

**RELATIONSHIP BETWEEN SELECTED MACROECONOMIC VARIABLES AND
THE FINANCIAL PERFORMANCE OF INVESTMENT BANKS IN KENYA**

BY

JAMES BAARIU MUNGIRIA

**DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENT FOR AWARD OF MASTERS OF COMMERCE IN FINANCE
AND INVESTMENTS IN THE SCHOOL OF BUSINESS AND PUBLIC
MANAGEMENT AT KCA UNIVERSITY**

OCTOBER, 2020

DECLARATION

I declare that this project is my original work and has not been previously published or submitted elsewhere for the award of a degree. I also declare that this contains no materials written or published by other people except where due reference is made and the author duly acknowledged.

Student Name: **James Baariu Mungiria**..... Reg.No: **16/05412**

Signature:.....

Date.....

I do hereby confirm that I have examined the master project of

James Baariu Mungiria

And have approved it for examination.

Signature: Date:

Name: **Dr. Peter Njuguna**

Dissertation Supervisor

ABSTRACT

Currently, investment banks in Kenya are facing a lot of challenges due to *persistence losses*. However, the available studies are inadequate to aid investment banks in overcoming these challenges in Kenya due to mixed findings, resulting in rising uncertainty on equity investments' performance, leading to massive losses among investment banks. This study, therefore, sought to model the relationship between inflation, GDP, interest rates, exchange rates, and financial performance of investment banks to strengthen market sentiment, guide investors and investment banks accordingly. *Arbitrage pricing theory*, *Modern portfolio theory* as well as classical economic theory (*flow-oriented model*) was used. A *causal research design* was adopted and targeted 16 investment banks authorized by CMA, and have been active from July 2006 to December 2019. Population census was employed to collect secondary data on the investment banks. Data on ROA was obtained from the individual investment banks, NSE, and CMA; data on the interest rate and the exchange rate were obtained from the Central Bank of Kenya, while that of Inflation and GDP was obtained from the Kenya National Bureau of Statistics. Data collected was analyzed using Stata version 12. Several techniques were applied to test the existence of dynamic relationships in time series variables. The study found that inflation has *negative significant* influence on financial performance of equity investments among investment banks in Kenya. Also, GDP has *positive and significant* influence on financial performance of equity investments among investment banks in Kenya. Interest rate was also found to have *negative and significant* influence on financial performance of equity investments among investment banks in Kenya. In addition, exchange rate has *negative significant* influence on financial performance of equity investments among investment banks in Kenya. The study therefore recommends any investor including financial investors to methodically analyze inflation trends and understand how it affects the company's financial performance. Investors must also be in a position to predict the future concerning inflation changes. It is also the responsibility of the government to put up policies and strategies that will help to reduce the rate of inflation and therefore encourage positive financial performance of investments.

Keywords: Investment bank, Equity Investment, Macroeconomic variables, Return on Asset.

ACKNOWLEDGEMENTS

First, I am grateful to God for enabling me to pursue a Master's of Science in Finance and investment. Without a doubt, I will forever be thankful in my life to you, God, for allowing me through my project. I would also like to recognize the excellent support accorded by my supervisor Dr. Peter Njuguna, as well as Dr. Munene, Dr. Marangu, for the guidance and astute counsel throughout the development of the disseartation. Additionally, I want to recognize my lovely wife Florence Mukami and daughter's Grace and Heavenly for offering their moral support. Without forgetting my friends Wycliffe, Hilda, Catherine

TABLE OF CONTENTS

DECLARATION	i
ABSTRACT	ii
ACKNOWLEDGEMENTS	iii
TABLE OF CONTENTS	iv
LIST OF FIGURES	vii
LIST OF TABLES	viii
ACRONYMS AND ABBREVIATIONS	ix
DEFINITION OF TERMS	x
CHAPTER ONE	1
1.1 Background of the Study.....	1
1.2 Statement of the Problem	9
1.3 Objectives of the Study	11
1.4 Research Questions	12
1.5 Justification of the Study.....	12
1.6 Significance of the Study	13
1.7 Scope of the Study	14
CHAPTER TWO	15
LITERATURE REVIEW	15
2.1 Introduction	15
2.2 Theoretical Review	15
2.3 Empirical Review	18
2.4 Conceptual Framework	29
2.5 Operationalization of Variables	31

2.6 Summary of Literature Review	31
CHAPTER THREE	33
METHODOLOGY	33
3.1 Introduction	33
3.2 Research design.....	33
3.3 Target Population	33
3.4 Sampling and Sampling Procedure	33
3.5 Research Instrument.....	34
3.6 Data collection procedure	34
3.7 Data Processing and analysis	34
CHAPTER FOUR.....	39
DATA ANALYSIS, RESULTS, AND FINDINGS	39
4.1 Introduction	39
4.2 Descriptive Statistics.....	39
4.3 Trend Analysis	41
4.4 Pre estimation Diagnostic Tests	44
4.5 Vector Error Correction Model.....	49
4.6. Post estimation diagnostics tests	54
CHAPTER FIVE	63
SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS	63
5.1 Introduction	63
5.2 Summary of Findings	63
5.3 Conclusions	65
5.4 Recommendations	66

5.5 Areas for further Studies 67

REFERENCE..... 68

APPENDICES..... 75

Appendix I: Investment banks licensed by Capital market authority (CMA) 75

Appendix II: Data Collection Sheets –Quarterly Averages 76

Appendix III: Research Program 78

Appendix IV: Research Budget 79

LIST OF FIGURES

Figure 2.1: Conceptual Framework	30
Figure 4.1 InfR	41
Figure 4.2 DInfR	41
Figure 4.3 IntR	42
Figure 4.4 DIntR	42
Figure 4.5 ExR	43
Figure 4.6 DExR	43
Figure 4.7 GDP	43
Figure 4.8 DGDP	43
Figure 4.9 ROA	44
Figure 4.10 DROA	44
Figure 4.11 Unit circle	55
Figure 4.12 Impuse response graph.....	61

LIST OF TABLES

Table 2.1: Operationalisation of Variables.....	31
Table 4.1: Descriptive Statistics.....	39
Table 4.2: Multicollinearity Test.....	45
Table 4.3: Correlation and covariance.....	45
Table 4.4: Stationarity Summary for all.....	46
Table 4.5: Lag Selection-order criteria.....	47
Table 4.6.1: LMT for var1.....	47
Table 4.6.2: LMT for var2.....	478
Table 4.6.3: LMT for var3.....	48
Table 4.6.4: LMT for var4.....	48
Table 4.7: Johansen test for cointegration.....	49
Table 4.8: Vector error correction model.....	50
Table 4.9.1 short-run coefficients output.....	51
Table 4.9.2 Adjustments parameters.....	53
Table 4.10: Test for Autocorrelation.....	54
Table 4.11: Results for VEC Stability test	555
Table 4.12: Granger causality Wald tests.....	56
Table 4.13 Test for Autocorrelation (VAR).....	58
Table 4.14 Results VAR model stability test.....	59
Table 4.15.1 Impulse Response function.....	60
Table 4.15.2 Impulse response function.....	60
Table 4.16.1 forecast error variance decomposition.....	61
Table 4.16.1 forecast error variance decomposition.....	61

ACRONYMS AND ABBREVIATIONS

ADF:	Augmented Dickey-Fuller
ARDL:	Autoregressive Distributed Lag
BRICS:	Brazil, Russia, India, China, and South Africa
CBK:	Central Bank of Kenya
CBR:	Central Bank Rate
CMA:	Capital Market Authority
CPI:	Consumer Price Index
ExR:	Foreign Exchange Rate
FP:	Financial Performance
GDP:	Gross Domestic Product
InfR:	Inflation Rate
IntR:	Interest rates
MPT:	Modern Portfolio Theory
OLS:	Ordinary Least Square
PAT:	Profit after Tax
ROA:	Return on Asset
ROE:	Return on Equity
VAR:	Vector Autoregressive Model
VECM:	Vector Error Correction Model

DEFINITION OF TERMS

- Stationarity: A state in time series data whereby its statistical properties such as mean, variance, and autocorrelation are constant over time.
- Causality: Is the ability of past values of one variable to predict another variable.
- Cointegration: Existence of a long-run economic relationship between variables.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Over the years, investment banks have undergone many transformations, beginning just as partnership companies primarily offered underwriting security issuance to more advanced services such as proprietary trading, securities research, and investment management.

In the United States, investment banking dates back to the 18th and 19th centuries but gained popularity after enacting the Glass Steagall act in 1933 during the great depression that saw over 40% of banks either shut down or forced to merge. This law aimed at solving the problem created by the banking industry by erecting a wall to disconnect investment banking from commercial banking. During this period, the majority believed that the banking industry was too greedy, therefore invested in very risky securities using depositor's funds. However, after implementing this law, there was great concern that this legislation created an unhealthy environment in the financial sector hence disadvantaged local banks compared to foreign banks that offered investment and commercial banking. Therefore, this concern triggered the repealing of the Glass Steagall Act by passing the Gramm Leach Bliley Act 1999. The repealing of the act led to many other investment banks' birth, and today the world's largest investment banks come from the United States. These banks have been leaders worldwide for some time, such as Bank of America, Deutsche Bank, Credit Suisse, Barclays, UBS, and JPMorgan Chase.

The United Kingdom, which recently discontinued its European Union membership, is the second robust country in the investment banking industry. Initially, the UK investment banks were more focused on capital market intermediation until investment banks from the United States entered the European and UK markets and forced them to introduce other investment banking services. Today, London is one of the leading investment banking hubs in Europe and globally dominated by top investment banks, including Credit Suisse, Morgan Stanley, JPMorgan, Citibank, Merrill Lynch, UBS, and Bank of America, among others.

In Africa, investment banking has flourished in the last two decades. These include Lagos based investment banks Chapel Hill, Afrinvest, Vetiva, and Ecobank Capital, which started in 2010 and thriving well on African markets with over 700 branches and representative offices in 35 countries, mostly in Africa. South African Investment banks'

capabilities are said to be on par with those in Western countries. For instance, Absa Capital has implemented multi-billion projects like led debut 144a/RegS bonds for Eskom and AngloGold Ashantiqw's 10-year and 30-year notes, summing up to \$1bn. In 2010, Rand Merchant bank participated in the financing of Trafigura, a Dutch commodities firm, to purchase BP downstream assets worth \$296m in East and Southern Africa. Further, Stanbic IBTC (Nigeria) was picked as underwriting manager \$104m and \$306m bonds for Ebonyi and Bayelsa states respectively and joined lead manager on a seven-year note valued \$352m for Lagos state (African Business Magazine, 2018).

In Kenya, the investment banking industry has been growing annually, signifying its importance in the Kenyan economy. Today Kenya is boosting 16 investment banks licensed CMA (2020) since 2002 when African Alliance (K) Ltd was licensed (CMA, 2002). Investment banks have also increased their product portfolio to serve diverse market needs and improve their earnings. Offering an expanded product portfolio has been made possible by technological advancements in the banking sector (Ongore, 2013). According to Kurt (2019), as investment banks expand in size, product portfolio, and earnings, investors demand higher returns. The investment banks have not met since they have been making losses or very insignificant profits (Anyanzwa, 2019). According to Audited Financial Results (NSE, 2020), Genghis Capital Limited recorded a loss after tax of Kshs109.9 million. Faida Investment Bank Limited reported a loss of Kshs 49.7 million, ABC Capital recorded losses of Ksh 37.68 million. Equity Investment Bank recorded a loss of Ksh 18.82 million, while NCBA recorded a loss after tax of Ksh 3.7 million. On the other hand, the Audited report 2019 reviewed that Genghis Capital Limited registered a loss after tax of Kshs 53.7 million (Audited Financial Results NSE, 2020).

Globally, in the year 2019, Investment banks registered a decline in revenue. Dealogic Quarterly Rankings (2020) reported that investment banks registered a decrease in revenue by 5 percent from \$79.8bn in 2018 to \$76bn in 2019. This global decline was associated with a reduction in several regions where Europe registered the highest drop of revenue by 15%, followed closely by Japan which recorded a 13% decline, followed by Australia which reported an 11% decrease and North America which reported the lowest drop of 4% in revenue (Dealogic Quarterly Rankings 2020).

1.1.1 Macroeconomic Variables

Brinson et al. (2009) described macroeconomic variables as the variables that are critical to a large economy internationally, regionally, or nationally that impact an over-sized population rather than any selected individuals.

The majority of scholars argue that Macroeconomic Variables form the general aspect and operation of an economic activity, which includes income, output, as well as the complex interactions between various sectors of the economy. An outstanding macroeconomic environment will, therefore, enhance the company's competitiveness, propelling it to access securities for sustainable growth.

Asaolu and Ogunmuyiwa (2010) reported that macroeconomic variables are barometers for ensuring economic performance, includes real Gross Domestic Product growth rate, rate of inflation, which is measured using CPI, the foreign exchange rate, fiscal status, and the debt level.

Variations related to the movement of macroeconomic forces have a varying impact across the economic spectrum. Therefore, they are closely monitored by financial institutions, governments, and economists to aid in exploring strategies to achieve industrial policy goals and prosperity. Nisha (2015) studied how Indian equity returns are affected by macroeconomic factors and concluded that up-and-coming markets are greatly affected by international macroeconomic factors.

Chowdhury et al. (2019) carried out an analysis to ascertain whether macroeconomic variables influence Bangladesh's economic growth. The researcher considered the GDP growth, real interest rate, and exchange rate measured by Taka against the US dollar; Inflation measured using (CPI) and household consumption expenditures growth as variables of the study. Results from this study reviewed that fluctuations in macroeconomic variables significantly affect the economic growth of Bangladesh, and that model could explain 75.60% of changes in the dependent variable.

Barakat et al. (2015) carried out a study to evaluate Macroeconomic factors' influence on equity Markets in Emerging Markets covering Egypt and Tunisia. Results from the analysis reviewed a causal relationship between the market index in Egypt and the four macroeconomic variables. Additionally, Tunisia results reviewed a causal relationship between the market index and macroeconomic variables except that of Inflation as measured

by CPI. On the other hand, both countries' outcomes also revealed that all four macroeconomic factors co-integrate with the equity market.

Based on scholars' findings, gross domestic product (GDP), exchange rate, Inflation, and interest rate are of significant influence and used as performance indicators of growth and development of an economy. Kwon & Shin (1999) observed that the most prevalent macroeconomic variables are inflation, GDP, interest rates, foreign exchange rates, and market risk and that the performance of organizations are affected by the economy of the country.

Tripath& Arnav (2014) conducted empirical research on BRICS markets. The purpose of the analysis was to assess whether a long-term causal association existed between inflation and return on equity. The results established a significant and positive relationship between equity returns and Inflation in India and China. Also, the results proved a significant negative association in Russia and Brazil.

The Economic Survey (2020) reported a rise in yearly inflation from 4.7 percent in 2018 to 5.2 percent in 2019. In comparison, annual inflation rates grew from 0.052 in December 2019 to 0.0562 in April 2020 (Economic survey, 2020). Consumer prices rose by 0.86 percent in April 2020 from 0.19 in March of the same year (Economic survey, 2020). Kenya's central bank estimates the Inflation to range 2.5-7.5 percent in the near term (Trading Economics of Kenya, 2020).

According to (Daniel, 2013), during a period of high GDP growth and an increase in aggregate demand, equity investment experiences solid performance and quickly obtains funds to fund their acquisitions. This translates to a more substantial and more diversified portfolio for investment firms, which subsequently are more likely to post good results. "It is not surprising that cornerstone partners of investment firms such as hedge funds, mutual fund managers, insurance companies, and pension funds have sought to increase their exposure to this rapidly growing asset class in their fund allocations, particularly when faced with high liquidity."

Kimani and Mutuku (2013) evaluated the effect of interest rate, Inflation, GDP, and exchange rate on the 20-share index at NSE using quarterly data collected between 1998 and 2010. The analysis revealed a statistically significant but negative relationship between the

20-share index and interest rate, Inflation, and exchange rate. However, the GDP had a positive, meaningful relationship.

Zhang and Dong (2011) examined the factors determining the banking industry's profitability in the United States. Conclusions show that interest rate and GDP are essential macroeconomic variables influencing bank returns. A study was conducted by Yahyazadehfar and Babaie (2012) to analyze the effect of the nominal interest rate on the equity market index in Iran. The study established a significant negative relationship between the nominal interest rate and Iran's equity market index in both the long and short run. Obudah (2013) carried out a study on the impacts of interest rate and debt on private equity investment in Nigeria. The research reviewed that GDP positively affected equity investment. On the other hand, interest rates negatively affected equity investment in Nigeria.

According to official data from the (World Bank, 2020) and Kenya's trading economics (2020), in 2019, Kenya's GDP was worth 89 billion US dollars, equivalent to 0.07 percent of the world economy. Similarly, the Real GDP reported in Economic Survey 2020 is estimated to have slimmed down to 0.054 in 2019, contrasted to 6.3 percent in 2018, denoting a 0.7 percent decrease in growth.

Mugambi and Okech (2016) conducted a study on how macroeconomic variables influence listed banks' equity returns. The study's results reviewed that exchange rate and interest rates negatively and significantly affected bank equity return at a 5% level of significance. Economic survey 2020 reported a downward adjustment of the Central Bank Rate (CBR), from 0.09 in July 2018 to 0.085 in November 2019. In comparison to 2018, interest levels were very friendly to economic development in 2019 (Economic survey, 2020). Similarly, in April 2020, the Central bank of Kenya lowered the interest rate to 0.07, aiming to protect the Kenyan economy (Economic survey, 2020). The forecast for economic growth was also reduced to 0.023 in April 2020 as opposed to 0.034 in March the same year (CBK, 2020).

The study carried out by Azar (2014) on the determinants of US stock returns, which mainly sort to scrutinize the impact of Inflation, inflation uncertainty, and relative adjustments in the US dollar on US stock returns established a significant relationship between the US S&P 500 and the US dollar.

A study was carried out by (K. Shula, 2017) to investigate the effect of GDP, Inflation CPI), Interest, and Exchange rates on the Stock Market in Zambia. The study reviewed that the coefficient from RGDP and exchange rate were positive, while inflation and real interest rates are negative.

Junkin (2011) used data collected between 1995 and 2000 to study the impact of GDP, exchange rate, and Inflation on the FTSE/JSE All Share Index in South Africa. The results show a positive relationship between the FTSE/JSE All Share Index and the exchange rate in both the long-run and short-run. Notably, the Economic survey (2020) reported that compared to other trading countries, the Kenyan shilling performed well with a 113.0 trade-weighted index in 2019 compared to 1.115.7 in 2018, denoting 0.023 improvements. Kenya shilling has been performing dismally against stable currencies in the last four months (CBK, 2020). As of May 2020, the shilling was trading at 106.65 against the US Dollar (Trading Economics of Kenya, 2020).

