

**MACROECONOMIC FACTORS AND FINANCIAL PERFORMANCE OF
EQUITY FUNDS IN KENYA**

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DECLARATION

This research is my original prepared with no other than the indicated sources and support and has not been presented for a degree in any other university and has not been published anywhere.

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CERTIFICATION

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DEDICATION

This work has been dedicated to my parents, Caleb Shitemi and Carlyne Shitemi, my siblings, Max Mwihwa and Esther Iminza without whose financial and emotional support I would not have made it. God bless you.

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ABSTRACT

Investment in mutual funds is becoming increasingly popular and plays a significant role in the financial sector. Over the past few years, diversified equities mutual funds in Kenya have grown in both quantity and size at an astounding rate. On a risk-adjusted basis, however, employing many performance metrics including the Sharpe ratio, they were no better than the market. Individual and corporate investors are discouraged by the weak performance trends of Kenyan mutual funds, which also impedes the implementation of vision 2030. In the eyes of investors, it is possible to foretell an investment's future success by studying its historical performance. It is not apparent how mutual funds are related to macroeconomic issues. The variables are correlated in some empirical works in a positive way and in others in a negative way. Additional variables that have an impact on the overall economic environment, such as the COVID-19 epidemic, the conflict in Ukraine, and the political unpredictability in Kenya following its general elections, have only served to heighten the situation's inherent unpredictability. The purpose of this study was to examine the impact of selected macro-economic factors on performance of equity mutual funds in Kenya. The macro-economic variables that were studied are inflation rate, national income and exchange rate. The study adopted a longitudinal research design. The target population consisted of 23 mutual funds with equity portfolios that were licensed by the Capital Market Authority. Of these, eleven were selected through a census. The study utilized secondary data from the Kenya National Bureau of Statistics, Capital Markets Authority, and Central Bank of Kenya between 2018 and 2022. Panel data analysis was implemented due to its capacity to integrate cross-sectional and time series data. The mean and standard deviation were the descriptive statistics that were conducted. Panel regression was employed in the course of inferential statistics. The static linear panel model was developed to ascertain the correlation between the financial performance of the dependent variable and the independent variables. Tables were employed to illustrate the data. The results indicated that the financial performance was significantly, negatively impacted by the exchange rate and inflation rate. Conversely, the financial performance of equity funds was significantly positively impacted by the Gross Domestic Product. In summary, the performance of equity funds is influenced by macroeconomic factors in both positive and negative ways. The results of this research are of significant importance to the scholarly community, equity fund managers, and policy makers. The research suggested that equity fund managers should diversify the risk associated with inflation and exchange rates by investing in both domestic and foreign portfolios. It will be of importance to researchers and future academicians who may need to refer to and expand upon it for additional research.

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LIST OF ABBREVIATIONS AND ACRONYMES

| | |
|-------------|-------------------------------|
| APT | Arbitrage Pricing Theory |
| CAPM | Capital Asset Pricing Model |
| CBK | Central Bank of Kenya |
| GDP | Gross Domestic Product |
| EMH | Efficient Market Hypothesis |
| KBS | Kenya Bureau of Statistics |
| KPMG | Kynveld Peat Marwick Goedeler |
| MF | Mutual Fund |
| MFI | Mutual Fund Investors |
| MPT | Modern Portfolio Theory |
| NAV | Net Asset Value |
| NSE | Nairobi Stock Exchange |
| OMAM | Old Mutual Asset Managers |
| ROA | Return on Assets |
| ROE | Return on Equity |
| ROI | Return on Investment |
| VIF | Variance Inflation Factor |

OPERATIONAL DEFINITION KEY TERMS

Exchange rates- This is a macroeconomic factor that refers to some of cash that is associated with conversion of currency and goods that hence interferes with the mutual funds general performance. The USD/KES exchange rate is used.

National income- It is a macroeconomic factor that avails the total production in a country for a given period of operation that hence interferes with the mutual funds general performance. The Gross Domestic Product was used to measure national income.

Inflation rate- This refers to a macroeconomic factor of persistent increase in price of commodities that interferes with the mutual funds general performance. The Consumer Price Index was used as indicator of inflation rate.

Macroeconomic factors- These are national factors that impact the economy as a whole, not just a particular equity fund, and are thus outside the control of fund management. Among these, you can find the GDP, inflation rate, and currency rate.

Performance of equity fund- Is regarded as the capacity to transform equity into returns for owners. Return on Equity was used to assess financial performance.

