nov-15	162.97	17.16	102.17	-829.00	2,654,388.00	4,016.00
Dec-15	164.72	18.30	102.19	1.00	2,704,866.00	4,040.00
Jan-16	165.37	18.00	102.31	-533.00	2,660,106.00	3,773.00
Feb-16	164.67	17.91	101.93	281.00	2,677,491.00	3,871.00
Mar-16	165.92	17.87	101.49	-1,334.00	2,713,294.00	3,982.00
Apr-16	167.07	18.04	101.23	80.00	2,742,721.00	4,009.00
May-16	167.99	18.22	100.73	196.00	2,759,419.00	3,868.00
Jun-16	169.76	18.18	101.14	100.00	2,807,172.00	3,641.00
Jul-16	170.84	18.10	101.33	974.00	2,769,546.00	3,489.00
Aug-16	170.97	17.71	101.41	3,703.00	2,793,673.00	3,179.00
Sep-16	171.56	13.84	101.27	1,343.00	2,810,821.00	3,243.00
Oct-16	172.62	13.65	101.32	-125.00	2,799,998.00	3,251.00
Nov-16	173.85	14.31	101.75	459.00	2,815,792.00	3,247.00
Dec-16	175.18	13.69	102.13	615.00	2,785,923.00	3,186.00
Jan-17	176.93	13.66	103.75	1,608.00	2,780,615.00	2,794.00
Feb-17	179.98	13.69	103.64	435.00	2,802,649.00	2,995.00
Mar-17	182.98	13.61	102.85	-50.00	2,866,503.00	3,113.00
Apr-17	186.24	13.61	103.33	433.00	2,915,235.00	3,158.00
May-17	187.64	13.71	103.26	-1,888.00	2,922,723.00	3,441.00
Jun-17	185.39	13.66	103.49	-813.00	2,955,908.00	3,607.00
Jul-17	183.60	13.70	103.88	-2,054.00	2,977,737.00	3,700.44

Aug-17	184.72	13.65	103.56	-3,268.00	2,986,790.00	4,027.12
Sep-17	183.66	13.69	103.12	-5,798.00	3,006,155.00	3,751.46
Oct-17	182.50	13.71	103.39	486.00	3,000,198.00	3,729.62
Nov-17	182.08	13.68	103.57	-450.00	3,015,009.00	3,815.61
Dec-17	183.05	13.64	103.10	-218.00	3,030,646.00	3,711.00
Jan-18	185.47	13.65	102.92	-1,464.00	3,026,102.00	3,737.27
Feb-18	188.00	13.68	101.40	-5,138.00	3,023,516.00	3,750.75
Mar-18	190.62	13.49	101.18	-1,483.00	3,035,395.00	3,854.34
Apr-18	193.18	13.24	100.61	-1,815.00	3,074,813.00	3,735.00
May-18	195.05	13.25	100.67	-4,022.00	3,142,070.00	3,333.00
Jun-18	193.31	13.22	101.00	-2,339.00	3,262,639.00	3,286.00
Jul-18	191.59	13.10	100.67	-2,111.00	3,278,791.00	3,320.44
Aug-18	192.18	12.78	100.61	-1,565.00	3,259,725.00	3,203.40
Sep-18	194.14	12.66	100.83	-3,029.00	3,261,081.00	2,875.51
Oct-18	192.60	12.61	101.08	-4,287.00	3,273,004.00	2,820.00
Nov-18	192.25	12.55	102.36	-599.00	3,269,041.00	2,797.00
Dec-18	193.51	12.51	102.29	-1,785.00	3,337,832.00	2,800.95
Jan-19	194.18	12.50	101.58	-1,357.00	3,683,050.00	2,982.73
Feb-19	195.78	12.47	100.23	216.00	3,678,544.00	2,916.19
Mar-19	198.91	12.51	100.36	1,742.00	3,765,930.00	2,846.35
Apr-19	205.90	12.50	101.07	93.00	3,763,661.00	2,796.84
May-19	205.77	12.47	101.15	2,165.00	3,773,916.00	2,676.92
Jun-19	204.34	12.47	101.69	-901.00	3,925,042.00	2,633.32
Jul-19	203.61	12.39	103.16	-2,073.00	3,875,325.00	2,627.81