1.1.2 financial Performance of Investments banks

Globally, it has generally accepted that every investor's aim in every sector, whether a rational or irrational investor, is to maximize investment return. Bodie (2007) observed that money invested should give back the expected positive returns to the investor since money hidden elsewhere yields nothing to the investor. Equity investment returns are neither assured nor fixed but are based on the principal assets' performance since investment banks have different streams of income.

Audited Financial Results (NSE, 2020) reported Dyer and Blair Investment Bank 2019 had a total income of Kshs 240 million from nine sources, including; Brokerage commissions 41.44%, Advisory and consultancy fees 19.19%, Rental income 12.73%, Gain/(loss) in fair value of investment property 11.87% Dividend income 6.41%, Unrealized gain/(loss) from dealing in shares 3.88%, Other income 3.74%, Interest income 0.47% while Realized gain/(loss) from dealing in shares 0.27% being the list source. While KCB capital limited had a total income of Kshs 151 million from the four sources Interest Income 36.17%, Advisory/Consultancy Fees 27.48%, Realized Profits/(Loss) on investments 19.58%, and Brokerage Commissions 16.76% as income sources. SBG Securities Limited 2019 reported a total income of Kshs 415 million from four sources Brokerage Commissions

60.87%, Advisory/Consultancy Fees 22.71%, Interest Income 13.37%, and other income 3.06% (Audited Financial Results NSE, 2020).

In this study, the investment bank is a direct investor. In contrast, the investor who avail funds to the investment bank and would benefit when the investment bank declares dividends, bonus issues, or the right issue from profit after tax (PAT) is the indirect investor. Two measures are used to measure equity investment performance, i.e., return on asset (ROA) and return on equity (ROE), where the return on asset measures the proportion of profit generated from one unit of asset and management efficiency in utilizing assets at disposal. Athanasoglou et al. (2005) presented a ROA as a proportion of net income (PAT) over the average asset. Return on equity (ROE) is a financial ratio that measures company efficiency in generating shareholder equity profits. ROE measures the funds that are payable to the investor at the end of the period, and it reflects the effectiveness of management in utilizing shareholders equity. As observed by Khrawish (2011), ROE is calculated as a proportion of Net Profit after Tax (PAT) against Overall Equity Capital, usually expressed in percentage. The only difference between the two is that ROA considers the financial leverage, while ROE does not.

Equity investment is affected either positively or negatively by the host company's Performance due to management's inability to effectively and efficiently employ the right strategy, backed up by model while analyzing the situation at hand. As much as earnings can be very high where equity investment is involved, the risks are equally high and can result in high losses. Investors participate in equity investment expecting that returns will improve in the form of capital dividends and capital gains. If the value of equity investment rises, investors should receive the monetary difference if they sell their equities.

Hall (2020) concluded that equity investment has many benefits. First, investors have a diversified investment option. Second, the possibility of increasing the value of the money invested is very high paid in the form of dividends and capital gains. Third, investors have an opportunity to increase investments through rights shares.

Investors engage in equity investments of both listed and non-listed companies even though they carry a significant level of risk due, of which they expect to be compensated (Samila& Sorenson, 2011). Equity investments are affected by market risks directly and often fall or rise in value depending on market forces. Consequently, investors can lose a

massive amount of investments due to market fluctuations, including foreign currency fluctuation, Inflation, and interest rate risk, which could hurt the company's value (Hall, 2020). On the other hand, (Babarinde, 2012) alluded that traders view market sentiment as the most challenging strategy to master. Market sentiment refers to the participants (investors) overall attitude of the market, collectively or individually, in most cases biased, subjective, and obstinate, particularly without a supporting approach or model. Therefore, this study seeks to model the relationship between these market fluctuations on financial performance of investment banks to strengthen market sentiment (speculative investment) and guide investors and investment banks accordingly.

1.1.3 Investment Banks

Investment banks in Kenya are private and government entities registered under the 1989 Capital Markets Authority Act, which empowers, regulates, and oversees investment pursuits (CBK, 2008). As of April 2020, (CMA, 2020) reported that the Capital Markets Authority had licensed 16 investment banks listed in Appendix 1. Capital market is a securities market where borrowers raise long-term funds and where investors (lenders) and borrowers (issuer of securities to the public) of capital converge. In 2009, the Capital Markets Regulations were revised to raise the paid-up capital for investment banks from Kshs 30 million to Kshs 250 million as of 1 January 2011 (CMA, 2009). The amendments intended to improve the confidence of investors and the overall stability of the market since a high level of capitalization is correlated with high efficiency and technical capability, thereby enhancing services.

Investment banks in Kenya form an integral component of the financial system that focuses on generating capital for long-term developments for government, companies, and other entities. Investment banks usually assist in the sale of securities, underwrite equity securities and new debts for all types of firms, broker trades for both individuals and firms, and facilitate mergers and acquisitions. Investment banks also guide firms in issuing and placement of securities. They are particularly useful when a firm or individual investor wants to buy and sell shares, bonds, T-bills, and securities (Surbhi, 2017). Investment banks also maintain securities such as equities in corporations, debt securities, money market securities,

and mortgage-backed securities. These investment securities provide investment banks with profits from capital gains when sold and the advantage of liquidity (Chen, 2020).

Investment banks own trading where they price shares higher than the purchase price and invest in long-term investments on behalf of investors; therefore, accepting significant risk. Surbhi (2017) observed that investment banks risk losing money if the regulator realizes that they overvalued their shares since they will be forced to sell their shares for less than they paid.

Investment banks in Kenya serve diverse clients ranging from private firms, public firms, and the government. Firms such as Standard Investment Bank have been in the investment banking industry for a long time. They have amassed a lot of experience executing private placement, government privatizations, first public offerings, and secondary offerings. Besides, investment banks work with SMEs in Kenya to help them access capital and listing on the market segment of capital markets (Standard Investment Bank, 2020).

As argued by (Ruibi, 2016), efficient management of investment banking is a prerequisite towards strengthening its capital bases and asset quality, reduction of operational costs, and pursuing diversification strategies successfully in Kenya. Small investment banks struggle to achieve efficiency; thus, their contribution to the economy is lower than large established counterparts.

1.2 Statement of the Problem

From a broader perspective, it is generally accepted that every investor aims to maximize return on their investment. Bodie (2007) observed that money invested should give back the expected positive returns to the investor since money hidden elsewhere yields nothing to the investor. Stredwolf (2018) noted that investors aim at earning high profits, maximizing their future wealth. NSE (2020) reported that Investment banks in Kenya face increased pressure from investors to give them a decent return. However, on the contrary, the cooperative bank annual financial report 2019 cast a shadow of uncertainty surrounding its investment banking unit (Anyanzwa, 2019). The bank further reported that many commercial banks with investment banking units struggle to sustain them due to persistent losses, therefore agreeing with (Kenya Bankers Association, 2019) assertion that very few investment banks have remained profitable in Kenya. Interestingly, these banks are torn between selling off and

shutting down those loss-making business segments since they do not want to send wrong signals on the market since they are considered more capitalized players (Anyazwa, 2019).

According to Audited Financial Results (NSE, 2020), Genghis Capital Limited recorded a loss after tax of Kshs109.9 million; Faida Investment Bank Limited reported a loss of Kshs 49.7 million; ABC Capital recorded Ksh 37.68 million losses. Equity Investment Bank recorded a loss of Ksh 18.82 million, while NCBA recorded a loss after tax of Ksh 3.7 million (Audited Financial Results NSE, 2020). On the other hand, the Audited report NSE 2019 reported that Genghis Capital Limited registered a loss after tax of Kshs 53.7 million (Audited Financial Results NSE, 2020).

Analysts argue that these losses are reflections of flawed strategy and overconfidence. According to (Anyazwa, 2019), commercial banks with investment units capitalized on their vast customer base to build relationships that did not yield much in their investment business units, suggesting that other factors greatly influence equity investment performance. Asaolu and Ogunmuyiwa (2010) reported that macroeconomic variables are barometers for ensuring the economy's performance, while (Nisha, 2015) observed that up-and-coming markets are greatly affected by macroeconomic factors. The Economic survey (2020) reported a slowed down growth where yearly inflation grew from 0.047 in 2018 to 0.052 in December 2019. Similarly, the Real GDP reported in Economic Survey 2020 is approximated to have slimmed down to 0.054 in 2019, contrasted to 6.3 percent in 2018, denoting a 0.7 percent decrease in growth. Simultaneously, the Kenyan shilling performed well with a 113.0 trade-weighted index in 2019 compared to 115.7 in 2018, implying a 2.3 percent improvement (Economic Survey, 2020). Similarly, a downward adjustment of the Central Bank Rate (CBR), from 0.09 in July 2018 to 0.085 in November 2019, was reported (Economic Survey, 2020).

Several studies have been done on the topic both internationally and locally. Zhang and Dong (2011) carried out research and reviewed that interest rate and GDP are critical macroeconomic variables influencing bank returns. However, this study did not consider investment banks that operate under different regulations, therefore not a representative. Ngeno (2018) surveyed the determinants of investment banks' financial performance in Kenya but only focused on internal variables that affect investment banks. Mutekwa et al. (2017) commissioned a survey regarding factors affecting security trading in Kenya's

investment banks. However, this analysis focuses on public awareness, while current studies would examine the effect of macroeconomic factors on the profitability of equity investment. Ruibi (2012) published a report on how Investment Banking is impacting economic growth in Kenya. The finding shows that the total within the investment market influences economic growth. However, the researcher only linked internal deliverables, including the value of stocks traded and trading cycles with economic growth. Kamamia (2018) undertook an analysis of the contributions of macroeconomic variables to the revenue growth of investment banks in Kenya. Finding implies that the inflation rate is positively associated with significant impact, while interest levels have a substantial adverse influence on financial growth. The researcher contrasted, however, with (Kiganda, 2014), who observed that these variables have a negligible effect on bank profitability. On the other hand, the researcher doubts the findings by acknowledging that the regression model applied has many shortcomings, therefore recommending using a superior model in a different study.

From the empirical review, it is now evident that information is scarce with mixed reactions conflicting findings, and glaring inconsistencies, probably due to approaches and investigations methods. As a result, the current studies are inadequate to aid investment banks in overcoming their challenges in Kenya due to mixed findings, resulting in rising uncertainty on equity investments' performance, leading to massive losses among investment banks. On the other hand, these studies majorly favored commercial banks and not investment banks, which operate under different regulations. Hence, these studies cannot be considered to be representative. This study, therefore, sought to model the relationship between inflation, GDP, interest rates, exchange rates (market fluctuations), and financial performance of investment banks to strengthen market sentiment (speculative investment), guide investors and investment banks accordingly.

1.3 Objectives of the Study

1.3.1 General objective

The study's general aim was to evaluate the relationship between selected macroeconomic variables and financial performance of investment banks in Kenya.

1.3.2 Specific objective

- 1) To evaluate the relationship between inflation and the financial performance of investment banks in Kenya.
- 2) To assess the relationship between interest rates and the financial performance of investment banks in Kenya.
- 3) To investigate the relationship between foreign exchange rate and financial performance of investment banks in Kenya.
- 4) To determine the relationship between gross domestic products and financial performance of investment banks in Kenya.

1.4 Research Questions

- 1) What is the relationship between inflation and the financial performance of investment banks in Kenya?
- 2) What is the relationship between interest rates and the financial performance of investment banks in Kenya?
- 3) What is the relationship between foreign exchange rate and financial performance of investment banks in Kenya?
- 4) How do gross domestic products relate with the financial performance of investment banks in Kenya?

1.5 Justification of the Study

The recent trend of poor financial performance among investment banking heavyweights mirrored an industry struggling and lost its lucrativeness. It is no longer an investment where big cats such as Cooperative bank, Equity Bank, and NIC bank scrambled to acquire stock brokerage firms. Investment banks and commercial banks with investment banking units are struggling due to persistent losses and uncertainty. Generally, banks hate losses with passion because shareholders' pressure for decent returns is too much. Therefore, they are torn between selling off and shutting down those loss-making business segments even though they do not want to send wrong signals to the market to retain investors' confidence.

First, if this trend of loss-making continues, it will reach a time when big cats will crack the whip and start exiting the industry one after the other, and perhaps bringing to an end the industry that CMA is very determined to see it grow. Therefore, this is the right time for policymakers and analysts to understand these persistent losses. Investors need to get

clear insights about this industry's future before committing their hard-earned cash to such investments.

Secondly, the empirical review from other sectors suggests that this trend of loss-making results due to macroeconomic variables fluctuations. However, they cannot appropriately guide policy action and strategy because of evident inconsistencies. Thus, this study is justified both in urgency and importance to investigate how Inflation, GDP, interest rates, and exchange rates affect the financial performance of investment banks in Kenya.

1.6 Significance of the Study

1.6.1 Investment Banks

Struggling investment banks in Kenya might find this study helpful in developing strategies and policies to improve their financial performance. Most importantly, they can use the study findings to build better economic models to guide their equity investments.

1.6.2 Institutional and Individual Investors

This study benefits both individual and firm investors. The outcomes of this investigation aid the understanding of macroeconomic factors that impact their investments, thereby enabling them to hedge. For institutional investors, this study provides useful information for the creation of volatility models. In addition to helping investors determine investment spending, volatility models can forecast shares and analyze the risk of keeping them.

1.6.3 Regulators

This research is of great importance to regulating agencies in Kenya, such as CMA, to effectively and efficiently offer support to various players such as investors, Nairobi Security Exchange, brokerage firms, and investment banks in the industry on the provision of the investment services.

The study further provides the basis to the regulating authority to draft some legal structure to steer the investment banking business, in particular, to grow more resourcefully and with negligible risks.

1.6.4 Other Researchers

Other researchers and scholars might also find this study highly valuable. They can use the outcomes of the review as reference material in their studies. Suggestions for further investigations may be used by researchers to advance research on similar or closely related topics.

1.7 Scope of the Study

This study investigated the relationship between selected macroeconomic variables and financial performance of equity investment among Kenya's investment banks. The study focused on four macroeconomic variables, namely Inflation, gross domestic product (GDP), interest rates, and foreign exchange rates. A causal research design was adopted and targeted all investment banks authorized by CMA, and have been active from July 2006 to December 2019. VAR model VEC model was used. Granger causality test model measured the linear causation between macroeconomic variables and the financial performance of investment banks in Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a literature review of the study. First, a theoretical investigation is presented, discussing the theories relevant to the study. Second, the chapter presents an empirical analysis by discussing past studies related to the macroeconomic variable's effect on the performance of investment banks. Third, the section provides a summary of the literature review and research gaps by critiquing reviewed studies. The chapter ends with an illustration of the conceptual framework.

2.2 Theoretical Review

This section reviews three main theories that are relevant to the current study. These theories are the classical theory of Inflation, modern portfolio theory, classical economic theory (flow-oriented Models).

2.2.1 Arbitrage Pricing Theory (APT)

APT is an asset pricing model that assumes that returns of an asset can be predicted with the linear relationship of returns of expected assets alongside macroeconomic variables that impact the asset's risk. APT was developed by (Stephen Ross, 1976), an American economist, as an alternative to the capital pricing model. Whereas the capital market pricing model supposes markets are perfectly efficient in pricing securities, APT sometimes presupposes markets overprices securities before the market finally corrects to fair value. APT provides investors and analysts a multi-factor pricing method for securities on the basis of the relationship between risks involved and the expected return of financial assets (Paavola, 2006).

The objective of ATP is to pinpoint securities' fair market price that may not be priced correctly. This theory presupposes that market action is not always perfectly efficient and sometimes leads to mispricing of assets- either undervalued or overvalued- for a short period. Nevertheless, to an arbitrageur, this brief mispricing of securities may come as an opportunity to make profits with fewer risks.

APT is considered more complex and flexible than the capital pricing model. APT allows analysts and investors to customize their market insights. However, it might be more difficult to use because it requires a lot of time to evaluate all the factors that may affect asset prices.

There are several assumptions in the arbitrage pricing theory. First, this theory works with a pricing model that considers multiple sources of risk. Whereas the capital market pricing model looks at only one factor of the risk level of the general market, the APT model considers several macroeconomic factors that influence the risk and returns. Second, the macro-economic factors carry a systematic risk that can be lowered through diversification. Third, investors have to choose their own risk and returns profile based on the sensitivity and premiums of the macroeconomic risk factors. High risk takers will exploit the variations in real and expected earnings on the asset using arbitrage.

APT is highly relevant in this study. APT concerns with identifying macroeconomic variables which influence stock returns. In this study, APT influences the financial performance of equity investments among investment banks. Macroeconomic forces affect dividend payouts providing evidence to the belief that an equilibrium exists between macroeconomic variables and equity investment performance (Tursoy, Gonsel & Rjoub, 2008). APT helped discover the relationship between macroeconomic variables and the financial performance of equity investments among investment banks in Kenya.

2.2.2 Modern Portfolio Theory (MPT)

Harry Markowitz (1952) pioneered a philosophy popularly known as the modern portfolio theory (MPT). MPT explains how risk-averse investors should create investment approaches to maximize or enhance investment returns depending on a given degree of market uncertainty, noting that higher yields are correlated with higher risks. According to (Markowitz, 1952), it is possible to build an investment portfolio to offer the highest potential returns for a given amount of risk.

This theory argues that investment return characteristics and risk should not be the only determinants. Still, one should evaluate them based on how the investment impacts the overall portfolio's return and risk. MPT strongly suggests an investor should construct a collection of numerous assets to maximize gains at a specific degree of risk. Equally, given

the optimal amount of projected investment returns, an investor could create a portfolio with the lowest potential risk. Based on statistical parameters like correlation and variance, a return on investment is less significant than the performance of portfolio investment (Chen, 2020). MPT assumes investors are generally risk-averse, which implies investors favor a rather diversified investment for a given level of returns.

Further, the theory assumes that if investors expect high yields, they are more willing to take up higher risk portfolios. A portfolio's risk is a complicated function of correlations of each pair of assets and variances of each asset (Chen, 2020). This theory also assumes that investors are well balanced and markets highly organized.

This theory is highly relevant in asset investment and Performance within investment banks. Expected returns and associated risks are key issues that determine the actions of these banks concerning asset investments. This theory offers a context that makes the whole investment process possible. Through this theory, it has been possible to inspire inactive investment techniques and shape the management of institutional portfolios.

The MPT is found highly relevant to the current study. The present research is shaped by the uncertainty of both individual and institutional investors in equity investments. Investors diversify their portfolio by investing in more than one equity investment to reap the maximum benefits of diversification, the benefit being risk minimization. This theory quantifies the benefits of diversification and the correct combination of stocks in one's basket. This theory champions the expected returns and associated risks as critical factors considered in investment. Investors' uncertainties are associated with impending investment risks. The risk for individual stock returns has two parts: systematic risk and unsystematic risk (Mcclure, 2020). This study sought to look at the systematic risk that accompanies macroeconomic variables such as interest rates. These are risks that are beyond the investor's control. However, investors need to understand them and factor them in their investment models.