Mutual Funds- This refers to types of financial intermediaries linking surplus spending units to deficit spending units.

Equity funds- This refers to types of mutual funds which primarily invest in stocks with an objective of maximizing returns in the long run.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Financial intermediaries bear tremendous obligation to both borrowers and lenders. One of the most significant contributors to the financial sector, mutual funds are now an integral element of the capital market sector in every country. Mutual funds connect units of surplus spending with units of deficit expenditure through various forms of financial intermediaries. Investors in mutual funds can buy stocks or bonds with the money they put into the fund through the sale of equity shares. The advantage of a mutual fund over direct investment is that it provides small investors access to reduced investment risk that results from diversification, economies of scale in transaction costs, and professional financial managers (Adjei, 2021)

The value of a mutual fund unit is not constant; it fluctuates in accordance with the pricing of the securities in its investment portfolio. The majority of mutual funds are concentrated in specific market sectors. For instance, certain investors exclusively invest in debt or equities, while others concentrate on an industry, such as energy or real estate, or in foreign investment. Mutual funds accumulate funds from numerous investors and allocate them to stocks, bonds, short-term money market instruments, other securities or assets, or a combination of these investments (Muthaura, 2013).

Scholars, investors, and regulatory bodies have all been intrigued by the impact of macroeconomic variables on mutual fund performance. The efficacy of mutual funds would be contingent upon the stability of macroeconomic variables in a specific economy. In recent

years, the field of financial theory has concentrated on the systematic

The impact of inflation, exchange rates, and other macroeconomic variables on financial performance and the associated risks.(Adjei, 2021).In their study of the United States, Humpe and Macmillan (2009) discovered that stock prices were positively correlated with industrial production, whereas the consumer price index and the long-term interest rate were discovered to be negatively correlated. The money supply and stock returns were determined to be insignificantly correlated. Ratanapakorn and Sharma (2007) verified the negative correlation between stock prices and the long-term interest rate and the positive correlation between stock prices and industrial production. Additionally, they indicate that there is a positive correlation between the money supply, inflation, the exchange rate, and the short-term interest rate and stock prices.

The gains and volatility of Canadian indexes were immediately and significantly affected by a number of US macroeconomic news stories. When the US economy was in a recession in 2008, Canadian stock returns were somewhat affected by macroeconomic statements. Financial markets in the United States and Canada are interdependent, according to the results (Hussain & Omrane, 2020).With an emphasis on the financial markets of Central and Eastern Europe, Nicolescu (2020) investigated the interplay between capital markets and macroeconomic variables. Two parts of the capital markets—the stock exchange and the mutual funds market—were examined in this study, together with the impact of five macroeconomic variables: population, GDP/capita, inflation, unemployment, and savings. The countries in question were Romania and Hungary. According to the research, macroeconomic factors had a higher effect on Romanian capital markets than Hungarian

ones over the studied time, and they had a greater influence on stock exchange development than mutual fund development.

Cheung and Ng (2011) conducted an empirical study that looked at how stock market indices, which are a measure of stock performance, react to changes in macroeconomic variables. Canada, Germany, Italy, Japan, and the United States were the developed economies that they chose to focus on. Their research proved that shifts in the stock market index are always associated with shifts in the underlying macroeconomic factors.

Ibrahim and Aziz (2003) looked studied the correlation between stock prices and the following variables in Malaysia: industrial production, money supply, consumer price index, and exchange rate. Industrial production and consumer price index are discovered to have a good correlation with stock prices over the long run. On the other hand, he discovered that the money supply and exchange rate have a negative correlation with stock prices. In 2008, Gay investigated the impact of certain macroeconomic variables on stock returns. According to his research, countries like Brazil, Russia, India, and China saw little to no effect from changes in the exchange rate or oil prices on the value of their stock market index.

Mohammadreza and Esmaeel (2013) also investigated the influence of inflation rates and exchange rates on the return of mutual funds in Iran. By analyzing panel data for all the mutual funds within the specified years, they tested the study's hypothesis using monthly data from 2008 to 2011. Fund returns were positively correlated with both inflation and currency rates, according to the results. Based on his research on the effects of important macroeconomic variables on the profitability of Ghanaian mutual funds, Adjei (2021) concluded that, over the long term, the exchange rate, inflation, Treasury bill, and GDP

growth all had a positive effect on fund profitability, while the monetary policy rate had a distinctly negative effect.