Aug-19	201.78	12.46	103.30	1,509.00	3,831,822.00	2,467.68
Sep-19	201.57	12.47	103.80	827.00	3,843,552.00	2,431.97
Oct-19	202.12	12.43	103.67	-1,361.00	3,887,174.00	2,643.39
Nov-19	202.94	12.38	102.39	-	3,832,368.00	2,618.62
Dec-19	204.77	12.24	101.50	1,247.00	3,897,552.00	2,654.39
Jan-20	205.40	12.29	101.09	530.00	3,906,203.00	2,600.41
Feb-20	107.17	12.19	100.79	-2,655.00	3,986,468.00	2,337.03
Mar-20	107.48	12.09	103.74	-9,058.00	4,055,325.00	1,966.12
Apr-20	108.50	11.92	106.41	-4,098.00	4,098,713.00	1,958.07
May-20	108.60	11.95	106.68	-4,462.00	4,151,224.00	1,948.08
Jun-20	108.27	11.89	106.40	-1,690.00	4,283,046.00	1,942.12
Jul-20	108.35	11.94	107.27	-5,339.00	4,307,145.00	1,804.10
Aug-20	108.57	11.94	108.14	10.00	4,256,049.00	1,794.85
Sep-20	108.57	11.75	108.41	802.00	4,252,506.00	1,852.29
Oct-20	109.60	11.98	108.64	-1,129.00	4,342,037.00	1,783.68
Nov-20	110.78	11.99	109.25	-1,186.00	4,373,248.00	1,759.93
Dec-20	111.87	12.02	110.59	-354.00	4,414,885.00	1,868.39
Jan-21	112.58	12.00	109.83	-5,237.00	4,423,599.00	1,881.91
Feb-21	113.37	12.02	109.68	-621.00	4,474,731.00	1,915.68
Mar-21	113.81	12.05	109.73	-975.00	4,472,216.00	1,846.41
Apr-21	114.75	12.08	107.95	-30.00	4,483,860.00	1,846.41
May-21	114.98	12.06	107.43	-782.00	4,485,047.00	1,871.55
Jun-21	115.11	12.02	107.81	-1,196.00	4,580,405.00	1,927.53
Jul-21	115.45	12.09	108.14	156.00	4,626,482.00	1,974.29

Aug-21	115.71	12.12	109.24	1,721.00	4,684,017.00	2,020.77
Sep-21	116.08	12.10	110.15	-941.00	4,627,476.00	2,020.77
Oct-21	116.67	12.12	110.86	-1,021.00	4,667,011.00	1,961.33
Nov-21	117.20	12.15	111.92	-1,186.00	4,690,703.00	1,871.31
Dec-21	118.27	12.16	112.91	-2,874.00	4,689,439.00	1,902.57
Jan-22	118.64	12.12	113.38	-422.00	4,644,268.00	1,889.33
Feb-22	119.13	12.17	113.66	187.00	4,698,298.00	1,886.75
Mar-22	120.14	12.15	114.32	-1,451.00	4,707,623.00	1,846.74
Apr-22	122.17	12.20	115.40	-1,653.00	4,811,956.00	1,800.64
May-22	123.12	12.22	116.28	-4,207.00	4,808,724.00	1,681.80
Jun-22	124.22	12.27	117.29	-5,036.00	4,933,307.00	1,612.89
Jul-22	125.05	12.35	118.32	-2,972.00	4,997,118.00	1,701.31
Aug-22	125.58	12.43	119.45	-1,656.00	4,940,080.00	1,751.20
Sep-22	126.73	12.41	120.42	-2,336.00	4,926,741.00	1,717.68
Oct-22	127.86	12.39	121.03	-2,318.00	4,930,927.00	1,677.76
Nov-22	128.31	12.64	121.90	-887.00	4,966,928.00	1,637.55
Dec-22	128.99	12.67	122.93	-1,665.00	5,042,419.00	1,676.10
Jan-23	129.29	12.77	123.93	-2,855.00	5,077,667.00	1,657.32
Feb-23	130.13	13.06	125.45	-383.00	5,102,239.00	1,646.56
Mar-23	131.18	13.09	129.74	-10,693.00	5,197,653.00	1,622.05
Apr-23	131.83	13.10	134.40	-283.00	5,258,973.00	1,578.88
May-23	133.01	13.21	137.26	-1,313.00	5,292,618.00	1,546.83
Jun-23	134.01	13.31	139.73	113.00	5,575,440.00	1,574.92
Jul-23	134.15	13.50	141.45	-3,019.00	5,673,797.00	1,577.25