2.2.3 Classical Economic Theory

The very earliest concept of this theory is that of 'flow-oriented' models (Dornbusch and Fisher, 1980). This theory opines that equity markets and currency fluctuations can relate, implying that a shift in currency exchange shapes market competitiveness, returns of firms,

ultimately manipulating broader economic variables. In other words, currency fluctuations would trigger the equity market (prices). This concept is founded on the general perspective of the Efficient Market Theory (EFM). That share values represent the estimated current value of the forecasted future cash flows of a firm, implying that any trend that influences the cash flow of business would be expressed in the share price of that firm, as EFM suggests. According to (Frank and Young, 1972), one of the early divergences in manipulating equity prices by exchange rates was whether the organization was of a global corporate or national nature. If the company is beyond the borders, the fluctuations in currency rate could impact the value of the overseas operations, reflecting in the financial statement as either gain or loss, influencing the share price either downwards or upward. As evidenced in the empirical review, most organizations are affected by variations in exchange rates. Implying organizations should take precautions to reduce the impact of these fluctuations on their performance.

This theory informed the study since exchange rates results to lower economic activities, reducing the earnings due to low investment returns of investment banks. On the other hand, a sudden rise in exchange rates heightens uncertainty about the economy leading to lower earnings forecasts for investment banks, affecting their performances.

2.3 Empirical Review

There exists literature on how fluctuating macroeconomic factors relate with equity investment performance. The majority of studies, both international and local, analyzed considered all the four key macroeconomic factors under review. The findings of the investigations have documented that there exists a correlation linking equity investment performance and macroeconomic variables. However, these past studies have given conflicting results.

2.3.1 Inflation and Financial Performance

Inflation, according to (Frisch, 1984), refers to a sustained overall spike in general price levels, as determined by an economy's consumer price index. Higher Inflation in the country deteriorates customers' purchasing, thereby reducing the demand for goods. Thus, high inflation rates impact negatively on the Performance of companies. As such, an investor needs to methodically analyze inflation trends and understand how it affects the company's

financial performance. Investors must also be in a position to predict the future concerning inflation changes (Doepke, Lehnert & Sellgren, 2010).

Tripath & Arnav (2014) conducted empirical research on BRICS markets. The study aimed at establishing whether causality exists among Inflation and equity return. The study factored quarterly data for 13 years, covering the year 2000 to 2013, and employed Pedroni's panel co-integration test and Johansen test. The results reviewed a noteworthy and positive relationship between price rises and equity earnings in India and China and significant negative association in Russia and Brazil. On the other hand, Johansen co-integration results showed no long term equilibrium association in Russia, India, and South Africa, while Brazil and China established long-term equilibrium associations. Also, the findings reviewed no long term relationship using the Pedroni panel co-integration test.

Yadav, Lama, and Rajangahlot (2015) explored the effects of price increases on the returns of the equity market. The research used statistics for ten years at the Karachi stock exchange from December 2004 to December 2014. It tested both short-run and long-run dynamics in connection to Inflation and stock market index. This study measured Inflation using CPI and considered the Karachi stock 300 indexes' end month value to signify the stock market returns monthly. The research adopted a simple regression model to analyze the associations of the endogenous variables and exogenous variables. The researcher confirmed an inconsequential positive correlation linking price increases and the performance of the stock market in Pakistan.

Silva, N.L.C. (2016) conducted a study to analyze the consequence of price increases on share prices in Sri Lanka. The study sought to test if there is a connection between the inflation rate and stock prices. The researcher factored statistics for a period of 10 years, covering 2004 to 2014, and adopted a linear regression model. The results reviewed that Inflation is negatively related to stock prices; however, proportion change reviewed that inflation growth rate positively associated with stocks return.

Mbulawa, S. (2015) carried out a study on how stock market performance is influenced by Inflation in Zimbabwe. The researcher measured equity market performance with the Zimbabwe stock exchange industrial index as well as Inflation using CPI. The study factored data for 29 years, covering 1980 to 2008, and employed the VECM to analyze the correlation in the long term and short term. The study results concurred with (Fishers, 1930), which

reviewed a positive correlation among Inflation and equity prices, although statistically insignificant in the long run.

A study was carried out by (Reddy, 2012) on the consequences of interest rate, GDP, and Inflation on equity market yield among trading companies for the period of 1997 to 2009. Reddy used regression analysis to establish the connection linking the chosen macroeconomic factors and equity yield. The study revealed that price increases, GDP, and interest rate explained 0.956 of the deviation in equity prices. Further, a reduction in Inflation caused a rise in stock prices. Reddy recommended that India's government implement strategies and policies that can lower inflation rates to encourage transactions and investments in equity.

Hsing. Y (2012) carried out a study on how macroeconomic variables influence Poland's equity market index: specifically, the researcher investigated the impact of real GDP, monetary strategy, fiscal strategy, and the exchange rate. The study used quarterly data for ten years, covering 2000 to 2010, and applied the GARCH MODEL in empirical estimation. The results from this study reviewed that the equity market index has a positive association with real GDP in Poland. In contrast, exchange-rate, interest rates, and expected inflation negatively influenced the german equity index.

Azar (2014) analyzed the determinants of US stock returns. Specifically, the research investigated the impact of Inflation, inflation uncertainty, and relative adjustments in the US dollar on US stock returns. The study used Monthly data sets, and the stock market index was measured using the S&P 500, while US dollar adjustments were measured using the US trade-weighted foreign exchange rate index. Both least squares regressions, GARCH regressions, and least square regressions were estimated. The research established that both US inflation and US inflation uncertainty do not impact US stock market returns.

Jamil &Ulhal (2013) investigated how the Foreign Exchange rate influences stock prices in Pakistan. The specific objective was to understand the short-run sensitivity and how equity returns respond to fluctuations of exchange rates. The researcher used VECM to analyze the relationship and concluded that the exchange rate variations significantly influenced Pakistan's stock market returns in the short run.

Ibrahim &Agbaje (2013) investigated the long-run associations and dynamic interaction linking price increases and equity income in Nigeria. The study used monthly

statistics of the All Share Price Index and CPI for 13 years, covering 1997 to 2010. The researcher employed the Autoregressive Distributed lag (ARDL) to investigate the long-run and short-run association. Results from the study established the presence of both short-run and long-run association linking equity yield and Inflation. Also, the findings reviewed that Inflation is a positive relationship and statistically significance.

A study on the impact of macroeconomic factors on the Ghanaian equity market returns was explored by (Kuwornu, 2012). The study used monthly data collected between 1992 and 2008 and applied the Johansen Multivariate Co-integration Procedure. According to the findings obtained, a co-integration exists between equity returns and inflation rates at a 5 percent significance level.

Barasa (2014) used secondary data collected between 2000 and 2013 to study the determinants of Performance of NSE. He employed a descriptive research design. The findings show that money supply, price increases, GDP per capita, and NSE 20-share index deteriorated within the 2013 electioneering time. The study also established an inverse relationship between Inflation and stock market yield. The researcher noted an inverse and insignificant connection linking Inflation and stock market performance.

Ochieng and Oriwo (2012) assessed the impact of macroeconomic variables, namely, inflation rate, lending interest rate, 91-day Treasury bill rate on the NSE all-share index. To determine whether co-integration existed between macroeconomic variables and the NSE all-share index, they used the ARDL bound test. This was the most preferred econometric test because it permits simultaneous analysis of the study model's long-run and short-run parameters. The research established a negative relationship between the 91-day Treasury bill rate and the NSE all-share index. Results showed a negative but insignificant relationship between Inflation and the NSE all-share index.

2.3.2 Interest rate and Financial Performance

According to (Banton, 2020), the interest rate is the amount a lender charges for the use of assets expressed as a percentage of the principal. Interest rates affect the cost and accessibility to credit facilities by companies. A lower interest rate implies the company can access a credit facility at a lower price. With the declining cost of obtaining credit, the profitability of firms increases. However, when interest rates are so high, the cost of securing

credit increases, which in turn increases production costs. The increased production cost leads to higher product prices, which results in lower demand and company earnings. Therefore, investors should consider the country's interest rates and carefully analyze how it affects companies' financial performance (Doepke, Lehnert & Sellgren, 2010).

Yahyazadehfar and Babaie (2012) conducted a study to evaluate the impact of the nominal interest rate on Iran's equity-market index. Data for the period 2001 and 2011 was used. They also used a vector error correlation model (VECM) and the Johansen-Juselius cointegration test for data analysis. They established a significant negative association in both the long and short term between the nominal interest rate and Iran's stock market index.

Zhang and Dong (2011) analyzed variables that determine banking industry efficiency in the United States. They examined both macroeconomic variables and bank characteristics. The conclusions show that interest rate, as well as GDP, is essential macroeconomic factors influencing bank returns.

A study by (Ozbay E, 2009) sought to create a connection among macroeconomic factors and returns on equity in Turkey. Specifically, the study sought to establish if there is causality between equity returns and interest rates, exchange rate, Inflation, money supply, and the real economy. The study factored data for 11 years, covering 1998 to 2008, and employed the granger causality model to investigate the relationships. The findings from the investigation reviewed that interest rate (OIR) and inflation rate (CPI) and CD/GDP Granger causes stock returns. In contrast, stock prices were negatively correlated with the interest rate, while other variables like Inflation, the exchange rate was statistically insignificant.

Obudah, B.C (2013) produced a report on the impacts of interest rate and debt on Nigerian private equity investments. The study used a cointegration technique, OLS, and error correction analysis to test for long-run relationships and analyzed statistics covering 1987 to 2010. Outcomes reviewed that GDP positively affected equity investment. Besides, interest rates unconstructively changed equity investment in Nigeria.

Olweny and Omondi (2011) evaluated the link between macroeconomic variables and equity return volatility on the NSE. The study considered fluctuations in Inflation, interest rate, and foreign exchange rate, where statistics for ten years was used spanning 2001 to 2010. Researchers used Threshold Generalized conditional Heteroscedasticity and Exponential Generalized Autoregressive Conditional Heteroscedasticity. The findings showed that all the macroeconomic factors being studied affected the volatility of stock return.

Kamamia (2014) attempted to determine how investment banks' efficiency in Kenya is affected by volatility in macroeconomic variables. The variables of concern included interest rate, money supply, unemployment, inflation, exchange rate, and GDP, where the efficiency of investment banks was calculated using the ROA. Secondary quarterly statistics spanning 2008 and 2017 was applied. Multiple linear regression models and descriptive statistics were employed to analyze data with the aid of SPSS version 22. The results indicate that price variation, interest rates, and exchange rates significantly affected the success of investment banks in Kenya.

Ngeno (2018) analyzed the determinants of the financial performance of investment banks in Kenya. He used liquidity, size, leverage, and operating efficiency as independent variables and profitability as dependent variables. He used descriptive research design and data for the period between 2013 and 2017. He analyzed ten investment banks that were active between 2013 and 2017. Both descriptive and inferential statistics were used to analyze data, and the test of significance was done at a 5% level. He established that bank leverage and size had a negative and insignificant relationship with bank profitability. Besides, operating efficiency had a significant effect on bank profitability.

Mugambi and Okech (2016) conducted a study on how macroeconomic variables influence equity returns of listed banks. The study factored exchange rate, interest rate, Inflation, and GDP to be the key macroeconomic variables. Secondary data was extracted from CBK, Bloomberg databases, and KNBS for a period of 15 years, covering 2000 to 2015. The study carried out correlation analysis and unit root tests and adopted a linear regression model using (OLS). The results from the study reviewed that exchange rate and interest rates negatively and significantly influenced bank equity return at a 5% level of significance. On the other hand, inflation rates positively and dramatically changed equity return, while GDP had an insignificant impact at a 5% level of importance.

2.3.3 Exchange rate and Financial Performance

The exchange rate measures the value of the currency of one nation to that of another state or economic region. The exchange rate for the euro, for example, shows us how much a euro is worth in a foreign currency. Exchange rates are of two types, which include flexible and fixed exchange rates. Flexible exchange rates are strongly influenced by Forex or currency markets, most of which fluctuate due to the prevailing market dynamics. Flexible rates, according to forex traders, match the valuation of the currency; where, therefore, their decisions are dependent upon various factors, including the debt level of the state, the performance of the economy, as well as the interest rate policies by the central bank. A nation is considered to have a stable exchange rate if its currency does not fluctuate due to a shift in the Forex market. Therefore, every country ensures that its currency value against other currencies remains constant by trading in a large volume to maintain their currency value (Doepke, Lehnert & Sellgren, 2010).

Zhao (2010) examined the dynamic relationship between exchange rate and equity price. The researcher factored 18 years of monthly data covering 1991 up to June 2009 and used both the VAR model and multivariate generalized autoregressive conditional heteroskedasticity (GARCH) model. Co-integration test results reviewed the existence of an unstable long-term association between real exchange rate and equity price. The study carried out by Azar (2014) on the determinants of US stock returns, which mainly sort to scrutinize the impact of Inflation, inflation uncertainty, and relative adjustments in the US

dollar on US stock returns established a significant relationship between the US S&P 500 and the US dollar.

Suriani et al. (2015) investigated the Exchange Rate influence on Equity Market in Pakistan. The study was carried to analyze if the exchange rate fluctuations affect the equity market. The researcher factored monthly statistics for the period of 5 years, covering 2004 to 2009, which was obtained from the state bank and Forex. The researcher measured equity prices using the KSE-100 index, while Pak Rupee against the US dollar was used as a measure of the exchange rate. The outcome of the research reviewed that the equity market in Pakistan is not impacted by fluctuations in the exchange rate.

Naik and Padhi (2012) undertook an inquiry into how the Indian stock market index is substantially swayed by macroeconomic factors. The researcher factored statistics for 18 years, spanning from 1994 to 2011, and employed the VEC model, Granger causality, as well as the co-integration test. Findings show a significant positive relationship on the long-term between the equity market index and industrial output. Nevertheless, the consumer price index and the stock market index had a strong downward association. The real effective exchange rate and the 91-day Treasury bill rate had an insignificant relationship with the equity market index. Also, fluctuation in the variables of the study did not indicate a statistically significant correlation in the short run. The causality analysis demonstrated a two - way causality between the stock price index and industrial aggregate output as well as inflation. This shows that the output growth rate is significant in pricing equity securities.

Nilsson (2013) Carried out a study on the impact of USD and EUR exchange rates on the Swedish equity market's performance. The research examined data over ten years, spanning from 2003 to 2013. The researchers applied the Pearson coefficient of association and the GARCH model. The results reviewed a very weak association which statistically negligible in the two advanced economies and that association across different points differed widely in the various economic sectors.

A study was carried out by (K. Shula. 2017) to investigate the Impact of GDP, Inflation, Interest, and Exchange rates on the Stock Market in Zambia. Data sets for the period of 1997 to 2012 were used. The estimated regression model reviewed that the explanatory variables accounted for 97.5% of the variation in stock prices, which explains a substantial portion of the LUSE index movement. The study reviewed that the coefficient

from RGDP and exchange rate were positive while that of Inflation and real interest rate are negative.

Junkin (2011) used data that had been collected between 1995 and 2000 to study the impact of GDP, exchange rate, and Inflation on the FTSE/JSE All Share Index in South Africa. The researcher used ADF and KPSS stationarity tests to test for unit root. He also used the Johansen cointegration test in the analysis. The results indicate a positive relationship between FTSE/JSE All Share Index and the exchange rate. However, a negative association existed in short-run and long-run between FTSE / JSE, All-Share Index, and Inflation

A study carried out by (Kitati, Evusa, and Maithya, 2015) examined how some macroeconomic variables affect stock prices. The specific macroeconomic variables were inflation rate, interest rate, and foreign exchange rate. The study considered secondary statistics from NSE and CBK for a period of 5 years from 2008 to 2012 and adopted simple and multivariate regressions analysis. The researcher concluded that interest rate had a higher impact than other macroeconomic variables. The stock indices were negatively influenced by interest rate and exchange for both Euro and US Dollar. However, they noted that the inflation rate negatively affected the stock market, pointing out that higher inflation rate levels result in low indices of Kenya's stock market.

Makeri (2014) examined exchange rate fluctuations' impact on equity prices in the Rwanda stock exchange. The researcher used secondary data for three years, covering 2011 to 2013, and employed the Johansen Co-integration technique to test the long-run relationship and Granger Causality test to analyze the short-run relationship. Johansen Co-integration test Results show no long-run association while that Granger causality test reviews that exchange rate Granger causes equity prices in the short run.

Makori (2017) carried out a study to investigate how equity market returns are influenced by exchange rate changes at the Nairobi securities exchange. The research focused on the 20 share index and exchange rate, as measured by Kenya shillings against the US dollar. The study factored half-year data for 16 years, covering 2001 to 2016 obtained from NSE, KNBS, and United Nations conference on trade and development and applied simple regression (OLS). The researcher tested and confirmed the absence of multicollinearity and heteroscedasticity. The researcher proved the existence of a significant

and positive correlation between the exchange rate and the 20 share index. Additionally, it is noted that Inflation had a negative association with 20 share indexes, while the exchange rate significantly triggered the equity market. Hence, the government must always find ways to manage it to caution firms' financial performance.

Kithome (2017) carried out a study exploring the correlation between currency fluctuations and returns on the stock market in the Nairobi securities exchange. The researcher used monthly statistics for ten years covering 2007 - 2016 and measured equity market return using a 20 share index while the exchange rate was measured using Kenya shillings against USD. The researcher used SPSS version 21 to evaluate the association among the variables and used a descriptive research design and multiple linear regression model. The outcomes of the research reviews that there was a weak negative correlation between foreign exchange rate, inflation rate, and equity market return while interest rate had a weak positive correlation. The relationship between the exchange rate, interest rate, and equity market return was insignificant, while that of Inflation was significant.

2.3.4 GDP and Financial Performance

GDP refers to the aggregate value of deliverables produced in a country. Therefore, GDP is a good indicator of overall economic performance. Some of the critical variables related to GDP are gross private domestic investment, personal consumption expenditure, net export of goods and services, and government expenditure on products and services (Doepke, Lehnert & Sellgren, 2010).

A study was carried out by (Laichena and Obwogi, 2015) to weigh up the consequence of varying macroeconomic factors on the success of equity across the East African Stock Exchanges. Variables of concern included price increases, interest rate, GDP, currency exchange rate, and stocks' yield. Researchers employed panel data of countries within East Africa from 2005 to 2014. Reports showed that there was a strong correlation across all of East Africa between stock returns and macroeconomic variables. They also recommended policy actions that can stabilize macroeconomic conditions in the region.

A study was conducted by (Mugambi and Okech, 2016) to investigate the consequences of varying macroeconomic factors on equity returns of NSE trading banks. They used secondary data collected by CBK between 2000 and 2015. The study employed linear regression, stationarity test, and correlation analysis to verify the link between variables of concern. It is established that Inflation, exchange rates, and interest rates have a remarkable impact on the stock returns of commercial banks. However, it is proved that the GDP had an inconsequential effect on stock returns. The researcher suggested monetary policy interventions to ensure stability among macroeconomic variables.