Amadi, Oneyema, and Odubo (2006) implemented a multiple regression model to predict the functional relationship between inflation, interest rates, exchange rates, and stock prices. According to their research, theoretical hypotheses and empirical results in certain nations are congruent with respect to the relationship between stock prices and macroeconomic variables. Additionally, Kariuki (2014) used a casual research methodology to uncover the effects of macroeconomic variables on the financial performance of Kenya's mutual fund industry. The study determined that macroeconomic variables in Kenya had both positive and negative effects on mutual funds by employing the multiple linear regression model to analyze the collected data.

1.1.1 Equity Funds

Mutual funds often fall into one of four categories: equity, fixed income, money market, or balanced. Equity funds invest in listed stocks with the goal of providing superior returns over the medium to longer term by maximizing dividend income and capital gains. Investors with a time horizon of three years or more will be well-suited to this investment. The fund's level of risk is medium to high. A diversified portfolio of shares across multiple industries is typically recommended to mitigate risk in the stock markets, which may be very volatile. A money market fund invests in short-term, interest-bearing securities with a maturity date of one year or less. Deposits in banks and other short-term money market instruments, such as commercial papers and treasury bills, are examples of these securities. Investors seeking financial stability, liquidity, and a high income yield from a low-risk investment vehicle

would do well to consider this fund. In times of extreme stock market volatility, the fund provides a welcome refuge for investors seeking to transition from more volatile to more stable portfolios with higher interest rates and lower risk.

A fixed income fund's primary goal is to generate a respectable amount of income in the present while simultaneously ensuring the capital's greatest stability. Treasury bills, bonds, preference shares, and corporate bonds are among the interest-bearing assets that the funds are invested in. An appropriate amount of both short-term income and long-term capital appreciation is what a balanced fund aims to provide its investors. One way to accomplish this is to invest in a variety of fixed-income and equity instruments. Investors looking for a diversified portfolio that covers all market areas can consider this product. Pension plans, institutional clients' treasury portfolios, co-ops, and high-net-worth individuals are among the many additional types of clientele that can benefit from it. The fund's level of risk is medium. (Shano 2014)

1.1.2 Performance of Equity Funds

Financial performance is defined as the method by which an organization's policies and operations are evaluated in relation to their monetary outcomes (Maina, 2013). Historically, fund performance has been evaluated using assortment methods. Jensen, Alpha, Treynor, and Sharpe ratios are the most popular metrics. Fund return formulas and portfolio return formulas, which do not account for risk, have also been employed. The equity trust fund's performance will be evaluated in this study utilizing the Sharpe ratio. The majority of the literature uses the ratio to evaluate the risk-adjusted returns of equity funds.

Prior studies on equity mutual funds show that the funds do not outperform the market. A study by Shano (2014) whose objective was to measure the performance of equity mutual funds in Kenya found the mutual funds performed no better than the market on a risk-adjusted basis using various performance measures. The NSE 20 share index was used as a statistical representation of the market. The market exhibited a 3% positive return, however all the individual funds included in the analysis had a positive but somewhat lesser return in comparison to the market. Old Mutual Kenya had a dividend yield of 2.8%, whereas Britam had 2.3% and CBA had 2.1%. The Sharpe ratios for the period 2006-2009 were all negative implying they did not outperform the market

1.1.3 Macroeconomic Factors

The macro-economic variables that have been identified over time as having influence on mutual funds and other financial instruments include; inflation, gross domestic product (GDP), currency exchange rate, interest rates, legal and regulatory environment and risk (Cashman.,2012). Kwon and Shin (2018) established that; a country's economy impacts the performance of its organizations and by extension GDP, inflation, interest rates and currency exchange rates as well as market risks forms the macro economic factors. Singh and Sharma (2011) found out that many private equity firms, which carry investment over a long term are least affected by macro-economic variables.

Inflation is the state of experiencing a continuous and lasting rise in the prices of goods and services over an extended period of time. This phenomenon is attributed to an increase in earnings that is not commensurate with the growth in the production of goods and services. The decrease in the purchasing power of individuals with low incomes leads to challenges in obtaining essential necessities (Cytonn, 2022).

The exchange rate determines the amount of local currency needed to purchase an equivalent basket of goods and services in another country. Exchange rates can be stated as either a direct or indirect quotation. The exchange rate affects the relative worth of local and international goods, as well as the demand for local items from foreign countries. Studies on international exchange rates have predominantly used nominal exchange rates, however it is possible to assess variations in real nominal terms.