Aug-23	134.02	13.83	143.93	672.00	5,774,645.00	1,540.16
Sep-23	135.32	13.98	146.77	-1,193.00	5,841,131.00	1,508.75
Oct-23	136.71	14.16	149.40	-571.00	5,882,723.00	1,461.07
Nov-23	137.03	14.43	152.03	-479.00	5,952,329.00	1,495.58
Dec-23	137.55	14.63	154.09	-1,285.00	6,044,533.00	1,501.16
Jan-24	138.15	15.20	159.69	-107.00	6,111,086.00	1,508.86
Feb-24	138.34	15.88	151.84	-918.00	6,003,981.00	1,535.89
Mar-24	138.66	16.28	137.35	-1,203.00	5,900,645.00	1,752.43
Apr-24	138.40	16.45	131.57	1,063.00	5,836,272.00	1,690.98
May-24	139.64	16.60	131.69	1,496.00	5,850,080.00	1,722.49
Jun-24	140.23	16.84	129.36	419.00	5,965,620.00	1,656.50
Jul-24	139.94	16.85	129.87	-655.00	6,017,840.00	1,669.73
Aug-24	139.87	16.84	129.32	-2.00	6,010,268.00	1,678.21
Sep-24	140.13	16.91	129.20	29.00	5,992,151.00	1,775.67
Oct-24	140.44	17.15	129.20	-570.00	5,987,465.00	1,905.51
Nov-24	140.81	17.22	129.40	-667.00	6,082,383.00	1,861.35
Dec-24	141.66	16.89	129.36	-15,401.00	6,048,537.00	2,010.65

Source: Central Bank of Kenya, Capital Markets Authority, Kenya National Bureau of Statistic

Appendix II: NACOSTI license

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: **299813**

Date of Issue: **30/August/2025**

RESEARCH LICENSE

This is to Certify that Miss.. Noel Owano Abukutsa of KCA University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: MACROECONOMIC INDICATORS AND STOCK MARKET PERFORMANCE: AN ARDL APPROACH for the period ending : 30/August/2026.

License No: **NACOSTI/P/25/4178916**

299813

Applicant Identification Number

Ag. Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013 (Rev. 2014)
Legal Notice No. 108: The Science, Technology and Innovation (Research Licensing) Regulations, 2014

The National Commission for Science, Technology and Innovation, hereafter referred to as the Commission, was the established under the Science, Technology and Innovation Act 2013 (Revised 2014) herein after referred to as the Act. The objective of the Commission shall be to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related thereto.

CONDITIONS OF THE RESEARCH LICENSE

1. The License is granted subject to provisions of the Constitution of Kenya, the Science, Technology and Innovation Act, and other relevant laws, policies and regulations. Accordingly, the licensee shall adhere to such procedures, standards, code of ethics and guidelines as may be prescribed by regulations made under the Act, or prescribed by provisions of International treaties of which Kenya is a signatory to.
2. The research and its related activities as well as outcomes shall be beneficial to the country and shall not in any way;
    i. Endanger national security
    ii. Adversely affect the lives of Kenyans
    iii. Be in contravention of Kenya's international obligations including Biological Weapons Convention (BWC), Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), Chemical, Biological, Radiological and Nuclear (CBRN).
    iv. Result in exploitation of intellectual property rights of communities in Kenya
    v. Adversely affect the environment
    vi. Adversely affect the rights of communities
    vii. Endanger public safety and national cohesion
    viii. Plagiarize someone else's work
3. The License is valid for the proposed research, location and specified period.
4. Neither the license nor any rights thereunder are transferable.
5. The Commission reserves the right to cancel the research at any time during the research period if in the opinion of the Commission the research is not implemented in conformity with the provisions of the Act or any other written law.
6. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research.
7. Excavation, filming, movement, and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
8. The License does not give authority to transfer research materials.
9. The Commission may monitor and evaluate the licensed research project for the purpose of assessing and evaluating compliance with the conditions of the License.
10. The Licensee shall submit one hard copy, and upload a soft copy of their final report (thesis) onto a platform designated by the Commission within one year of completion of the research.
11. The Commission reserves the right to modify the conditions of the License including cancellation without prior notice.
12. Research, findings and information regarding research systems shall be stored or disseminated, utilized or applied in such a manner as may be prescribed by the Commission from time to time.
13. The Licensee shall disclose to the Commission, the relevant Institutional Scientific and Ethical Review Committee, and the relevant national agencies any inventions and discoveries that are of National strategic importance.
14. The Commission shall have powers to acquire from any person the right in, or to, any scientific innovation, invention or patent of strategic importance to the country.
15. Relevant Institutional Scientific and Ethical Review Committee shall monitor and evaluate the research periodically, and make a report of its findings to the Commission for necessary action.