Kirui (2014) assessed the correlation between Inflation, exchange rate, Treasury bill rate, GDP, and stock market returns of companies listed on NSE. The researcher used the Engle-Granger two-step method to evaluate the link between macroeconomic variables and stock returns. The study results indicate that GDP, Treasury bill, and inflation rate had an insignificant effect on NSE listed companies' stock returns. However, the exchange rate considerably impacted stock returns.

Kimani and Mutuku (2013) evaluated the effect of interest rate, Inflation, GDP, and exchange rate on the 20-share index at NSE using quarterly data that had been collected between 1998 and 2010. Their analysis used the ADF test for stationarity test, error correlation model, and Johansen-Juselius co-integration test for co-integration test. The report revealed a statistically significant but negative relationship between the 20-share index and interest rate, Inflation, and exchange rate. However, the GDP had a meaningful positive relationship.

Another study was carried out by (Babu, 2017) on the effect of inflation on stock market returns at the Nairobi Security Exchange in Kenya. Specifically, the study investigated the impact of money supply, interest rate, exchange rate, and real GDP on equity market return. The study obtained secondary data from NSE, CBK, and KNBS for a period of 17 years, covering 2000 to 2016. The research reviewed a significant positive relationship between Inflation and equity market returns, a positive long-run relationship between real GDP and equity market returns. The study also revealed a negative long-run relationship on both interest rate and exchange rate and equity market return. However, in the short-run, only the inflation rate that significantly influenced the equity market return positively; all other variables have an insignificant influence on the equity market return. In the long –run, the

investigations revealed that economic growth, as measured by real GDP, is the most important determinant of equity market return.

Ruibi (2012) carried out a study on the Impact of Investment Banking on Economic Growth in Kenya. The study explored the impact of commission fees, no of investment banks, amount of stock traded, and trading cycle within the investment market. The finding shows that investment banking significantly influences economic growth and that the total value of shares traded and the trading cycle within the investment market influences economic growth. Also, investment banks should diversify to have more sources of revenue, such as interest income, fees, and commissions, foreign exchange activities rather than principally depending on a single source of revenue.

Muthui (2018) conducted a study on how selected macroeconomic variables influence share prices of listed firms on the Nairobi securities exchange. The study specifically investigated; Interest Rate, Exchange Rate, Money Supply, Unemployment Rate, GDP, and Inflation Rate. The study adopted quarterly secondary statistics for 2007 to 2016, obtained data from KNBS, CBK, and NSE, and multiple regression models were used to analyze data. The study concluded that the model could explain 72.97% of the variations in share price and that NSE share price is negatively and significantly impacted by the inflation rate and exchange rate at a 5 percent level of significance. On the other hand, the NSE share price was positively and significantly affected by GDP. At the same time, the interest rate was found to have an insignificant effect on share prices in the short-run and significant influence on the share price in the long-run.

2.4 Conceptual Framework

A conceptual framework is a diagrammatic representation of the relationship among study variables. The relationship between macroeconomic variables and financial performance of equity investments has been explained both empirically and theoretically by several studies reviewed in the literature.

Conceptual Framework

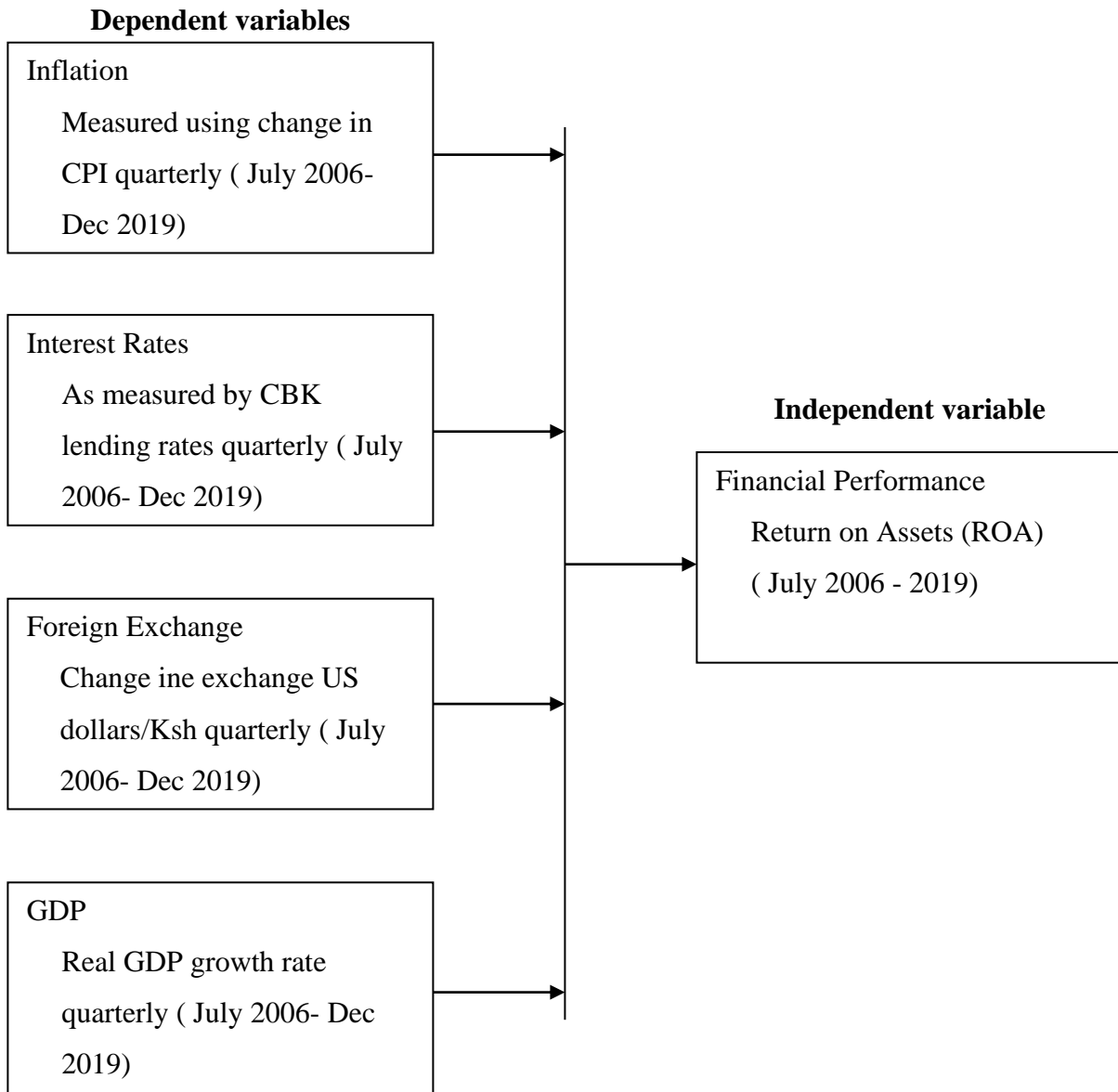


Figure 2.1: Conceptual Framework

Source: Author, 2020

Figure 2.1: Conceptual Framework showing the relationship between macro-economic variables and the financial performance of Kenya investment banks.

The study conceptualizes that the selected macroeconomic variables, namely, Inflation, gross domestic product, interest rate, and foreign exchange, relate to the financial performance of investment banks in Kenya.

2.5 Operationalization of Variables

Table 2.1: Operationalisation of Variables

Variable	Definition	Variable Measurement
FP	Financial Performance	Quarterly Average ROA of 16 investment banks Where, aROA $= \frac{\text{NET INCOME}}{\text{AVERAGE TOTAL ASSETS}}$
InfR	Inflation	Quarterly Change in Consumer Price Index (CPI)
IntR	Interest rate	Quarterly change Central Bank Rate (CBR)
ExR	Exchange Rate	Quarterly change in the exchange rate Kshs against USD
GDP	Economic growth rate GDP	Quarterly change in real Gross Domestic Product (GDP) growth

2.6 Summary of Literature Review

This chapter presented the literature on the relationship between selected macroeconomic variables and the financial performance of investment banks in Kenya. The review was based on research questions and past studies done to address these questions. The study was supported by three theories. APT helped discover the relationship between macroeconomic variables and the financial performance of investment banks in Kenya. Modern portfolio theory which championed the expected returns and associated risks as critical factors considered in investment. The classical economic theory took care of the exchange rates variable. This is because exchange rates result in lower economic activities, reducing the earnings due to low investment returns of investment banks.

On the other hand, a sudden rise in exchange rates heightens uncertainty about the economy leading to lower earnings forecasts for investment banks, affecting their performances. The empirical review was also conducted and revealed mixed AND inconclusive findings, which may not help solve the current research problem. Further, there were scanty local studies performed on the relationship between macroeconomic variables and the financial performance of investment banks.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This section provides data collection, data analysis, and presentation techniques of research findings. Specifically, the chapter discusses research design, target population, sampling and sampling methods, research instrument, data collection procedure, and data processing and analysis.

3.2 Research design

A research design is a set of procedures and methods used to gather and analyze data on measures of variables defined in the problem research. In other words, it is a framework that is selected to look for answers to research questions (Kothari, 2004). A causal research design was employed to measure the effect an absolute change had on existing assumptions and norms. The causal research design was based on the principle that if a statistically significant relationship exists between two variables, then it is possible to forecast the dependent variable utilizing available information on the independent variables. The causal effect occurs when changes in one phenomenon, the dependent variable, are caused by changes in another aspect, an independent variable. This research design enables researchers to prove a causal relationship between study variables and removing other possibilities (Leamer, 1985). In the current study, the researcher intended to establish the link between the selected macroeconomic variables and the performance of Kenya's investment banks.

3.3 Target Population

The target population is the entire group that the researcher intends to conclude (Kothari, 2004). The study targeted all the investment banks authorized by CMA, and have been active from 1st July 2006 to December 2019. The researcher collected data from 1st July 2006 since CBR was introduced in June 2006. Again, a fairly large period (over ten years) was needed due to constant fluctuations of macroeconomic variables in Kenya. As of April 2020, there were 16 investment banks licensed and regulated by the Capital Markets Authority (CMA, 2020). The list of these banks is found in the appendices.

3.4 Sampling and Sampling Procedure

The population census was employed to collect data on all 16 investment banks. Population census is an attempt to obtain data on all the population elements and use it to provide

comprehensive information on all aspects of the study population. This data collection method was preferred in this study because of the small target population and the need for complete data on all available investment banks.

3.5 Research Instrument

According to Creswell (2002), data collection is a means by which data is acquired from a study's chosen subjects. For this research, secondary data was collected using the data collection Sheet, as presented in Appendix II.

3.6 Data collection procedure

The data for Performance equity investment as measured using ROA was obtained from the individual investment banks, NSE, and CMA. Data on the interest rate and the exchange rate was obtained from the Central Bank of Kenya, while that of Inflation and GDP were obtained from the Kenya National Bureau of Statistics.

3.7 Data Processing and analysis

Data analysis refers to the use of thinking to grasp the information that has been assembled to decide predictable examples and sum up the essential details uncovered in the investigation (Zikmund, Babin, Carr & Griffin, 2010). During this study, data collected was analyzed using excel and Stata version 12. The study also adopted an econometric model to investigate the effects of selected macroeconomic variables on the performance of investment banks. Several techniques are available for testing the existence of dynamic relationships in time series variables, such as Granger (1987) test and Johansen (1988) test.

3.7.1 Diagnostic Test

Granger and Newbold (1974), within their study, concluded that the employment of Ordinary Least Squares (OLS) on non-stationary data would produce results with very high R^2 and statistically significant "t" ratio even in the circumstances where there is no relationship between the data used in the regression. Cameron (2005) further argued that the regression estimated would be 'spurious regression' because they have no meaning or function.

Since the study used statistical data, which is assumed to be non-stationary, the researcher tested the variables under the investigation for stationarity. Wooldridge (2012) concluded that if mean, variance, and autocorrelation of the data structure are constant over

time, the data is considered stationary. This test is incredibly important before fitting the model since if data is non-stationary would produce spurious modeling (Wooldridge, 2012).

The Augmented Dickey-Fuller (ADF) unit root test was used with the null hypothesis of non-stationarity (Dickey & Fuller, 1979). If the P-value is less than a 5% level of significance, then the null hypothesis was rejected, implying stationarity (Gujarati, 2003). However, If the P-value is higher than a 5% level of significance, then we fail to reject null hypothesis, implying non-stationarity (Brooks, 2008).

3.7.1.1 Co-integration test

Co-integration, as it is known today, was first initiated by Hendry and Julius (2000) in their work on properties of economic series, therefore an extension.

If statistic data move within the same trend, it is claimed to be co-integrated in the long run. Consistency with Nielsen (2005) co-integration requires that a series be stationary. If they are non-stationary, combining such series would help eliminate non-stationarity in multivariate statistics differencing. Before carrying out the co-integration test, it is essential to see the stationarity of the series. If the series into account is non-stationary, Johansen's method is used to perform the co-integration test. If co-integration is established, Vector Error Correction Model (VECM) is adopted. Conversely, if there is no co-integration, then the vector autoregressive (VAR) Model is used after differencing (Gujarati, 2003).

VECM is said to be VAR based approach, and it allows for testing a system of equations. This technique gives more efficient estimators of co-integrating vectors, for it does not require variables to be normalized. To work out, the number of cointegrating vectors Johansen approach developed Trace statistics and also the maximum Eigenvalues (Hendry & Juselius, 2000). After fitting the error correction model and co-integration test, the model would be satisfactory to its forecasting ability.

3.7.1.2 Granger causality test

Granger causality tests were accustomed to measure the linear causation between macroeconomic variables and the Performance of equity investments. Granger causality is a means for determining the causality between two or more study variables within statistics. The Granger causality test was employed to determine whether a time series helps predict the other (Granger, 1988). The strategy uses empirical data to indicate patterns of correlation. In

granger causality, the researcher does not test the cause-effect relationship but is interested to know if a specific variable helps forecast the other variable within the statistic (Leamer, 1985). The Granger causality tested whether InfR_t , GDP_t , IntR_t , and ExR_t forecasts FP_t and help to assess the reverse effect of FP_t on macroeconomic characteristics. The null hypothesis was macroeconomic factors do not Granger Cause FP_t . In the event that the p-value falls below 0.05, then meant that macroeconomic variables triggers FP_t , and the alternative hypothesis was macroeconomic factors triggers FP_t . In case the p-value was over 0.05, then it would mean that macroeconomic variables do not trigger FP_t .

3.7.2 Model specification

Either **Vector autoregressive (VAR) model** or Vector Error Correction (VEC) Model were accustomed to analyzing the long-run and short-run relationship between macroeconomic variables and the performance of investment banks in Kenya. The VEC Model's main distinguishing factor requires the series to be co-integrated, whereas the VAR model requires non-co-integration. The presence or absence of co-integration dictated which of the two models should be fitted for the study's data set. Vector autoregression (VAR) is a model in econometrics that captures values and interdependencies between multiple time series and generalizes univariate (ARs) models. It is a system of equations equal to the number of variables within the model (Brooks, 2008). Also, each variable is taken as endogenous, and in the VAR system, each variable is a function of its own lagged values (past values) and lagged values of other variables in the model.

If the series is non-stationary and not co-integrated, the researcher differenced to induce stationarity before estimating the VAR model. If the series are co-integrated, then the following model from Brooks (2008) was adopted.

$$X_t = \alpha_0 + \beta_1 X_{t-1} + \beta_2 X_{t-2} + \beta_3 X_{t-3} + \dots + \beta_p X_{t-p} + \varepsilon_t$$

Where

X_t = the model variables, i.e., four by a 1-dimensional vector of the model's endogenous variables.

α_0 = is the model intercept, i.e., four by a 1-dimensional vector of constant.

$\beta_1, \beta_2, \beta_3,$ and β_p = is a four by 4-dimensional autoregressive coefficient matrices of the established parameter that relate to lagged values of the variables to their current values.

ε_t = is a four by a 1-dimensional vector of stochastic error term normally distributed with noise properties $N(0, \sigma^2)$

$t - 1, t - 2 \dots, t - p$ = is the number of lags.

VAR model was not used to capture the dynamics within if the series are co-integrated. In that case, the VEC model was employed to capture the relationships. Therefore VECM can be described as a restricted and differenced VAR model used for non-stationary and co-integrated variables. In the long-run, co-integrated series share equilibrium, while in the short term, the series may deviate from the equilibrium as they respond to their own shocks where the VEC model is used to correct the deviation.

Vec model

$$\Delta X_t = \alpha \beta X_{t-1} + \Gamma_1 \Delta X_{t-1} + \Gamma_2 \Delta X_{t-2} + \Gamma_3 \Delta X_{t-3} + \dots \Gamma_p \Delta X_{t-p} + \varepsilon_t$$

Where

α = is coefficients of the adjustments matrix,

β = is co-integrating equations matrix coefficients

Γ = is short run coefficients

X_t = model endogenous variables.

3.7.3 Post estimation analysis

3.7.3.1 Impulse response analysis

Stock (2001) observed that impulse response functions link the current value of the error term of the future variables or current and past valued variables. The impulse response test was conducted to show the effects of exogenous shocks on the whole process over time. This test allowed the researcher to detect dynamic relationships over time. To obtain the impulse response function, the researcher estimated the VAR model after that desired impulse response analysis was specified for each variable.

3.7.3.2 Forecast Error Variance Decomposition

Sims (1980) argued that VAR models are not useful for short-term forecasts because they are usually over-parameterized. However, understanding the perspectives of the forecast errors is exceedingly crucial to aid in uncovering interrelationships among the variables. The above test was applied in the Vector Autoregressive model to ease and facilitate understanding of the model and how the exogenous shocks explain forecast error variance in the variables under consideration.

CHAPTER FOUR

DATA ANALYSIS, RESULTS, AND FINDINGS

4.1 Introduction

This chapter presents the analyzed data and findings based on the research objectives. The study's main objective was to evaluate the relationship between selected macroeconomic variables and the financial performance of investment banks in Kenya. Secondary data was collected from all investment banks (16) authorized by CMA, and have been active from January 2006 to December 2019. The data were analyzed using STATA. VAR model and VEC model was used. Granger causality test model measured the linear causation between macroeconomic variables and the performance of investment banks in Kenya.

4.2 Descriptive Statistics

In this section, the study presented the research finding on the descriptive statistics in the data collected. The results are as presented in Table 4.1.

Table 4. 1:Descriptive statistics

```
. summarize ROA InFR IntR ExR GDP
```

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	54	.068713	.06191	.0067	.2777
InFR	54	7.699995	4.143889	2.713585	19.18704
IntR	54	9.469136	2.488827	5.833333	18
ExR	54	2.739034	7.627553	-9.396166	25.22082
GDP	54	5.424708	2.045486	.0834896	11.62256

Based on the findings presented in Table 4.1, there were a total of 54 observations. Regarding the financial performance of equity investments, measured using ROA, the investment banks recorded an average of 0.0687, with the minimum performance recorded being 0.0067 and the maximum being 0.2777. These findings show that since CBR was introduced in July 2006, the Return on Asset recorded by investment banks have not varied significantly, as indicated by a standard deviation value of 0.0619. Macroeconomic factors have been cited for influencing the financial performance of investment banks. This agrees with Asaolu and Ogunmuyiwa (2010) that macroeconomic variables are barometers for ensuring financial performance. Also, variations related to the movement of macroeconomic forces have a varying impact across the economic spectrum. As Nisha (2015) explained, it is

important for them to be closely monitored by financial institutions, governments, and economists to help explore strategies to achieve industrial policy goals and prosperity. Therefore, this study seeks to establish the influence of inflation, interest rate, exchange rate, and GDP on the financial performance of investment banks.