Gross Domestic Product (GDP) refers to the whole economic output of a nation during a certain time frame, measured in terms of monetary value. Gross Domestic Product (GDP) per capita is a reliable indicator for assessing economic downturns and subsequent recoveries. Gross Domestic Product (GDP) is commonly used as the primary macroeconomic indicator to assess the overall economic output of a country. The growth rate of GDP serves as an indicator of the current economic conditions.

Kotishwar (2017) considered the repo rate, reverse repo rate, GDP and inflation to assess the influence of economic variables on mutual funds in India. Kariuki (2014) assessed money supply, interest rate, inflation rate, GDP and exchange rate as possible influencers of the performance of mutual funds in Kenya. Lobao and Levi (2016) used GDP growth, industrial production growth, consumption growth and unemployment rate growth as macroeconomic variables in assessing the relation between mutual funds flow, stock returns and macroeconomic variables in Portugal.

Since the onset of the COVID-19 pandemic in March 2020, the economy has been characterized by a prevailing sense of uncertainty. At the onset of the pandemic, economists were unable to foresee the extent to which the economy would be adversely affected by the widespread implementation of lockdown measures. Subsequently, inflation began to

increase as a result of disturbances in the supply chain. The invasion of Ukraine by Russia caused a surge in uncertainty, resulting in an energy crisis and a significant increase in inflation. Also, the political environment in Kenya made the situation event more unpredictable occasioned by its general elections. These events introduced a high degree of uncertainty in macroeconomic variables such as GDP, inflation rate and exchange rate (Iania 2023).

Moreover, empirical literature reveals inconsistencies in how inflation rate, exchange rate and GDP affect mutual funds. Since these macroeconomic variables changed significantly during the period 2018 to 2022 occasioned by the pandemic and general elections, the study will get accurate results on their influence. The study examined how the selected macroeconomic variables affected equity fund performance.

1.1.4 Mutual funds in Kenya

The mutual fund sector in Kenya is very new, beginning with the implementation of the Capital Markets Amendment Act 2000. This act introduced specific investment vehicles, specifically mutual funds. The act was enacted with the aim of encouraging widespread Kenyan participation in the financial sector. However, despite the positive action of enacting the Act, the mutual fund business did not begin until December 2001 when African Alliance Kenya received a license from the Capital Markets Authority (CMA) to establish the first regulated mutual fund organization. Currently, it provides investment options such as Money Market Fund, Fixed Income, Managed Retirement Fund, and Equity Fund to both institutional and individual clients. Stanbic Bank Kenya Limited serves as the trustee and custodian of the funds, KPMG Kenya acts as the auditors, and African Alliance Kenya Management Company Limited is responsible for fund administration (Capital Market

Authority, 2012). Subsequently, Old Mutual Asset Managers (OMAM) Kenya Limited introduced the Old Mutual Equity Fund and the Old Mutual Money Market Fund, which commenced operations on April 1, 2003. The Kenya Commercial Bank Limited serves as the trustee and custodian of the money, while Price water house Coopers Kenya acts as the auditors. The Fund Manager responsible for managing the funds is Old Mutual Investment Services Kenya Limited.

The assets under management of Kenyan mutual funds reached a new peak of Ksh 111 billion in the first quarter of 2021, compared to Ksh 76.3 billion in the same period of 2020, as reported by the CMA Quarterly Statistical Bulletin. 44.4% of the assets under management were allocated by fund managers to government securities. An amount of Ksh. 45.6 billion, which is equal to 41.1% of the total, was allocated to fixed deposits, while only Ksh 6.1 billion (0.51%) was allocated to NSE Listed Securities. The industry's total Assets under Management increased by 4.5% to Ksh 140.7 billion at the end of the first quarter of 2022, compared to Ksh 134.7 billion at the end of 2021. Equity mutual funds did not outperform the market on a risk-adjusted basis, despite the increase in asset size. However, the funds are neither profitable nor outperform the market. (Shano, 2014).