National Commission for Science, Technology and
Innovation(NACOSTI),
Off Waiyaki Way, Upper Kabete,
P. O. Box 30623 - 00100 Nairobi, KENYA
Telephone: 020 4007000, 0713788787, 0735404245
E-mail: dg@nacosti.go.ke
Website: www.nacosti.go.ke

Appendix III: Scientific and Ethics Committee approval

Thika Road, Ruaraka
P.O. Box 56808-00200 Nairobi Kenya
Pilot Line: +254 20 8070408/9

Tel: +254 20 3537842
Fax: +254 20 8561077
Mobile: +254 734 888022, 710 888022
Email: kca@kca.ac.ke
Website: www.kca.ac.ke

KCA UNIVERSITY SCIENTIFIC & ETHICS REVIEW COMMITTEE

REF: **KCAU/SERC/ SOB0170** **Date: 21ST JULY 2025**

TO: **NOEL O ABUKUTSA (22/00766)**

Dear Sir/Madam,

RE: MACROECONOMIC INDICATORS AND STOCK MARKET PERFORMANCE: AN ARDL APPROACH

This is to inform you that KCA University Scientific Ethics Review Committee (KCAUSERC) has reviewed and approved your above research proposal. Your application approval number is ***KCAUSERC/*SOB0170.** The approval period is ***21st July 2025 – 21st July, 2026.***
This approval is subject to compliance with the following requirements;

i. Only approved documents including (informed consents, study instruments, MTA) will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by ***KCAUSERC***.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to **KCAU*SERC*** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to ***KCAUSERC*** within 72 hours
v. Clearance for export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to ***KCAUSERC***.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://research-portal.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely

Dr. Caroline Ntara
Chairperson
KCA University Scientific & Ethics Review Committee

Advancing Knowledge, Driving Change

Appendix IV: NACOSTI introduction letter

Thika Road, Ruaraka
P.O. Box 56808-00200 Nairobi Kenya
Pilot Line: +254 20 8070408/9

Tel: +254 20 3537842
Fax: +254 20 8561077
Mobile: +254 734 888022, 710 888022
Email: kca@kca.ac.ke
Website: www.kca.ac.ke

BOARD OF POSTGRADUATE STUDIES

KCAU/BPS/2025 *Date: Tuesday, August 19, 2025*

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION (NACOSTI)
P.O BOX 30623-00100
NAIROBI

Dear Sir/Madam,

RE: NOEL O ABUKUTSA - REG NO. 22/00766

It is my distinct pleasure to introduce Noel O. Abukutsa, a student at our institution pursuing a Master of Science in Commerce- Finance and Investment degree within the School of Business.

Noel is conducting research on the topic ***"Macroeconomic indicators and stock market performance: An ARDL approach."*** Her study has been reviewed and approved by the University's Ethics Review Committee, Approval No. KCAU/SERC/SOB0170. The Approval period is from 21st July 2025 – 21st July 2026.

Any assistance accorded to her is highly appreciated.

Yours faithfully,

DR. JACKSON NDOLO
DIRECTOR, BOARD OF POST GRADUATE STUDIES

Appendix V: Data collection introduction letter

Thika Road, Ruaraka
P.O. Box 56808-00200 Nairobi Kenya
Pilot Line: +254 20 8070408/9

Tel: +254 20 3537842
Fax: +254 20 8561077
Mobile: +254 734 888022, 710 888022
Email: kca@kca.ac.ke
Website: www.kca.ac.ke

BOARD OF POSTGRADUATE STUDIES

KCAU/BPS/2025 *Date: Tuesday, August 19, 2025*

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: NOEL O ABUKUTSA - REG NO. 22/00766

It is my distinct pleasure to introduce Noel O. Abukutsa, a student at our institution pursuing a Master of Science in Commerce- Finance and Investment degree within the School of Business.

Noel is conducting research on the topic ***"Macroeconomic indicators and stock market performance: An ARDL approach."*** which is part of the requirements of the program she is pursuing. The research as well as the data procured thereof shall be used for academic purposes only.
Any assistance accorded to her is highly appreciated.

In case of further inquiry, do not hesitate to contact the undersigned.