The findings also show that the average Growth in CPI recorded between July 2006 and December 2019 was 7.6999. Also, the minimum rate was 2.713585, and the maximum 19.18704. This shows a great disparity in the inflation rate, as supported by a standard deviation value of 4.143889. As explained by Frisch (1984), higher Inflation in the country deteriorates customers' purchasing, thereby reducing the demand for goods. Investors, therefore, need to methodically analyze inflation trends and understand how it affects the company's financial performance. Investors must also be in a position to predict the future concerning inflation changes. This study, therefore, evaluated the relationship between inflation and financial performance of investment banks in Kenya

The findings also show that the investment banks recorded an average interest rate of 9.4691. Over the period under consideration, the minimum interest rate recorded was 5.83, and the maximum value was 18. These findings show that the interest rate varied significantly, as indicated by a standard deviation value of 2.4888. Banton (2020) explained that interest rates affect the cost and accessibility to credit facilities by companies. This study, therefore, sought to determine the relationship between interest rates and financial performance of investment banks in Kenya, if it has a positive or negative influence and the extent of the impact.

The findings also showed that the average change in exchange rate recorded over the period under consideration (2006-2019) was 2.7390. Also, it was established that the minimum rate recorded was -9.396, and the maximum value was 25.2208. This suggests that there was a significant variation in the exchange rate. This was supported by a considerable standard deviation value of 7.6276. Therefore, this study sought to determine whether there was any relationship between the exchange rate recorded and the financial performance of investment banks in Kenya. The findings determined whether sentiments of Doepke, Lehnert, and Sellgren (2010) that when a country ensures its currency value against other currencies remain constant, they maintain their currency value is supported.

Lastly, the findings showed that the Gross Domestic Product (GDP) recorded between July 2006 and December 2019 averaged 5.4247. The minimum value over the same period was 0.0835, and the maximum value was 11.6226. This shows that there was a significant variation in the level of GDP over the 11 years. This study, therefore, sought to determine whether the change in GDP affected the financial performance of investment banks in Kenya. This is supported by Doepke, Lehnert, and Sellgren (2010), which indicated that GDP is a good indicator of overall economic performance.

4.3 Trend Analysis

Trend analysis refers to a statistical method and procedure used in showing the movement of an observed data over a specified period. This section presents the trend analysis for the independent variable (inflation, gross domestic product, interest rates, and foreign exchange rate) and the dependent variables (financial performance of equity investments).

4.3.1 Inflation (InfR)

The study sought to determine the inflation in Kenya between July of 2006 to December of 2019, and the findings were as presented in Figure 4.1. and Figure 4.2

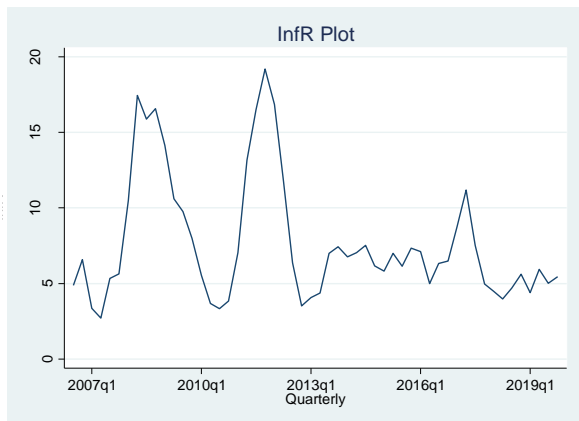


Figure 4.1

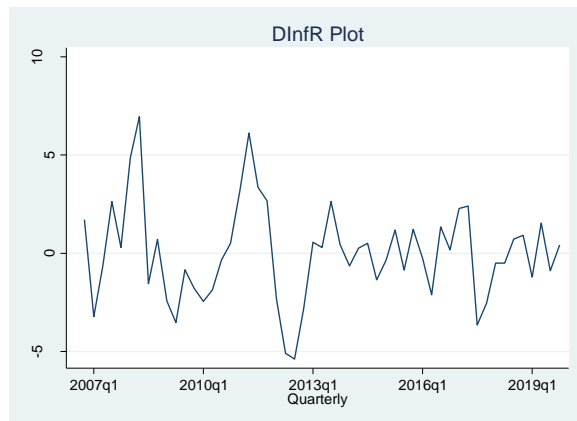


Figure 4.2

Based on the findings presented in Figure 4.1, it can be seen that the inflation rate in the country fluctuated between July 2006 and December 2019, where a trend is evidenced, suggesting a possibility of nonstationarity. On the other hand, Figure 4.2 shows no clear trend suggesting stationarity after the first difference. The study, therefore, used the information to analyze the relationships and determine whether the change in the inflation

rate had any significant influence on the financial performance of investment banks in Kenya.

4.3.2 Trend in Interest Rate (InfR)

The study sought to determine the trend in interest rates in Kenya between July of 2006 to December of 2019, and the findings were as presented in Figure 4.3 and 4.4

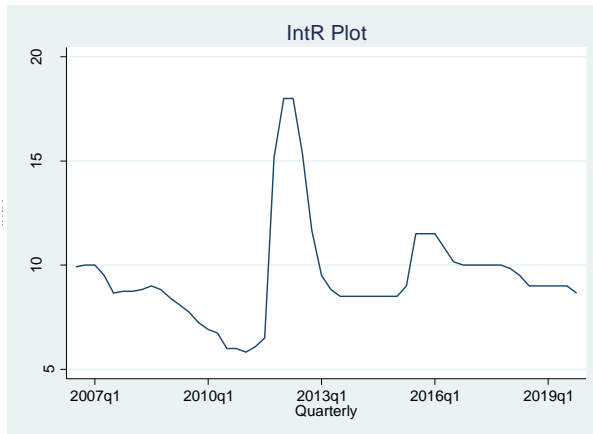


Figure 4.3

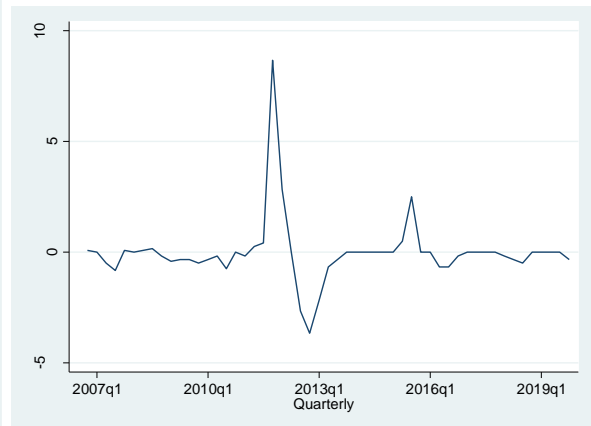


Figure 4.4

The findings presented in Figure 4.3 shows that there was no clear trend in interest rates recorded in the country, suggesting stationarity similar to Figure 4.4 after differencing. Each quarter had different rates of interest. It was not clear to determine whether the next quarter, the interest rate would be high or low. Therefore, this study used the information to analyze the relationships and determine whether the fluctuating interest rate affected the financial performance of investment banks in Kenya.

4.3.3 Trend in Foreign Exchange Rate (ExR)

The study sought to determine the trend in the foreign exchange rate in Kenya between July of 2006 to December of 2019, and the findings were as presented in Figures 4.5 and 4.6.

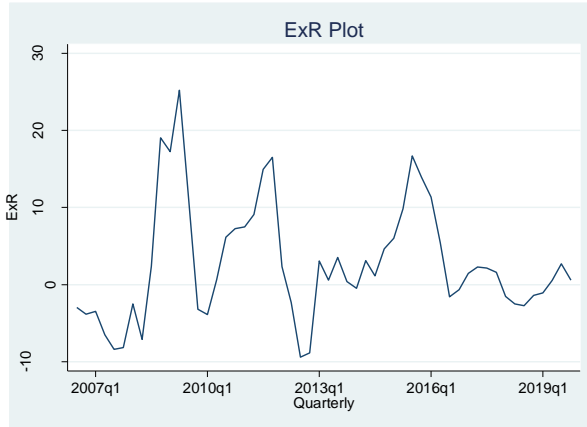


Figure 4.5

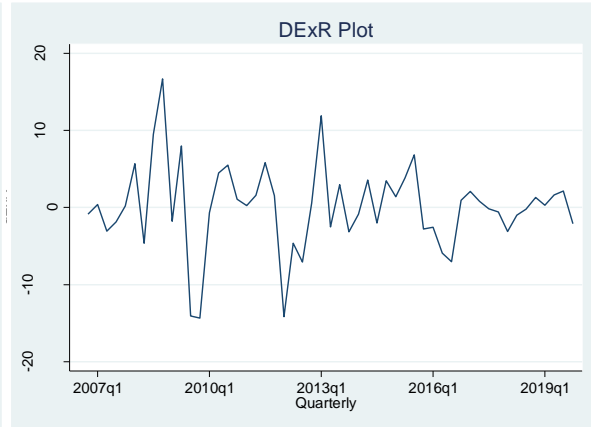


Figure 4.6

From the findings in Figure 4.5, it can be seen that the quarterly foreign exchange rate between July 2016 and December 2019 has been fluctuating with some trend though not very clear over the years, therefore, suggesting the possibility of nonstationarity. On the other hand, Figure 4.6 shows no trend suggesting stationarity after the first difference. The study consequently adopted the outcomes to analyze the relationship between foreign exchange and the financial performance of investment banks in Kenya.

4.3.4 Trend Gross Domestic Product

The study sought to determine the trend in the gross domestic product in Kenya between July of 2006 to December of 2019, and the findings were as presented in Figure 4.7 and 4.8

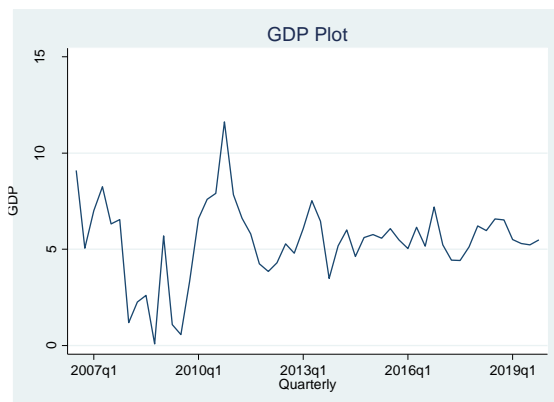


Figure 4.7

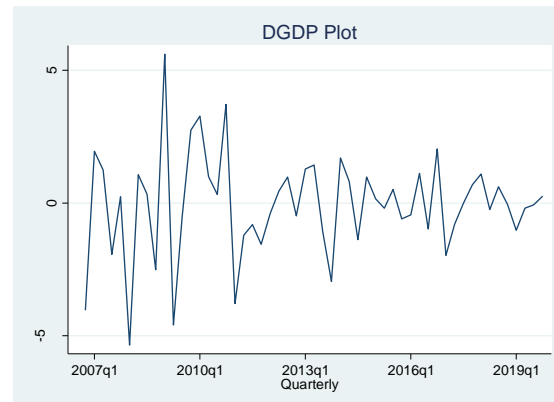


Figure 4.8

The findings in Figure 4.7 show that the GDP of the country had a clear trend. Over the period under consideration, the rate of real gross domestic product was fluctuating. The

growth in real GDP of the country was used to analyze the relationship and determine its effects on the financial performance of investment banks in Kenya.

4.3.5 Trend in Return on Asset

The study sought to determine the trend in the financial performance of equity investments among investment banks in Kenya between July of 2006 and December of 2019. The study used ROA to measure financial performance, and the findings were as presented in Figure 4.9 and 4.10

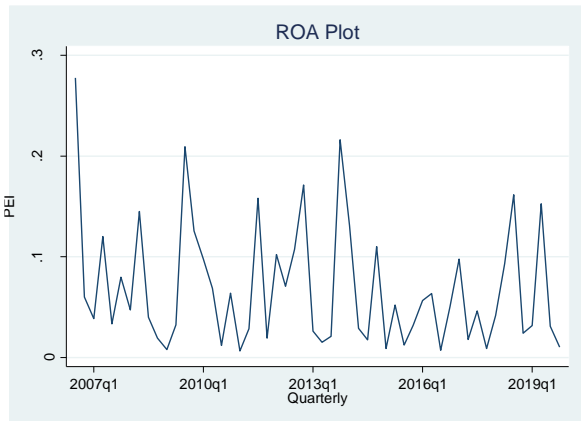


Figure 4.9

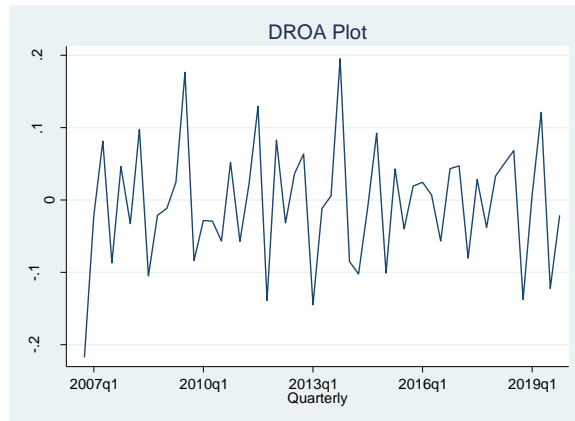


Figure 4.10

Figure 4.9 shows that the financial performance of equity investments among investment banks in Kenya over the period under consideration fluctuated, exhibiting some trend suggesting nonstationarity. Similar to macroeconomic factors presented above, ROA was also seen to fluctuate with no clear trend. Therefore, the study sought to analyze the relationship of those macroeconomic factors and whether they were the reason for fluctuating performance. This was achieved by computing the Granger causality test model.

4.4 Pre estimation Diagnostic Tests

4.4.1 Test of Multicollinearity

A multicollinearity test was conducted to test if there is a high relationship between any two independent variables. A VIF value of 1-10 indicates moderate Multicollinearity. Table 4.2 presents the findings.

Table 4. 2: Multicollinearity Test

```
. vif
```

Variable	VIF	1/VIF
InfR	1.90	0.524962
GDP	1.54	0.648119
ExR	1.32	0.760332
IntR	1.14	0.874029
Mean VIF	1.48	

If the value of VIF is more than 10, we can say that the model is suffering from multicollinearity. The findings indicate that the VIF values ranged between 1.14 and 1.90, indicating that the variables' variance was inflated moderately. The analysis exhibits signs of multicollinearity, even though low levels. The results suggest that the overall VIF is 1.48, which is less than ten, implying that the study data did not reveal a multicollinearity problem as recommended by (Field 2018). Thus, all the variables based on the VIF indicators have no multicollinearity problem.

4.4.2 Correlation and Covariance

Correlation and covariance analysis, as shown in table 4.3, also indicates no significant linear relationship apart from GDP against inflation as well as exchange rate against Inflation.

Table 4. 3:Correlation and covariance

```
. correlate ROA InfR IntR ExR GDP
(obs=54)
```

	ROA	InfR	IntR	ExR	GDP
ROA	1.0000				
InfR	-0.0091	1.0000			
IntR	0.0285	0.2484	1.0000		
ExR	-0.2999	0.4330	-0.1133	1.0000	
GDP	-0.0589	-0.5899	-0.2058	-0.2304	1.0000

4.4.3 Stationarity Test

Before computing regression analysis, the study tested the data collected to determine whether it met regression assumptions. The study tested the variables under the investigation for stationarity. The study used the Augmented Dickey-Fuller (ADF) unit root test with the null hypothesis of non-stationarity. If the P-value is less than a 5% level of significance, then the null hypothesis was rejected, implying stationarity. However, if the P-value is higher than a 5% level of significance, then the null hypothesis is accepted, indicating non-stationarity. The study tested for stationarity of each variable as shown in the table below.

Table 4. 4: Stationarity Test for ALL

Variable	Undifferenced			First Differenced		
	T statistic	Critical Value at 5%	P-value	T statistic	Critical Value at 5%	P-value
ROA	7.997	2.928	0.0000	10.748	2.928	0.0000
InfR	2.245	2.928	0.1901	4.490	2.928	0.0002
IntR	2.252	2.928	0.1878	4.487	2.928	0.0002
ExR	2.874	2.928	0.0484	5.893	2.928	0.0000
GDP	4.245	2.928	0.0006	9.838	2.928	0.0000

The findings in table 4.4 show that the p-value for InfR before differencing was 0.1901, which is greater than the selected level of significance (0.05), while the absolute value for t statistics was 2.245 which is less than the critical value of 2.928. The study, therefore, fails to reject the null hypothesis and concludes that data on inflation was nonstationary. This implies that the fitted data would produce spurious models.

The p-value for IntR before differencing was 0.1878, which is greater than the selected significance (0.05) while the absolute value for t statistics was 2.252 which is less than the critical value of 2.928.. The study, therefore, fails to reject the null hypothesis and conclude that interest rate data was nonstationary thus would produce a spurious model without differencing.

The p-value for ExR before differencing was 0.0484, which is less than the selected level of significance (0.05) . On the other hand, the absolute figure for t statistic is less than

the absolute figures for the critical value. Therefore, the study fails to reject the null hypothesis and concludes that data on the foreign exchange rate was nonstationary. This implies that the fitted data without differencing would produce spurious models.

The results in Table 4.4 show that the p-value of GDP was 0.0006, which is less than the selected level of significance (0.05). On the other hand, the absolute figure for t statistic is greater than the absolute figures for the critical value. The study therefore rejects the null hypothesis and concludes that the data for GDP was stationary and could be used for further modeling.

The findings in Table 4.4 show that the p-value for the stationarity test of Return on Assets was 0.0000, which is less than the selected level of significance (0.05). The study therefore rejects the null hypothesis and concludes that the data for ROA was stationary and can be used for further modeling.

From the above output in table 4.4 , the p values after, the first difference is less than the selected p-value of (0.05), while the absolute figures for t statistics are greater than the critical values implying stationarity after the first difference .

4.4.4 Determining Optimal Lag Selection

In time series analysis, the use of lags is essential because economic variables do not impact one another instantaneously but do so within a time-span called a lag. Hence, using the appropriate lag length is vital in deciding the regressors' explanatory power on the dependent variable. It also helps in correcting for heteroscedasticity, model stability, and serial correlation. The study, therefore, selected the optimal lags for a model using the minimized criterion. Table 4.3 presents the findings.