1.2 Statement of the Problem

World Bank data shows that in strong economies, capital markets provide 60% of a company's finance, while banks provide just 40%. Nevertheless, the World Bank observed that the majority of enterprises in Kenya depend on banks for 99% of their finance, with less than 1% sourced from the capital markets. Notably, Kenya's mutual fund to GDP ratio of 1.1% is very low compared to an average of 56.3% amongst select global markets, indicating

there is still room for improvement (Cytonn, 2022). Kenya's vision 2030 envisions the equity market as a source of financing for both corporate and government sectors aimed at achieving a 10 per cent average annual gross domestic product growth with 90 percent market capitalization to Gross Domestic Product (Government of Kenya, 2007). The government has shown support for the capital market by setting up the Capital Market Authority which is a financial regulatory entity responsible for supervising, licensing and monitoring activities of the capital market.

Despite the value that firms can draw from capital markets through equity financing, the performance of equity funds has not been impressive. Studies of equity mutual funds in Kenya show that the funds do not outperform the market (Shano, 2014). This may be attributed to the under developed capital market. Theoretically, the expected correlation between macro-economic variables and mutual fund performances is not clear. Whereas there are those who established a negative relationship between macroeconomic factors such as inflation, GDP and exchange rate and performance of mutual funds (Leyian, 2017; Garg & Srivastava, 2019), others hold that a positive correlation exists between those macroeconomic factors and performance of mutual funds (Kariuki, 2014; Njau, 2013 and Audo, 2014).

Basing on macro-economic dynamics and inconsistency of past studies the current study will seek to fill the empirical gap establishing the effect of selected macro-economic factors on performance of risk adjusted equity funds in Kenya.

1.3 Research Objectives

1.3.1 General Objective

The study investigated the macro economic factors influencing performance of mutual funds in Kenya.

1.3.2 Specific Objectives

- i. To examine the effect of inflation on performance of equity funds in Kenya.
- ii. To examine the effect of National income per capita on performance of equity funds in Kenya.
- iii. To examine the effect of exchange rates on performance of equity funds in Kenya.

1.4 Research Hypotheses

The study tested the following hypotheses:

H01: Inflation rate has no significant effect on performance of equity funds in Kenya

H02: National income per capita has no significant effect on performance of equity funds in Kenya

H03: Exchange rates has no significant effect on performance of equity funds in Kenya

1.5 Significance of the study

The findings of this study will be vital for mutual fund managers and other financial organizations that allocate investments to money market funds. Studying the macro-economic factors that impact the performance of equity funds in Kenya would enhance their comprehension and enable them to foresee and predict the behavior of the portfolio in response to changes in each element.

The result will hold great importance for the Capital Market Authority (CMA) and other financial authorities. Regulators will get valuable insights into the important elements that need to be targeted in order to promote growth in the collective investment schemes market. Ultimately, this study will serve as a valuable resource for future scholars and academicians who are interested in exploring the area of mutual funds. It will contribute to the existing body of literature and research on this particular investment. The study will additionally propose new areas for further investigation that impact the mutual fund industry by identifying gaps in research.

1.6 Scope of the study

The study examined the impact of macroeconomic variables on the performance of equities mutual funds in Kenya. The macroeconomic factors comprised the inflation rate, exchange rate, and national income. The study's financial performance will be assessed using the Return on Equity metric. The study focused on analyzing twenty-three mutual funds in Kenya that had equity portfolios and were active as of the end of the financial year on December 31, 2022. The study was carried out from 2018 to 2022. The preference for this historical period is attributed to the occurrence of several macroeconomic shifts.

1.7 Limitation of the study

The authenticity of the research data presented a challenge. The study aimed to utilize existing data sources, as the internet contains a plethora of data sets pertaining to the variables being researched. To address this difficulty, the researcher obtained study data exclusively from primary sources, such as KNBS, CBK, and financial statements of mutual funds.

Certain equity funds refrain from disclosing their financial performance on their websites. Consequently, the researcher was restricted to utilizing only 11 out of the 23 equity funds for data analysis.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides a comprehensive examination of pertinent literature regarding the performance of equity mutual funds as influenced by macroeconomic variables. Additionally, pertinent theories and information from academicians and researchers who have conducted research in this field will be examined. The chapter also examines the conceptual framework's depiction of the relationship between independent and dependent variables, as well as the related empirical literature and the identification of knowledge gaps.