Yours faithfully,

DR. JACKSON NDOLO
DIRECTOR, BOARD OF POST GRADUATE STUDIES

Appendix VI: SERC Disclaimer Form

KCA UNIVERSITY SCIENTIFIC AND ETHICS REVIEW COMMITTEE

DISCLAIMER FORM FOR PRINCIPAL INVESTIGATORS (PIS) COLLECTING SECONDARY DATA

This Disclaimer Form serves to release the Scientific and Ethics Review Committee (SERC), KCA University, and the National Commission for Science, Technology, and Innovation (NACOSTI) from any liability concerning the unlawful or unethical use of data collected by the Principal Investigator (PI) in their research. By signing this form, the Principal Investigator acknowledges and agrees to comply with all relevant data protection laws, including the Data Protection Act of Kenya and other applicable regulations.

1. Acknowledgment of Liability

The Principal Investigator (PI) acknowledges and agrees that the Scientific and Ethics Review Committee (SERC) of KCA University and NACOSTI shall not be held liable or responsible for any unlawful, unethical, or unauthorized use of the data collected as part of the research project. The PI is solely responsible for ensuring that the data is collected, stored, and processed in compliance with all applicable data protection laws.

2. Compliance with Data Protection Laws

The PI is required to adhere to the following data protection laws in the collection, storage, and processing of data in Kenya:

- **Kenya Data Protection Laws**:
  - The PI must ensure compliance with the *Data Protection Act of 2019* of Kenya, which governs personal data collection, processing, and storage. - The PI is responsible for obtaining informed consent (Where applicable) from research participants and ensuring that personal data is collected for legitimate purposes, stored securely, and used only in accordance with the stated purposes. - The PI must implement appropriate security measures to protect personal data from unauthorized access or misuse, and ensure that data is only retained for as long as necessary.

3. Liability Release and Disclaimer

The PI agrees that the Scientific and Ethics Review Committee (SERC) and KCA University are not liable for any actions taken by the PI that are in violation of applicable laws. This includes, but is not limited to, the misuse, unauthorized disclosure, or improper handling of data that is in violation of the laws outlined above.

Additionally, the PI agrees that NACOSTI, as the regulatory body overseeing scientific research in Kenya, shall not be held liable for any breaches or failures in compliance resulting from actions taken by the PI, including any unauthorized use of data.

4. Data Use and Research Details

The PI is required to provide specific details about the data to be collected in the sections below:

- **Type of Data**
  (Please describe the nature of the data to be collected, e.g., personal, sensitive, demographic, health data, etc.):

  The research will rely solely on secondary data gathered from public and credible sources. No human participants will be involved, and no identifiable personal or sensitive information will be collected.

- **Purpose of Data Collection**
  (Please explain the primary objectives of the research and how the data will be used.):

  The primary objective of this research is to determine the short-run and long-run relationship between macroeconomic indicators and stock market performance in Kenya. The data collected will be used to analyze trends and correlations between these macroeconomic indicators and the performance of the Nairobi Securities Exchange (NSE) over time. The findings will contribute to understanding how macroeconomic conditions influence investor behavior and stock market outcomes, thereby informing investment decisions, policy formulation, and academic discourse.

- **Method of Data Collection**
  (Please specify the methods that will be used to collect data, e.g., surveys, interviews, observations, etc.):

  The research will use secondary data collected from the Nairobi Securities Exchange, the Capital Markets Authority of Kenya, the Kenya National Bureau of Statistics, and the Central Bank of Kenya websites.

- **Data Storage**
  (Please describe how and where the data will be stored, including any digital or physical storage methods used to ensure security):

  The data will be electronically stored on a computer that is accessible only to the researcher. No physical data will be processed.

- **Data Access**
  (Please specify who will have access to the data during and after the research process.):

  Only the Principal Investigator, supervisor and document reviewers will have access to the data throughout the research process.

- **Retention Period**
  (Please indicate how long the data will be kept and the conditions under which it will be disposed of or anonymized.):

  The data will be retained securely for two years after the completion of the research. Any data used for publication will be anonymized and aggregated.

5. Consent and Understanding

By signing this form, the PI acknowledges understanding the terms and conditions outlined above, including the legal obligations to adhere to Kenyan data protection laws. The PI understands that they are solely responsible for ensuring the lawful collection, processing, and storage of data.

6. Signatures

- **Principal Investigator (PI) Name**: _Abukutsa Noel Owano___
- **Research Project Title**: _Macroeconomic Indicators and Stock Market Performance: An ARDL Approach ____
- **Date of Data Collection**: _____August 2025 – October 2025_
- **Researcher Signature**: __ 
- **Date**: ____22/07/2025___