Table 4. 5: Lag Selection-order criteria

```

Selection-order criteria
Sample: 2007q3 - 2019q4
Number of obs = 50

```

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-441.324				39.002	17.853	17.9258	18.0442
1	-333.699	215.25	25	0.000	1.43964	14.548	14.9848*	15.6952*
2	-299.748	67.902	25	0.000	1.0378*	14.1899*	14.9909	16.2932
3	-281.656	36.184	25	0.069	1.48192	14.4663	15.6312	17.5255
4	-255.323	52.667*	25	0.001	1.64945	14.4129	15.9419	18.4282

```

Endogenous: ROA InfR IntR ExR GDP
Exogenous: _cons

```

From the above output, HQIC and SBIC suggest VAR1, meaning one lag length, while FPE and AIC suggest VAR2 and LR suggest VAR4. Therefore the researcher fitted VAR(1), VAR(2), VAR(3), and VAR(4) model to check if the residuals are autocorrelated using the LM test, as shown below.

Table 4. 6:Lagrange multiplier test output

```
. varlmar, mlag(10) estimates(var1)
```

Lagrange-multiplier test

lag	chi2	df	Prob > chi2
1	42.8527	25	0.01453
2	34.3483	25	0.10067
3	21.8385	25	0.64505
4	39.9689	25	0.02938
5	40.0647	25	0.02872
6	26.5836	25	0.37700
7	28.5366	25	0.28375
8	26.0533	25	0.40476
9	23.8051	25	0.53066
10	22.9703	25	0.57930

H0: no autocorrelation at lag order

Table 4.6. 1: var1

```
. varlmar, mlag(10) estimates(var2)
```

Lagrange-multiplier test

lag	chi2	df	Prob > chi2
1	24.6724	25	0.48085
2	19.9476	25	0.74957
3	19.9301	25	0.75048
4	28.8052	25	0.27214
5	27.0838	25	0.35171
6	26.7931	25	0.36630
7	24.4986	25	0.49073
8	42.7803	25	0.01479
9	19.6972	25	0.76252
10	16.9409	25	0.88393

H0: no autocorrelation at lag order

Table 4.6. 2:var2

```
. varlmar, mlag(10) estimates(var3)
```

Lagrange-multiplier test

lag	chi2	df	Prob > chi2
1	20.5682	25	0.71642
2	26.8249	25	0.36469
3	23.1912	25	0.56640
4	24.6216	25	0.48373
5	23.3632	25	0.55637
6	17.8642	25	0.84810
7	18.8898	25	0.80237
8	38.8855	25	0.03782
9	15.0832	25	0.93942
10	27.5382	25	0.32954

H0: no autocorrelation at lag order

Table 4.6. 3:var3

```
. varlmar, mlag(10) estimates(var4)
```

Lagrange-multiplier test

lag	chi2	df	Prob > chi2
1	30.1457	25	0.21888
2	23.5667	25	0.54451
3	13.3334	25	0.97215
4	22.4034	25	0.61236
5	32.2988	25	0.14955
6	24.5930	25	0.48536
7	19.4842	25	0.77333
8	28.5770	25	0.28199
9	25.3296	25	0.44403
10	17.2821	25	0.87131

H0: no autocorrelation at lag order

Table 4.6. 4:var4

Considering the above output, VAR1 and VAR2 show autocorrelation at lag order one and lag order 8, while VAR3 shows autocorrelation at lag 8. Therefore the researcher adopted VAR4 since it shows no autocorrelation considering lag order ten.

4.4.5 Co-integration Test

Since the study found that the data was stationary, it computed the co-integration test. The study used Johansen's method to perform the co-integration test

Table 4.7: Johansen Tests for Cointegration

Johansen tests for cointegration						
Trend: constant			Number of obs =		50	
Sample: 2007q3 - 2019q4			Lags =		4	
maximum				trace	5%	
rank	parms	LL	eigenvalue	statistic	critical	value
0	80	-307.56759	.	104.4898	68.52	
1	89	-282.6144	0.63143	54.5834	47.21	
2	96	-271.61971	0.35583	32.5940	29.68	
3	101	-262.39363	0.30860	14.1418*	15.41	
4	104	-258.31021	0.15069	5.9750	3.76	
5	105	-255.32271	0.11264			

The Johansen tests produced the Trace Statistic. The null hypothesis for this test is that there is no cointegrating equation. For a maximum rank of 0 to 2, the trace statistics are greater than the critical value. We, therefore, reject the null hypothesis and conclude that we have three cointegrating ranks in this model. For maximum rank 3, the trace statistic (14.1413) is smaller than the critical value (15.41); therefore, we fail to reject the null hypothesis and conclude that we have a maximum rank of 3 integrating ranks in this model. Hence, it is supposed that a long-run relationship exists among the four variables, and therefore a VECM model is used. The cointegration rank for this model is 3.

4.5 Vector Error Correction Model

Since this study found that the series are co-integrated, it did not use the VAR, but rather computed the VEC to capture the relationship

Table 4.8: Error correction Model

Cointegrating equations

Equation	Parms	chi2	P>chi2
_ce1	4	51.03145	0.0000

Identification: beta is exactly identified

Johansen normalization restriction imposed

beta	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
_ce1					
ROA	1
InfR	-.0013762	.0088585	-0.16	0.877	-.0187385 .0159861
IntR	.0387377	.0107316	3.61	0.000	.0177043 .0597712
ExR	-.0102441	.0038016	-2.69	0.007	-.0176951 -.0027931
GDP	-.0677602	.0165177	-4.10	0.000	-.1001343 -.0353861
_cons	-.0185841

The VEC model, the long-run model, commonly referred to as the Johansen normalization restriction, was developed. The restriction was placed on the dependent variable, i.e., error correction term. When interpreting its findings, the signs of the coefficients are reversed. The coefficients were considered significant at a 5% level of significance.

From the findings, the following counteracting/correction equation was developed;

$$ECT_{t-1} = 0.0186 + 0.0014 \Delta \text{InfR}_{t-1} - 0.0387 \Delta \text{IntR}_{t-1} + 0.0102 \Delta \text{ExR}_{t-1} + 0.0678 \Delta \ln \text{GDP}_{t-1}$$

The findings, therefore, show that in the long-run, inflation has a positive effect on ROA, as indicated by a coefficient value of 0.0014. The influence was insignificant since the p-value was 0.877, which greater than the selected significance of (0.05). The findings also show that interest rate negatively influences error correction estimate as indicated by the coefficient value of **0.0387**. The influence was considered significant since the p-value was 0.000, which is less than the selected 5% level of significance. The exchange rate has a positive and significant influence on the error estimate, as indicated by the coefficient value of **0.0102**. The p-value was 0.007, suggesting that influence was significant in the long run p-value is less than the selected level of significance (0.05). Finally, the findings show that GDP has a positive and insignificant influence, as indicated by the coefficient value of 0.0678 and a p-

value of 0.000. Since the p-value is less than 0.05, the influence was considered to be negligible in the long run.

These findings, therefore, suggest that inflation, interest rate, exchange rate, and GDP have asymmetric effects on error estimates in the long run.

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
D_ROA						
_ceil						
L1.	-.0182596	.0756849	-0.24	0.809	-.1665993	.1300801
ROA						
LD.	-.7432399	.1607773	-4.62	0.000	-1.058358	-.4281223
L2D.	-.6582301	.1763598	-3.73	0.000	-1.003889	-.3125713
L3D.	-.2174479	.1440455	-1.51	0.131	-.4997719	.0648761
InfR						
LD.	-.0023995	.0055805	-0.43	0.667	-.0133371	.0085381
L2D.	-.0019129	.0055216	-0.35	0.729	-.0127351	.0089093
L3D.	-.0025572	.0063284	-0.40	0.686	-.0149607	.0098462
IntR						
LD.	.0092086	.0079747	1.15	0.248	-.0064215	.0248386
L2D.	-.0086706	.0090583	-0.96	0.338	-.0264245	.0090834
L3D.	.0050734	.0077988	0.65	0.515	-.010212	.0203588
ExR						
LD.	-.002527	.0022842	-1.11	0.269	-.007004	.00195
L2D.	-.0026371	.0020793	-1.27	0.205	-.0067124	.0014383
L3D.	.0044917	.0019598	2.29	0.022	.0006506	.0083327
GDP						
LD.	-.0186763	.0087052	-2.15	0.032	-.0357383	-.0016144
L2D.	-.003149	.0100767	-0.31	0.755	-.0228991	.0166601
L3D.	.0062371	.0074866	0.83	0.405	-.0084362	.0209105
_cons	-.0016706	.0084792	-0.20	0.844	-.0182895	.0149483

Table 4.9.1 short-run coefficient

From the findings, the study also developed the generalized VEC model;

$$ROA_t = - 0.0017 - 0.7432ROA_{t-1} - 0.0024InflR_{t-1} + 0.0092IntR_{t-1} - 0.0025ExR_{t-1} - 0.0187 \ln GDP_{t-1} - 0.0183ECT_{t-1}$$

These findings show that inflation has a negative and insignificant influence on ROA in the short run. This is demonstrated by a p-value of 0.667, which is greater than the selected level of significance (0.05). Therefore, inflation can be said to have an insignificant negative influence on the financial performance of equity investments among investment banks in Kenya in the short run. The study findings agree with (Doepke et al., 2010) that the Inflation in the country deteriorates customers' purchasing, thereby reducing the demand for goods;

this meant that high inflation rates impact negatively on the Performance of companies. It also agrees with (Silva, 2016), whose results showed that Inflation is negatively related to stock prices; however, proportion change reviewed that inflation rate positively associated with stocks return.

On the influence of the ROA's interest rate, the findings show that the influence was positive and insignificant, as shown by p-value (0.248) greater than the selected level of significance. The influence was also found to be positive, as demonstrated by the coefficient value of **0.0092**. This suggests that interest rate has a positive and insignificant impact on the financial performance of equity investments in the short run. These findings concur with those of (Banton, 2020) that interest rates affect companies' cost and accessibility to credit facilities. A lower interest rate implies the company can access a credit facility at a lower price. With the declining value of obtaining credit, the profitability of firms increases. However, when interest rates are so high, the cost of securing credit increases, which in turn increases production costs. The increased production cost leads to higher product prices, which results in lower demand and company earnings.

The findings also showed that the influence of the exchange rate on ROA was negative, as indicated by the coefficient value of 0.0025. The findings also showed that the influence was insignificant, as shown by p-value (0.002), which is less than the selected level of significance (0.05). Therefore, the exchange rate has a significant negative influence on the financial performance of equity investments in the short-run at lag 3. This agrees with (Doepke et al., 2010) that flexible exchange rates are strongly influenced by Forex or currency markets, most of which fluctuate due to the prevailing market dynamics. It also concurs with (Nilsson, 2013) that the results reviewed a very weak association which statistically negligible in the two advanced economies and that association across different points differed widely in the various economic sectors.

On the influence of GDP on ROA, the findings showed that the influence was significant, as indicated by a p-value (0.032) less than the selected level of significance (0.05). The findings further showed that the influence was negative, as shown by the coefficient value of **0.0187**, implying that GDP has a negative and significant influence on the financial performance of equity investments among investment banks in Kenya. The study findings concur with (Kimani and Mutuku, 2013), which revealed a statistically

significant but positive relationship between the 20-share index and interest rate, Inflation, and exchange rate. However, the GDP had a meaningful positive relationship. It also agreed with (Babu, 2017), which reviewed a significant positive relationship between Inflation and equity market returns, a positive long-run relationship between real GDP and equity market returns.

The adjustment parameters in $_ce1$ L1 shows the error correction term. From the findings, the adjusted parameters of GDP are (1.593881) is statistically insignificant at a 5% level of significance since the p-value was 0.482. This suggests that the previous year's errors, i.e., deviations from long-run equilibrium, are corrected for within the current year at a convergence speed of 159%. ROA responds at an adjustment speed of 1.8% InfR responds at -8.93, IntR respond at(-4.63) ExR responds at -8.50

Table 4.9.2 Adjustment Parameters

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
D_ROA _ce1 L1.	-.0182596	.0756849	-0.24	0.809	-.1665993	.1300801
D_InfR _ce1 L1.	-8.929365	2.198837	-4.06	0.000	-7.432757	-1.8352724
D_IntR _ce1 L1.	-4.634015	1.427956	-3.25	0.001	-12.28449	9.383145
D_ExR _ce1 L1.	8.504763	5.704334	1.49	0.136	-2.675526	19.68505
D_GDP _ce1 L1	1.593881	2.264996	0.70	0.482	-2.845429	6.033191

4.6. Post estimation diagnostics tests

4.6.1 Test for Autocorrelation

The study tested for autocorrelation using the LM Test of autocorrelation. The null hypothesis for the study is that there is no autocorrelation. Therefore, if the p-value is less than 0.05, we reject the null hypothesis, and if p is greater than 0.05, we accept the null hypothesis. Table 4.10 presents the findings obtained.

Table 4.10: Test for Autocorrelation

```
. veclmar, mlag(5)
```

```
Lagrange-multiplier test
```

lag	chi2	df	Prob > chi2
1	31.2381	25	0.18125
2	28.3076	25	0.29389
3	14.5054	25	0.95219
4	23.0043	25	0.57731
5	23.4456	25	0.55156

```
H0: no autocorrelation at lag order
```

From the findings, the p-values for each lag is greater than 0.05. we, therefore, fail to reject the null hypothesis and conclude that there is no autocorrelation at each of the five lag orders.

4.6.2 Stability Test

Stability was tested using the eigenvalue stability condition.

Table 4.11: Results of Test for VEC Stability

```
. vecstable, graph
```

Eigenvalue stability condition

Eigenvalue	Modulus
1	1
1	1
1	1
1	1
.6979705 + .5084682i	.863541
.6979705 - .5084682i	.863541
.5065147 + .5966109i	.782625
.5065147 - .5966109i	.782625
-.7823662	.782366
-.00815157 + .7523727i	.752417
-.00815157 - .7523727i	.752417
-.2128454 + .6918055i	.723808
-.2128454 - .6918055i	.723808
-.4360136 + .5193349i	.678098
-.4360136 - .5193349i	.678098
-.5552273 + .3746407i	.669801
-.5552273 - .3746407i	.669801
.4110755 + .2802214i	.497501
.4110755 - .2802214i	.497501
.1305351	.130535

The VECM specification imposes 4 unit moduli.

Table 4.11 above shows post estimation analysis of the eigenvalue condition test for stability of the VEC model in modeling the relationship between macroeconomic variables and performance in equity investment among investment banks. Since each eigenvalue in our model is strictly less than one, the estimates satisfy the eigenvalue stability condition. This means that our estimated VEC model is a stable and meaningful interpretation of the results is guaranteed. The VECM specification imposes 4 unit moduli, which is good; it implies our model was stable at all the four lag levels. On the other hand, the results for the unit circle shows that our eigenvalue do not exceed one; therefore, our model is stable

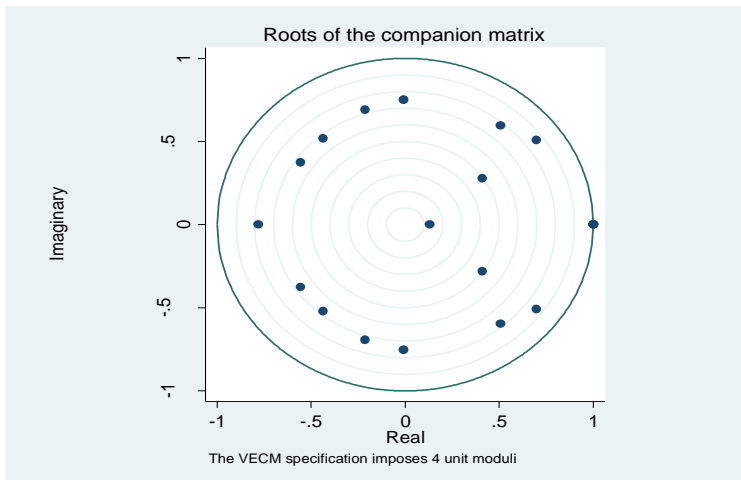


Figure 4.11

4.6.3 Granger Causality Test

The Granger causality test was employed to determine whether a time series helps predict the other. The null hypothesis was macroeconomic factors do not Granger Cause ROA. If the p-value falls below 0.05, then meant that macroeconomic variables trigger ROA, and the alternative hypothesis was macroeconomic factors triggers ROA. In case the p-value was over 0.05, then it would mean that macroeconomic variables do not trigger ROA. Table 4.8 presents the findings obtained.

```
. vargranger
```

```
Granger causality Wald tests
```

Equation	Excluded	chi2	df	Prob > chi2
dROA	dInfr	.72784	4	0.948
dROA	dIntR	5.3287	4	0.255
dROA	dExR	22.145	4	0.000
dROA	dGDP	9.3794	4	0.052
dROA	ALL	45.746	16	0.000
dInfr	dROA	6.4388	4	0.169
dInfr	dIntR	7.3781	4	0.117
dInfr	dExR	8.1729	4	0.085
dInfr	dGDP	14.625	4	0.006
dInfr	ALL	33.904	16	0.006
dIntR	dROA	8.1875	4	0.085
dIntR	dInfr	11.893	4	0.018
dIntR	dExR	3.2824	4	0.512
dIntR	dGDP	7.8173	4	0.099
dIntR	ALL	34.362	16	0.005
dExR	dROA	2.0093	4	0.734
dExR	dInfr	28.728	4	0.000
dExR	dIntR	26.351	4	0.000
dExR	dGDP	11.807	4	0.019
dExR	ALL	65.625	16	0.000
dGDP	dROA	4.8402	4	0.304
dGDP	dInfr	19.006	4	0.001
dGDP	dIntR	8.8266	4	0.066
dGDP	dExR	5.4576	4	0.243
dGDP	ALL	36.555	16	0.002

Table 4.12 Granger causality test

From the findings presented in Table 4.12, it can be seen that the dependent variables distinguish the equations. In each equation, the vargranger tests Granger causality of every variable individually, and the test of all the variables combined. Considering the Granger causality tests for each equation, the excluded variables test the null hypothesis that the lag variables do not trigger the equation's dependent variable. If p is less than 0.05, we reject the hypothesis, As shown below

	X ²	Probability	DECISION
InfR do not granger cause ROA	.72784	0.948	Fail to Reject
IntR do not granger cause ROA	5.3287	0.255	Fail to Reject
ExR do not granger cause ROA	22.145	0.000	Reject
lnGDP do not granger cause ROA	9.3794	0.052	Fail to Reject
ROA do not granger cause ROA	45.746	0.000	Reject
ROA do not granger cause InfR	6.4388	0.169	Fail to Reject
IntR do not granger cause InfR	7.3781	0.117	Fail to Reject
ExR do not granger cause InfR	8.1729	0.085	Fail to Reject
lnGDP do not granger cause InfR	14.625	0.006	Reject
InfR do not granger cause InfR	33.904	0.006	Reject
ROA do not granger cause IntR	8.1875	0.085	Fail to Reject
InfR do not granger cause IntR	11.893	0.018	Reject
ExR do not granger cause IntR	3.2824	0.512	Fail to Reject
lnGDP do not granger cause IntR	7.8173	0.099	Fail to Reject
IntR do not granger cause IntR	34.362	0.005	Reject
ROA do not granger cause ExR	2.0093	0.734	Fail to Reject
InfR do not granger cause ExR	28.728	0.000	Reject
IntR do not granger cause ExR	26.351	0.000	Reject
lnGDP do not granger cause ExR	11.807	0.019	Reject
ExR do not granger cause ExR	65.625	0.000	Reject
ROA do not granger cause lnGDP	4.8402	0.304	Fail to Reject
InfR do not granger cause lnGDP	19.006	0.001	Reject
IntR do not granger cause lnGDP	8.8266	0.066	Fail to Reject
ExR do not granger cause lnGDP	5.4576	0.243	Fail to Reject
lnGDP do not granger cause lnGDP	36.555	0.002	Reject

From the summary above, on the first equation on ROA, all the p-values were greater than the significance level of 0.05 except ExR, an indication that the macroeconomic factors (Inflation, interest rate, and GDP) do not granger affects PEIt (ROA). In the second equation on inflation, the p-values are also seen to be greater than 0.05 except GDP, suggesting that the lags (ROA, exchange rate, and interest rate) do not granger cause inflation. In the third equation on interest rate p values for ROA, exchange rate, and GDP is greater than 0.05, meaning they do not granger cause interest rates while inflation granger causes interest rates. On the exchange rate equation, all variables granger causes exchange rate except ROA. Lastly, only inflation that granger causes GDP

Diagnostic Tests

4.6.4 Autocorrelation test

Table 4.13 autocorrelation test

```
. varlmar, mlag(5)
```

```
Lagrange-multiplier test
```

lag	chi2	df	Prob > chi2
1	29.9838	25	0.22490
2	23.5063	25	0.54802
3	22.8151	25	0.58836
4	26.6895	25	0.37157
5	9.2049	25	0.99830

```
H0: no autocorrelation at lag order
```

From the autocorrelation test results above, we fail to reject the null hypothesis and conclude there is no serial autocorrelation in fitted model therefore the model said to be a good fit considering the data set of the research.