2.2 Theoretical Literature review

2.2.1 Arbitrage Pricing Theory

Stephen Ross proposed the Arbitrage Pricing Theory in 1976. The fundamental tenet of this asset pricing model is that the correlation between an asset and a number of commonly used risk variables allows one to anticipate the asset's return. The theory postulates, by linearly combining numerous independent macroeconomic factors, a link between portfolio returns and returns of a single asset. APT delineates the anticipated value of an asset in the event that its price is incorrectly assessed. The Capital Asset Pricing Model (CAPM) established a relationship between asset returns and market returns. Nonetheless, APT's basic tenet is that multiple variables interact to establish the market return. These elements can have a statistical or foundational (macroeconomic) nature. Inflation, gross domestic product, and exchange rates are the macroeconomic variables that this study provides. The absence of arbitrage opportunities in the investment process is inevitable if these elements are essential.

By simultaneously taking advantage of multiple prices for the same asset, arbitrage allows one to earn a profit without taking any risks. The lack of clarity on the APT model's risk variables is its most significant flaw. Consequently, this is the guiding theory of the research.

2.2.2 Modern Portfolio Theory (MPT)

Modern Portfolio Theory, put out by Harry Markowitz in 1952, is based on the idea that even investors who are afraid of taking risks may create investment portfolios that maximize their expected return given a certain level of risk. According to this theory, taking more risks always comes with the possibility of greater payoffs. That one stock's expected risk and return isn't enough to warrant further investigation is the implication. It is more prudent for an investor to spread their bets over various equities in order to reap the benefits of diversification, which include a lower overall portfolio risk. The total performance is affected by the risky activities that equity mutual funds invest in. Investing in an inflationary environment can be risky. Concerns about currency fluctuations also dominate the industry. For a given level of expected return and a given feasible set of securities, Markowitz had shown that knowing the covariance or correlation between all possible security combinations is necessary for the optimal portfolio with the lowest total risk, as measured by variance or standard deviation.

MPT theory presupposes that investors are risk-averse, which implies that they will select the asset with the lower risk when presented with two assets that yield comparable returns. MPT posits that it is feasible to establish an efficient frontier of optimal portfolios that provide the highest possible expected return for a specified level of risk. A combination of assets with maximum expected returns that is superior to any other combination and provides the highest level of returns at the lowest level of risk is referred to as the efficient

frontier (Markowitz, 1952). The correlation coefficient estimation for two assets is a challenging task, which manifests as weaknesses in the MPT. It is impractical to have multiple assets that necessitate intricate instruments, as it is even more difficult. In reality, there is an infinite array of investment opportunities.

2.2.3 Capital Asset Pricing Model (CAPM)

The Capital Asset Pricing Model was developed by financial economist William Sharpe (1970), as detailed in his book, "Portfolio Theory and Capital Markets." He proposed the idea that there are two forms of risk associated with individual investments: systematic risk and market risk. There is systemic risk, which includes things like interest rates and recessions, and there is unsystematic risk, which is the risk associated with particular equities and can be mitigated by diversifying an investor's portfolio. In other words, it denotes the portion of a stock's return that is not influenced by broader market fluctuations. Several models are used to determine the value of assets or securities. For the purpose of displaying asset pricing, Sharpe devised CAPM. The capital asset pricing model is the foundation for the majority of performance measurement tools, including the Sharpe Index. When compared to other kinds of mutual funds, the risk level associated with equity mutual funds is higher because they invest primarily in capital market stocks. Portfolio metrics including the Sharpe Index, Treynor Ratio, Jensen Index, and Return on equity can be used to evaluate equity mutual funds like a stock portfolio. Return on Equity was the portfolio metric employed in the study.

2.3 Conceptual Literature Review

2.3.1 Exchange Rates

The sensitivity of exchange rates is of utmost importance for international investors who want to participate in the domestic market, as well as for domestic investors who wish to invest in foreign markets. The exchange rate policy is widely regarded as a highly influential tool for regulating the economy and managing the external sector of an economy. Exchange rates have a significant influence on the prices at which a country engages in commerce with other nations. This makes exchange rates a crucial factor in analyzing and formulating policies for an open economy.

2.3.2 Inflation Rate

Inflation refers to the widespread and continuous increase in the overall prices of goods and services, as measured over a specific time frame. The repetitive escalation of prices diminishes the buying capacity of money and other financial assets with stable worth, resulting in financial insecurity. Inflation arises when a combination of current economic pressures and expectations of future changes lead to a situation where the demand for goods and services surpasses the available supply.

In general, there is an inverse correlation between inflation and interest-bearing assets, including interest-bearing mutual funds. This is primarily attributed to the erosive impact that inflation has on the value. Nevertheless, equities diversified mutual funds have traditionally been resistant to this deteriorating impact. A study conducted by Bakaert and Engstrom (2010) found that economic recessions lead to increased uncertainty, which in turn erode investor confidence in the economy. This is due to the fact that during economic

recessions, market risk tends to be elevated. As a consequence, there is an increased risk premium that typically diminishes the value of the investor's ownership over time.