4.6.5 Stability Test for VAR

Table 4.14 stability test

. varstable, graph

Eigenvalue stability condition

Eigenvalue	Modulus
.7236806 + .5322962 <i>i</i>	.898361
.7236806 - .5322962 <i>i</i>	.898361
.5467648 + .6802379 <i>i</i>	.87274
.5467648 - .6802379 <i>i</i>	.87274
-.5159281 + .677581 <i>i</i>	.851644
-.5159281 - .677581 <i>i</i>	.851644
.01403066 + .7808957 <i>i</i>	.781022
.01403066 - .7808957 <i>i</i>	.781022
-.7005445 + .2994626 <i>i</i>	.761866
-.7005445 - .2994626 <i>i</i>	.761866
-.1833714 + .7228592 <i>i</i>	.745755
-.1833714 - .7228592 <i>i</i>	.745755
-.5881428 + .4495388 <i>i</i>	.740268
-.5881428 - .4495388 <i>i</i>	.740268
.5880534 + .3910974 <i>i</i>	.706232
.5880534 - .3910974 <i>i</i>	.706232
.2558759 + .6361694 <i>i</i>	.6857
.2558759 - .6361694 <i>i</i>	.6857
-.4009205 + .3464603 <i>i</i>	.529879
-.4009205 - .3464603 <i>i</i>	.529879

All the eigenvalues lie inside the unit circle.
 VAR satisfies stability condition.

From the findings obtained, as shown in the table, all the Eigenvalues lie within the unit circle, implying that the VAR model is stable.

4.6.6 Impulse Response Function

Impulse response function explains the shock response of one endogenous variable to another due to its standard deviation (impulse) based on a period.

Table 4.18

step	(1) irf	(2) irf	(3) irf	(4) irf	(5) irf
0	1	0	0	0	0
1	-.936719	-7.20453	8.16139	12.2476	1.78719
2	-.025718	-6.65545	-1.33201	-22.3341	5.115
3	.191509	-5.36365	-4.2271	-7.25961	2.30364
4	.28597	.895854	-3.25604	5.14151	-6.6915
5	-.098117	8.28778	-1.19361	-10.5049	1.88416

Table 4.15:1

The above output or IRF is summarised below.

If we shock DROA (irf1) by one unit holding all other variables constant, DROA will respond by negative 0.93. While InfR (irf2) will respond by negative 7.2, IntR (irf3) by 8.1, dExR (irf4) by 12.25 and finally dGDP (irf5) by 1.78. On the other hand, If you shock, macroeconomic variables will respond as follows below.

Table 4.15.2

step	(1) irf	(2) irf	(3) irf	(4) irf	(5) irf
0	1	0	0	0	0
1	-.936719	.001575	.010333	-.002502	-.013336
2	-.025718	.001487	-.006019	-.001159	.013864
3	.191509	-.001623	-.000304	.007398	.003754
4	.28597	-.004812	-.00264	.000829	-.0055
5	-.098117	.007251	-.000478	-.004461	.006203

From the above findings, it can be seen that, If we shock DInfR (irf2) by one unit, DROA will respond by 0.0016. While shocking DIntR (irf3) by one unit, DROA will respond by 0.0103. If we shock DExR (irf4) by one unit, DROA will respond by 0.0025. Finally, if we shock DGDP (irf5) by one unit, DROA will respond by negative 0.013 in the short run. The above table is also represented using a graph as shown below

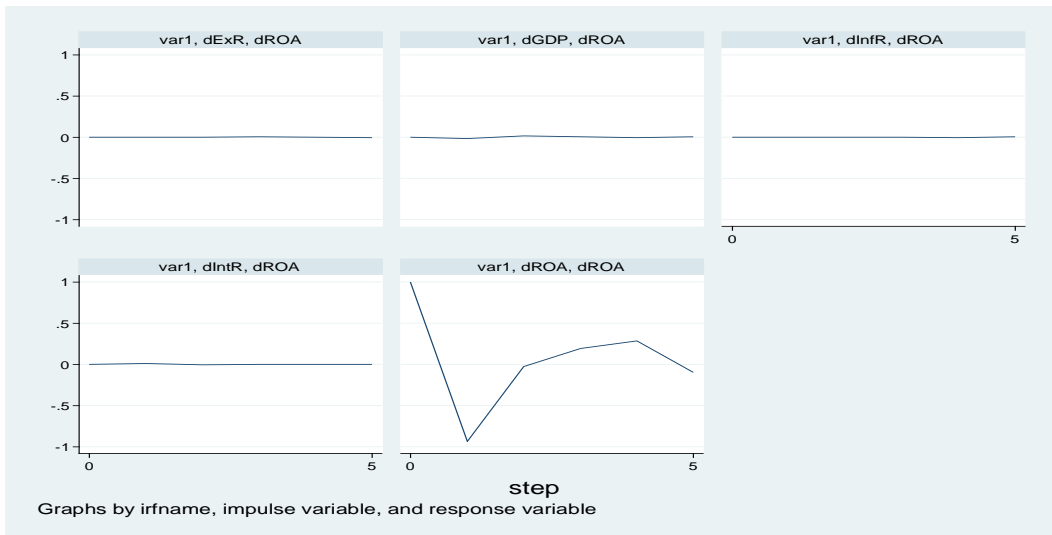
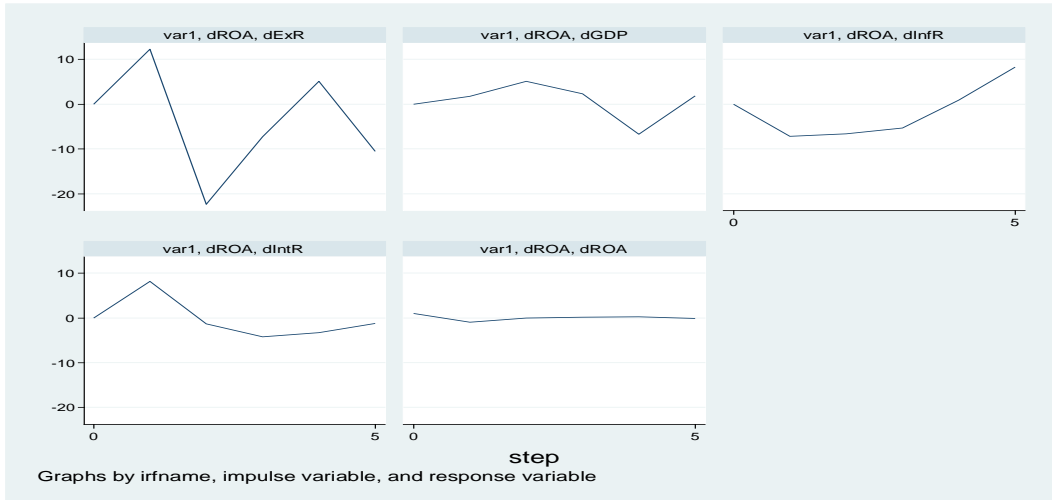


Figure 4.12

4.7.7 Forecast error variance decompositions

The above test was applied in the Vector Autoregressive model to ease and facilitate understanding of the model and how the exogenous shocks explain forecast error variance in the variables under consideration.

Results from var1

step	(1) fevd	(2) fevd	(3) fevd	(4) fevd	(5) fevd
0	0	0	0	0	0
1	1	.004083	.007189	.014672	.021129
2	.876315	.047354	.054398	.019621	.033865
3	.807529	.085385	.055754	.048244	.05915
4	.711786	.086266	.06022	.046687	.058889
5	.713231	.071151	.071134	.044894	.06932

Table 4.16:1Fevd

In the short run, i.e., quarter 3, a shock to ROA (fevd 1) account for 80 percent of the variation of fluctuation in ROA (own shock), 8.5 percent of the variation in dInfR (fevd 2), 5.56 percent of variation in dIntR (fevd 3), 4.82 percent variation in dExR (fevd 4) and finally 5.9 percentage variation in DGDP (fevd 5).

On the other hand, a shock to dInfR (fevd 2) account for 2.26 percent of the variation of fluctuations in dROA, while a shock to dIntR (fevd 3) account for 2.4 percent of the variation of fluctuations in dROA, a shock to dExR (fevd 4) account for 2.08 percent of variations of fluctuations in dROA, and shock to dGDP (fevd 5) account for 11.12 percent of the variation in fluctuations in dROA as shown below.

step	(1) fevd	(2) fevd	(3) fevd	(4) fevd	(5) fevd
0	0	0	0	0	0
1	1	0	0	0	0
2	.876315	.014631	.023537	.021495	.064023
3	.807529	.025267	.023947	.02083	.122426
4	.711786	.022855	.023634	.130482	.111243
5	.713231	.022752	.025685	.124524	.113808

Table 4.16.2 Fevd

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of findings, draws a conclusion from the results, and makes appropriate recommendations based on the outcomes and interpretation of the outcomes from the analysed data. The findings and recommendations drawn focused on addressing the objective of the review. The researcher intended to evaluate the relationship between selected macroeconomic variables and the financial performance of investment banks in Kenya. The findings were discussed based on the four specific objectives of the research.

5.2 Summary of Findings

The research used quarterly time series data set and applied cointegration analyses, VEC model and causality analysis and used stata 12 software for data analysis. The preliminary test on the data established no multicollinearity problem between the variables however presence on correlation between variables was established. The study established that data set on InfR, IntR and ExR were non stationary while ROA and GDP were stationary. However, stationarity was achieved after the first difference. Additionally from the cointegration analysis the study established that there was cointegration between variables therefore informing the use of VEC Model in the study. The presentation of the summary of findings was done based on the specific objectives of the study.

5.2.1 Inflation and Financial Performance of Investment Banks

The first specific objective of the study was to analyse the relationship between inflation rate and the financial performance of investment banks in Kenya. The results from trend analysis, established a fluctuation in inflation rate in the country. The results from VECM established that the inflation rate has a positive but insignificant influence on the financial performance of investment banks in the long run. The study further found from the VAR model that inflation had a positive impact on lagging one but negative on lag two and three on the financial performance of investment banks in Kenya though insignificant. The study findings agreed with (Doepke et al., 2010) that higher inflation in the country deteriorates customers' purchasing, reducing the demand for goods. This meant that high inflation rates negatively impact the performance of companies. It also agrees with (Silva, 2016), whose results showed that inflation is negatively related to stock prices; however, proportion change

reviewed that inflation rate positively associated with stocks return. On the other hand, this study agrees with (Kamamia, 2018) that the inflation rate is positively related to investment banks' financial performance; however, this study found it to have an insignificant impact in the longrun.

5.2.2 Interest Rates and Financial Performance of Investment Banks in Kenya

The second specific objective of the study was to analyse the relationship between Interest rate and the financial performance of investment banks in Kenya. The interest rate was found to lack a clear trend since it fluctuated over the period under consideration. The results from VECM established that the interest rate has a negative and significant influence on the financial performance of investment banks in the long run. However, the study demonstrated from the granger causality test that interest rates do not cause financial performance of investments banks. Meaning the relationship between the two variables was inverse. These study findings concurred with (Banton's, 2020) findings that interest rates affect companies' cost and accessibility to credit facilities. Also the findings concurs with (Yahyazadehfar, 2012) which established a significant negative association in both the long and short term between the nominal interest rate and Iran's stock market index, (Ozbay, 2009) which established that stock prices were negatively correlated with the interest rate. On the other hand the study disagrees with (Obudah, 2013) that interest rates unconstructively changed equity investment in Nigeria.

5.2.3 Foreign Exchange Rate and Financial Performance of Investment Banks in Kenya

The third specific objective of the study was to analyse the relationship between foreign exchange rate and the financial performance of investment banks in Kenya. From the trend analysis, the study established that foreign exchange rates over the period considered fluctuated, and therefore, it was not possible to identify its trend. The results from VECM established that the foreign exchange rate has a positive and significant influence on the financial performance of investment banks in the long run. The study also confirmed that the exchange rate as a macroeconomic factor had granger effect on ROA. Meaning, an increase in foreign exchange would cause the financial performance of investment banks in Kenya to increase in the long run. The outcomes of the study agrees with (Doepke et al., 2010) that flexible exchange rates are strongly influenced by Forex or currency markets, most of which fluctuate due to the prevailing market dynamics. Fluctuation affects the performance of the

organization. Also, the study agrees with (Azar, 2014; Shula, 2017; Makori, 2017) that foreign exchange rate positively and significantly influences stock prices in the longrun. However, the study disagrees with (Kithome, 2017; Makeri, 2014; Nilsson's, 2013) findings that there is a weak association that is statistically negligible in the two advanced economies and That association across different points differed widely in the various economic sectors.

5.2.4 Real Gross Domestic Product's and Financial Performance of Investment Banks in Kenya

Finally, the fourth specific objective of the study was to analyse the relationship between RGDP and the financial performance of investment banks in Kenya. The trend analysis findings shows that the country's real GDP growth fluctuated, therefore, not able to establish a clear trend. The results from VECM established that the real GPD rate has a positive and significant influence on the financial performance of investment banks in both short run and long run. The vargranger tests also showed that Real GPD had a granger effect on ROA, meaning they directly impacted performance on macroeconomic characteristics. This means that variations in real GPD positively affect the financial performance of investment banks in Kenya. It also agreed with (Babu, 2017), who reviewed a significant positive relationship between inflation and equity market returns, a positive long-run relationship between real GDP and equity market returns. However, the study findings disagree with (Kimani and Mutuku (2013), which revealed a statistically significant but negative relationship between the 20-share index and interest rate, inflation, and exchange rate and that GDP had a meaningful positive relationship. The study also disagrees with (Mugambi and Okech, 2016) that GDP had a negligible impact on stock returns.

5.3 Conclusions

The general objective of this research was to analyze the relationship between the selected macroeconomic variables and the financial performance of investment banks in Kenya. The study analysed the relationship using four macroeconomic variables comprising of inflation rate, interest rates, foreign exchange rate and real GDP while financial performance of investments banks was measured using return on assets. The study established that inflation rate has positive relationship even though insignificant in explaining financial performance of investment banks, foreign exchange rate and real GDP have significant and positive

relationship with financial performance, while interest rates had significant and negative relationship in the longrun.

This study therefore concludes that by analyzing the past values of interest rates, foreign exchange rates and real GDP is possible to forecast present and future financial performance of investment banks all other factors held constant. On the hand, the past values of inflation rate are negligible in forecasting current and future financial performance of investment banks.

The outcomes of this study are consistent with the conclusions of arbitrage pricing model that return on asset can be forecasted with the linear relationship of returns of expected assets alongside macroeconomic variables that impact the asset's risk. Also, the findings are in agreement with modern portfolio theorist who explains that risk-averse investors should create investment approaches to maximize or enhance investment returns depending on a given degree of market uncertainty, noting that higher yields are correlated with higher risks. This theory quantifies the benefits of diversification and the correct combination of stocks in one's basket. Additionally, the study outcomes are also consistent with the flow oriented models (Dornbusch and Fisher, 1980) which opines that equity markets and currency fluctuations can relate, implying that a shift in currency exchange shapes market competitiveness, returns of firms, ultimately manipulating broader economic variables.

5.4 Recommendations

The findings of this study are recommended for consideration to a variety of users of such information including but not limited to investment banks, institutional and individual investors, regulators and other researchers.

Considering the significant and negative relationship between interest rates and financial performance, significant and positive relationship between foreign exchange rate, real GDP and financial performance of investment banks, the study therefore recommends investor, including financial investors, to methodically analyze and monitor fluctuations in macroeconomic variables and understand how they affects their financial performance. The study also recommend investors to use the formulated model to predict the current and future financial performance hence leading to sound investments decisions.

The study also recommends regulators to put up policies to guarantee stability of these macroeconomic variables. Firmness in these macroeconomic variable would lower uncertainty in the market resulting to stability in financial performance.

This study additionally recommends investments banks to embrace diversification to caution themselves against these risk arising as a result of fluctuation in macroeconomic variables therefore lowering there losses in the event that there is significant variation in macroeconomic variables..

5.5 Areas for further Studies

The study found that there was a fluctuation in macroeconomic variables over the past ten years. This study, therefore, suggest further research on the factors contributing to macroeconomic factors changes in Kenya. Further, the study also recommends further research on the relationship between macroeconomic variables and the performance of equity among Kenya's investment banks. Lastly, Different reviews should also be replicated in other institutions such as brokerage firms.