2.3.3 National Income

The GDP growth rate serves as a primary measure for determining whether an economy is expanding or experiencing a recession, as it reflects the changes in the overall economic performance. Consequently, it serves as a crucial measure of the economic risk present in an economy, which impacts the returns of mutual funds and other investments. Companies utilize the GDP growth rate as a means of forecasting whether their operations will experience decline or expansion. The GDP is directly correlated with the fluctuations in financial markets. Investors allocate their investments based on the trajectory of the real Gross Domestic Product (GDP) in the economy.

2.4 Empirical Review

There have been numerous investigations into the influence of macroeconomic variables on the financial performance of mutual funds, insurance companies, and non-bank financial institutions, as well as on stock market returns. This empirical evaluation, which is conducted under the macroeconomic determinants of mutual funds, will evaluate GDP, inflation, interest rates, and exchange rates.

2.4.1 Inflation and Performance of Equity Mutual Funds Performance

According to a study by Ahuja, Makan and Chauhan (2012) which investigated the effect of macro-economic variables on mutual fund schemes in India, in terms of return volatility. The results of the study identified increase in inflation and crude oil prices affected mutual fund returns. Whereas both India and Kenya are developing countries, India is a bigger economy hence there may be dynamism in the equity funds market based on its size hence such findings may not be applicable in the Kenyan context therefore warranting the present study. Humpe and Macmillan (2009) studied the effect of several macroeconomic variables on the stock prices in the US and Japan using monthly data between 1965 and 2005. They used co-integration analysis to look at how stock prices and the consumer price index relate to one another within the context of the conventional discounted value model. There was a negative correlation between stock prices and both the consumer price index and the long-term interest rate. The USA and Japan are developed countries with more developed capital markets, unlike Kenya which is a developing country hence the results are not applicable in Kenyan equity funds.

In the case of Indonesia, Heramwan and Wiagustini (2016) indicate that macroeconomic variables such as inflation has a negative relationship on the performance of mutual fund. In contrary, inflation has positive impact on mutual fund performance (Alexandr, 2013). However, Pasaribu and Kowanda (2014) revealed that there is no effect of inflation to the performance of mutual fund. The studies were centered on ROA and ROE to point on performance.

Wagwa (2021) sought to establish the relationship between macroeconomic variables and performance of stock prices of companies listed at NSE in Kenya. The study found that

inflation rate had a significant negative relationship with stock prices traded at the NSE. This study will focus on equity funds as opposed to Stocks at the Nairobi Stock Exchange.

According to Ciner (2015) examination of the relation between equity returns and inflation in a frequency dependent framework. The researchers discovered that the correlation between stock returns and inflation rate is significantly frequency dependent. There is a negative correlation between trend shocks, defined as those with higher persistence, and stock returns across all sectors that were considered. Nevertheless, they contended that market players can anticipate the influence of inflation on share prices, making this association artificial.

Inflation rates and commercial bank liquidity were the foci of an investigation by Audo (2014). For this demographic, we used all 43 of Kenya's commercial banks that were active between 2008 and 2013. There was no statistically significant correlation between inflation and commercial banks' liquidity ratios, according to regression analysis. According to the results, inflation is not a major macroeconomic factor that affects commercial banks' liquidity ratio. While that research centered on banks, the present investigation is centered around equity funds.

Leyian (2017) looked at how various macroeconomic factors affected the returns of Kenyan mutual funds. Using a descriptive survey design methodology and multiple regression analysis, the researcher looked at the impact of inflation on the financial performance of mutual funds between 2011 and 2016. Interest rates are dynamic, the study found, and mutual funds could benefit or suffer from unexpected shifts in the market. Mutual fund inflation rates and the results showed that inflation has a detrimental effect on mutual fund

performance. The study was remarkably directed using panel regression. Panel regression will serve as the guiding principle for the present inquiry due to the utilization of panel data. Also, before drawing any conclusions or inferences from the data, diagnostic tests will be run on it.