REFERENCE

- Alper, D., & Anbar, A. (2011). Bank Specific and Macroeconomic Determinants of Commercial Bank Profitability: Empirical Evidence from Turkey. *Business and Economics Research Journal*, 2(2), 139-152. ISSN: 1309-2448. Retrieved from www.berjournal.com
- Annual Reports. (2020). Cma.or.Ke. https://cma.or.ke/index.php?option=com_phocadownload&view=category&id=13:annual-reports&Itemid=191
- Anyanzwa, J. (2019). *Kenyan banks weighed down by unprofitable stockbroking firms*. The East African. <https://www.theeastafrican.co.ke/tea/business/kenyan-banks-weighed-down-by-unprofitable-stockbroking-firms-1421992>
- Audited Financial Results - Nairobi Securities Exchange (NSE). (2020). Www.Nse.Co.Ke. <https://www.nse.co.ke/member-firms/company-financial-results/audited-financial-results.html>
- Azar, S. A. (2014). The Determinants of US Stock Market Returns. *Open economics and management*. 1, 1-13. Retrieved from <https://doi.org/10.2174/2352630001401010001>
- Babarinde, O. (2012). The private equity market in Africa: trends, opportunities, challenges, and impact. *The Journal of Private Equity*, 16(1), 56-73. <https://doi.org/10.3905/jpe.2012.16.1.056>
- Babu, S. O. (2017). Effect of inflation on stock market returns at Nairobi Security Exchange. University of Nairobi.
- Barakat, M. R., Elgazzar, S. H., & Hanafy, K. M. (2015). Impact of Macroeconomic Variables on Stock Markets: Evidence from Emerging Markets. *International Journal of Economics and Finance*, 8(1), 195. <https://doi.org/10.5539/ijef.v8n1p195>
- Bodie, Z., Kane, A., & Marcus, A. J. (2007). *Essentials of Investments* (6th ed.). New York: McGraw-Hill, International Edition.
- Brooks, C. (2008). *Introductory econometrics for finance*. (2nd ed.) London: Cambridge University press.
- CBK. (2020). Monthly Economic Indicators. Retrieved on May 14, 2020. <https://www.centralbank.go.ke/monthly-economic-indicators/>

- Cameron, S. (2005). Making regression analysis more useful. Maidenhead: McGraw Hill Higher Education.
- Chowdhury, A. H. M. Y., Hamid, M. K., & Akhi, R. A. (2019). Impact of Macroeconomic Variables on Economic Growth: Bangladesh Perspective. *Information Management and Computer Science*, 2(2), 19–22. <https://doi.org/10.26480/imcs.02.2019.19.22>
- Chen, J. (2020). Investment Securities. Retrieved on May 26, 2020, at <https://www.investopedia.com/terms/i/investment-securities.asp>
- Creswell, J. W. (2002). Research design: Qualitative, quantitative, and mixed methods. (2nd ed.). Thousand Oaks, California: Sage Publications.
- Dealogic Rankings (2019). *Global Investment Bank Revenue Rankings*. Www.Dealogic.Com. Retrieved August 3, 2020, from <https://www.dealogic.com/>
- Dickey, D., & Fuller, W. (1979). Distribution of the Estimators for Autoregressive Time Series With a Unit Root. *Journal of the American Statistical Association*, 74(366), 427-431. doi:10.2307/2286348
- Doepke, M., Lehnert, A., & Sellgren, A. (2010). Macroeconomics. Retrieved on May 14, 2020. <https://www.bu.edu/econ/files/2014/08/DLS1.pdf>
- Dornbusch, R. and Fischer, S. (1980). “Exchange Rates and the Current Account”, *American Economic Review*, Vol. 70, No. 5 (Dec., 1980), pp. 960-971
- Economic Survey 2020*. (2020). Kenya National Bureau of Statistics. <https://www.knbs.or.ke/?wpdmpromo=economic-survey-2020>
- Franck, P., and A. Young (1972) Stock Price Reaction of Multinational Firms to Exchange Realignments. *Financial Management* 1, 66–73.
- Frisch, H. (1984). *Theories of Inflation* (Cambridge Surveys of Economic Literature). Cambridge: Cambridge University Press. doi:10.1017/CBO9780511664588
- Global Economic Prospects. (2019) (June 2019, Vol. 13). Washington, D.C.: World Bank Group.
- Granger, C. W. J. (1988). Some recent development in a concept of causality. *Journal of Econometrics*, 39(1–2), 199–211. [https://doi.org/10.1016/0304-4076\(88\)90045-0](https://doi.org/10.1016/0304-4076(88)90045-0)
- Granger, C. W. J., & Newbold, P. (1974). Spurious regressions in econometrics. *Journal of Econometrics*, 2, 111-120.

- Granger, C. W. J., Engle, R. F (1987). Co-Integration and Error Correction: Representation, Estimation, and Testing. *Econometrica*, 55(2), 251. <https://doi.org/10.2307/1913236>
- Gujarati, D.N. (2003) Basic Econometrics. 4th Edition, McGraw-Hill, New York
- Hendry, D. F., & Juselius, K. (2001). Explaining Cointegration Analysis: Part II. *The Energy Journal*, 22(1). <https://doi.org/10.5547/issn0195-6574-ej-vol22-no1-4>
- Hsing, Y., & Hsieh, W. (2012). Impacts of Macroeconomic Variables on The Stock Market Index In Poland: New Evidence. *Journal of Business Economics and Management*, 13(2), 334–343. <https://doi.org/10.3846/16111699.2011.620133>
- Ibrahim, T. M., & Agbaje, O. M. (2013). The Relationship between Stock Return and Inflation in Nigeria. *European Scientific Journal*, 146-157.
- Jamil, M., & Ullah, N (2013). Impact of Foreign Exchange Rates on Stock Prices, *Journal of Business and Management*, 7(3): 45-51
- Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of Economic Dynamics and Control*, 12(2–3), 231–254. [https://doi.org/10.1016/0165-1889\(88\)90041-3](https://doi.org/10.1016/0165-1889(88)90041-3)
- Kamamia, L. (2018). The Effect of Macro-Economic Variables on Performance Of Investment Banks In Kenya.
- Kenya Bankers Association, (2020). Bankers Survey Projects Pandemic-led Business Slowdown, Highlights Commitment to Support Economy. Retrieved on May 26, 2020, at <https://www.kba.co.ke/news105.php>
- Kenya Bankers Association. (2019). State of the Banking industry report. Retrieved on May 14, 2020. [https://www.kba.co.ke/downloads/State%20of%20Banking%20Report%20200618%20\(web\).pdf](https://www.kba.co.ke/downloads/State%20of%20Banking%20Report%20200618%20(web).pdf)
- Kiganda, E.O. (2014). Effects of Macroeconomic variables on Commercial Banks Profitability in Kenya: Case of Equity Bank Limited. *International Journal of Economics and Sustainable Development*, Vol. 5, No. 2, 2014, ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online).
- Kitati E., Evusa Z. & Maithya H. (2015). Effect of Macro-Economic variables on stock market prices for companies quoted on Nairobi Securities Exchange in Kenya. *International Journal of Science - Basic & Applied Research*. 21 (2), 235-263.

- Kithome, L. (2017). *The Relationship Between Foreign Exchange Rates and Stock Market Returns in Nairobi Securities Exchange*. Erepository.Uonbi.Ac.Ke. <http://erepository.uonbi.ac.ke/handle/11295/103174>
- Kurt, D. (2019). What Is the Role of an Investment Bank? Retrieved on May 26, 2020, [athttps://www.investopedia.com/articles/investing/111114/whats-role-investment-bank.asp](https://www.investopedia.com/articles/investing/111114/whats-role-investment-bank.asp)
- K. Shula (2017). The Impact of GDP, Inflation, Interest and Exchange rates GDP on the Stock Market in Zambia Working Paper No. 2. Lusaka, Zambia: *Economics Association of Zambia*
- Kwon, A. & Shin, H. (1999). Determinants of Commercial Bank Interest Margins and Profitability: Some International Evidence. *World Bank Economic Review*, 13,379-408.
- Leamer, Edward. 1985. "Sensitivity Analyses Would Help." *American Economic Review*, 75(3): 308–313.
- Markowitz, H. (1952). Portfolio Selection. *The Journal of Finance*, 7(1), 77. <https://doi.org/10.2307/2975974>
- Makeri, B. N. (2014, October 1). *The relationship between exchange rate fluctuations and stock prices in Rwanda stock exchange*. Erepository.Uonbi.Ac.Ke. <http://erepository.uonbi.ac.ke/handle/11295/75090>
- Makori, N. G. (2017). The effect of exchange rate changes on stock market returns at the Nairobi Securities Exchange. University of Nairobi
- Mbulawa, S. (2015). The Impact of Inflation on Stock Market Performance in Zimbabwe between 1980 and 2008: An Empirical Investigation. *European Journal of Business, Economics and Accountancy*, 3 (4), 62-70
- Mugambi, M. & Okech, T. C. (2016). Effect of Macroeconomic Variables on Stock Returns of Listed Commercial Banks in Kenya. *International Journal of Economics, Commerce and Management*, 4 (6), 390-418
- Mutekwa, N. A., Gatawa, J. M., & Kirimi, D. (2017). Analysis of Factors Affecting Security Trading In Investment Banks in Kenya. *Research Journal of Finance and Accounting*, 8(18), 44. <https://iiste.org/Journals/index.php/RJFA/article/view/38754>
- Muthui, F.K. (2018) effect of selected macroeconomic variables on share prices of listed firms on the Nairobi securities exchange. University of Nairobi

- Naik, P. K., and Padhi, P. (2012). The Impact of Macroeconomic Fundamentals on Stock Prices Revisited: Evidence from Indian Data. *Eurasian Journal of Business and Economics*, Vol. 5(10), pp. 25-44.
- Nairobi Securities Exchange (2020). List of investment banks in Kenya. Retrieved on May 14, 2020, <https://www.nse.co.ke/member-firms/firms.html>
- Nielsen, M. O. (2005). Semiparametric Estimation in Time-Series Regression with Long-Range Dependence. *Journal of Time Series Analysis*, 26(2), 279–304. <https://doi.org/10.1111/j.1467-9892.2005.00401.x>
- Nilsson, F. (2013). Impact of Exchange Rates on Swedish Stock Performances. : Empirical study on USD and EUR exchange rates on the Swedish stock market. (Dissertation). Retrieved from <http://urn.kb.se/resolve?urn=urn:nbn:se:umu:diva-75782>
- Ngeno, R.K. (2018). *Determinants of Financial Performance of Investment Banks in Kenya*. Unpublished Master Thesis submitted to the University of Nairobi.
- Ngorongo, S. M. (2019). *Effect of Macroeconomic Variables On Financial Performance Of Commercial Banks In Kenya*. Erepository.Uonbi.Ac.Ke. <http://erepository.uonbi.ac.ke/handle/11295/109745>
- Obudah, Bodisewei&Tombofa (Dr), Stephen. (2013). Effects of Interest Rate and Debt on Equity Investment. *American Journal of Humanities and Social Sciences*. 1. 10.11634/232907811301301.
- Olweny, T. & Omondi, K., 2011. The effect of Macro-economic factors on stock return volatility in the Nairobi Stock Exchange, Kenya. *Economics and Finance Review*, 1(10), pp.34-48.
- Ongore, V. O. (2013). Determinants of Financial Performance of Commercial Banks in Kenya. *International Journal of Economics and Financial Issues*, 3 (1), 237-252.
- Osamwonyi, P. I. S., & Michael, C.I. (2014). The Impact of Macroeconomic Variables on Profitability of Listed Commercial Banks in Nigeria. *European Journal of Accounting Auditing and Finance Research*. Vol.2, No.10, pp.85-95.
- Otuori, O. H. (2013). Influence of Exchange rate Determinants on the Performance of Commercial Banks in Kenya. *European Journal of Management Sciences and Economics*, 1(2), 86-98.

- Ozbay E (2009), the relationship between stock returns and macroeconomic factors: Evidence of Turkey, Business school, University of Exeter, Dissertation
- PWC (April 2015). East Africa Private Equity & Venture Capital Association (EAVCA) - 2015/2016 Budget Submission. Nairobi, Kenya.
- Ruibi, K. M. (2012, November 1). *Impact of investment banking on economic growth in Kenya*. Erepository.Uonbi.Ac.Ke. <http://erepository.uonbi.ac.ke/handle/11295/12794>
- Reddy, D. V. (2012). Impact of inflation and GDP on stock market returns in India. *International Journal of Advanced Research in Management and Social Sciences*
- Samila, S., & Sorenson, O. (2011). Venture capital, entrepreneurship, and economic growth. *The Review of Economics and Statistics*, 93(1), 338-349.
- Silva, N.L.C. (2016). Effect of inflation on Stock Prices. Evidence from Sri Lanka. *International Journal of Scientific & Research* 7 (4).
- Simuyu, C.N., & Ngile, L. 2015. Effect of Macroeconomic Variables on Profitability of Commercial Banks Listed in The Nairobi Securities Exchange. *International Journal of Economics, Commerce, and the Management United Kingdom*. Vol. III, Issue 4.
- Sims, C. A. (1980). Macroeconomics and Reality. *Econometrica*, 48(1), 1. <https://doi.org/10.2307/1912017>
- Standard Investment Bank. (2020). Standard Investment Bank -simply, we are the Standard. Retrieved May 14, 2020. <http://www.sib.co.ke/>
- Stock, J. H., & Watson, M. W. (2001). Vector Autoregressions. *Journal of Economic Perspectives*, 15(4), 101–115. <https://doi.org/10.1257/jep.15.4.101>
- Streidwolf, E. G. (2018). *Factors Influencing Personal Investment Decisions: Case of USIU-A Graduate Students*. Erepo.Usiu.Ac.Ke. <http://erepo.usiu.ac.ke/handle/11732/4391>
- Surbhi, S. (2017). Difference Between Investment Bank and Commercial Bank. Retrieved on May 15, 2020. <https://keydifferences.com/difference-between-investment-bank-and-commercial-bank.html>
- Suriani, S., Dileep Kumar, M., Jamil, F., & Muneer, S. (2015). International Journal of Economics and Financial Issues Impact of Exchange Rate on Stock Market. *International Journal of Economics and Financial Issues*, 5, 10–11. <http://www.econjournals.com>
- Trading Economics (2020). Retrieved on May 14, 2020. <https://tradingeconomics.com/>

- Tripathi, V., & Kumar, A. (2014). Relationship between Inflation and Stock Returns – Evidence from BRICS markets using Panel Co integration Test. *International Journal of Accounting and Financial Reporting*, 4(1), 647. <https://www.academia.edu/19789276>
- Woolridge, J. (2012). *Introductory Econometrics. A Modern Approach 5th edition*. United States: South Western Cengage Learning.
- Yadav C., Lama S. & Rajangahlot (2015). The study of inflation & stock market returns in Pakistan. *International Journal of Marketing, Financial Services & Management Research*. 4 (2), 39-48.
- Zhao, H. (2010). Dynamic relationship between exchange rate and stock price: Evidence from China. *Research in International Business and Finance*, 24(2), 103–112. <https://doi.org/10.1016/j.ribaf.2009.09.001>
- Zhang, C., & Dong, L. (2011). *Determinants of Bank Profitability: Evidence from the U.S Banking Sector*. Simon Fraser University.
- Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2010). *Business research methods* (8th ed.). Mason, HO: Cengage Learning.
- Tursoy, T., Günsel, N. & Rjoub, H. (2008). Macroeconomic factors, the APT and the Istanbul stock market. *International Research Journal of Finance and Economics*, 22, 49-57.
- Paavola, M. (2006). Tests of The Arbitrage Pricing Theory Using Macroeconomic Variables in The Russian Equity Market. (Bachelor's thesis, Lappeenranta University of Technology, Finland) Retrieved from: <http://www.doria.fi/bitstream/handle/10024/30869/TMP.objres.246.pdf?>

APPENDICES

Appendix I: Investment banks licensed by Capital market authority (CMA)

	INVESTMENT BANKS NAME	ADDRESS	LICENSE NUMBER
1.	African Alliance Kenya Investment Bank Limited	P.O. Box 27639, Nairobi	001
2	Barclays Financial Services Limited	P.O. Box 30120-00100, Nairobi	002
3	CBA Capital Limited	P.O. Box 30437-00100, Nairobi	003
4	Dyer and Blair Investment Bank Limited	P.O. Box 45396-00100, Nairobi	004
5	Equity Investment Bank Limited	P.O. Box 74454-00200, Nairobi	005
6	Faida Investment Bank Limited	P.O. Box 45236-00100, Nairobi	006
7	Genghis Capital Limited	P.O. Box 9959-00100, Nairobi	007
8	KCB Capital Limited	P.O. Box 48400-00101, Nairobi	008
9	NCBA Investment Bank Limited	P.O. Box 44599-00100, Nairobi	009
10	Renaissance Capital (Kenya) Limited	P.O. Box 40560-00100, Nairobi	010
11	SBG Securities Limited	P.O. Box 47198-00100, Nairobi	011
12	Standard Investment Bank Limited	P.O. Box 13714-00800, Nairobi	012
13	Kestrel Capital (East Africa) Limited	P.O. Box 40005-00100, Nairobi	091
14	Sterling Capital Limited	P.O. Box 45080-00100, Nairobi	021
15	Dry Associates Investment Group	P.O. Box 684-00606, Nairobi	114
16	Salaam Investment Bank Kenya Limited	P.O. Box 14939-00100, Nairobi	115

Appendix II: Data Collection Sheets –Quarterly Averages

YEAR	Period	Average ROA Per Quarter	Change in CPI Per Quarter	Interest Rate Per Quarter	Change Exchange Rate Per Quarter	Change in real GDP Per Quarter
2006	3Q					
	4Q					
2007	1Q					
	2Q					
	3Q					
	4Q					
2008	1Q					
	2Q					
	3Q					
	4Q					
2009	1Q					
	2Q					
	3Q					
	4Q					
2010	1Q					
	2Q					
	3Q					
	4Q					
2011	1Q					
	2Q					
	3Q					
	4Q					
2012	1Q					
	2Q					
	3Q					

	4Q					
2013	1Q					
	2Q					
	3Q					
	4Q					
2014	1Q					
	2Q					
	3Q					
	4Q					
2015	1Q					
	2Q					
	3Q					
	4Q					
2016	1Q					
	2Q					
	3Q					
	4Q					
2017	1Q					
	2Q					
	3Q					
	4Q					
2018	1Q					
	2Q					
	3Q					
	4Q					
2019	1Q					
	2Q					
	3Q					
	4Q					

Appendix III: Research Program

Research Activity	Time Frame		
	Start	Finish	Duration
Proposal Development	14 th Feb, 2020	30 th Aug, 2020	191 days
Data Collection (Fieldwork)	15 th Sep, 2020	2 nd Oct, 2020	14 days
Data Analysis & Interpretation	9 th Oct, 2020	23 rd Oct, 2020	12 days
Report Writing	27 th Oct, 2020	7 th Nov, 2020	10 days
Report Presentation	12 th Nov, 2020	-	1 day
Time to be taken			228 days

Appendix IV: Research Budget

Research Activity	Description	Cost (ksh)
Preliminary study	Internet, field travel	3300
Proposal Development and defense	Internet, phone calls, travel to consult the supervisor, printing services	12000
Data Collection, analysis and interpretation.	Wages for 1 research assistants, field travel, internet, phone calls, writing materials, printing services, mileage.	30000
Report Writing	Phone calls, internet, travel to consult the supervisor	5200
Report Presentation	Printing services	2400
Grand Total	-	52,900