Nderitu (2012) conducted research to find out how inflation affected investment in Kenyan insurance firms. The research strategy used in this study was a descriptive one. The study's intended participants were 46 Kenyan insurance firms. The study selected 35 insurance companies with the authority to do business in various insurance classes and, by implication, bid bonds using a planned sample method. Secondary data was sourced from CBK, the central bureau of statistics, and audited financial accounts of the enterprises. In order to highlight the effects of changes in inflation on company investment, the collected data was subjected to many models. Inflation has a detrimental effect on investment among Kenyan insurance companies, according to the report. This study is concerned with equity funds, whereas the previous one was more narrowly focused on insurance companies.

There was a good correlation between the returns of mutual funds and the rates of both Treasury bills and market interest, according to Amunga (2015), who investigated the elements impacting the performance of Kenyan mutual funds. Inflation, fund size, and GDP growth rate all had negative betas calculated. The most important factors influencing the returns of mutual funds were found to be the rates of inflation, market interest, and GDP growth. While the beta for the rate of Treasury bills was not statistically significant, the fund size had a smaller but significant effect. Every single mutual fund in Kenya was the focus of the research. Specifically, the current investigation concentrated on mutual funds that maintained an equity portfolio.

Inflation was supposed to moderate the association between operational expenditures, fund size, systematic risk, and performance of unit trusts in Kenya, however Nthimba's (2021) research on the topic failed to do so. Findings indicated that systematic risk had no discernible impact on the performance of bond and balanced funds, but had a positive and statistically significant influence on the performance of stock and money market funds as measured by the Jensen index.

2.4.2 Gross Domestic Product and Equity Mutual Funds Performance

Gross domestic product (GDP) is a measure of both the quantity and quality of economic activity. The expansion of the economy is reflected in a rise in GDP. Companies can foretell their success or failure based on the GDP growth rate. Financial market ups and downs are intimately correlated with GDP, therefore investors stay away from areas when GDP is falling. Mutual fund returns were unrelated to GDP growth, according to Garg & Srivastava (2019). For portfolios of large and medium-sized businesses, Singh et al. (2011) discovered a positive correlation between GDP growth and stock returns. While the previous research looked at all mutual funds in India, this one will narrow its attention to equities funds in Kenya.

Pal and Mittal (2011) looked at the relationship between several long-term macroeconomic indicators and the Indian capital markets. These variables included interest rates, inflation rates, exchange rates, and gross domestic savings. Their research covers the years 1995–2008 using quarterly time series data. According to the research, some macroeconomic variables influence stock market movements, but other macroeconomic factors also have an impact on the Indian capital market.

The effect of macroeconomic variables on the Net Asset Value of Indian mutual funds was investigated by Pamigrahi (2019). According to their theories, the enterprises or sectors in which the funds invest are profoundly affected by macroeconomic variables, which in turn impact the performance cycle of the funds. The model used interest, inflation, and exchange rates as macroeconomic variables through regression analysis. Mutual fund performance was found to be positively or negatively affected by macroeconomic variables, according to the study's trend analysis and regression model. A future increase in interest rates of a specific percentage will have a devastating effect on the mutual fund's performance. Goods prices will rise in the future due to inflation. Generally speaking, mutual fund performance improves as the inflation rate rises since the risk involved rises as well. While the currency rate is a major factor when dealing with international assets, it often has a little impact on mutual funds. Since panel regression can encompass a bigger sample, it is often considered to be more superior to regression, which is why it was used in this study.

Additionally, Qureshi (2019) investigated the correlation between mutual fund inflows, stock market returns, and macroeconomic variables for nine emerging Asian economies: Thailand, China, India, Indonesia, Korea, Malaysia, Pakistan, the Philippines, and Taiwan. The research makes use of the following macroeconomic variables: GDP, inflation, exchange rate, and fiscal deficit to GDP ratio. The results demonstrated that the equity and bond flows are positively and strongly impacted by GDP, money growth, unemployment, and the ratio of fiscal deficit to GDP. Additionally, the study confirms the information hypothesis by showing that the relationship between financial flows and macroeconomic variables is bidirectional. The research, which is cross-national in nature, focused on nine

developing nations in Asia. Give results particular to the state of Kenya, in contrast to the current study.

Amunga (2015) cites research by Misati, Nyamongo, and Kamau (2011), which indicated a positive correlation between the return of mutual funds and the rate of Treasury bills. Inflation, fund size, and GDP growth rate all had negative betas calculated. According to the model's calculations, these variables stand for mutual fund market risk and a favorable risk-reward relationship. The most important factor influencing the returns of mutual funds was the interest rate.

Adjei (2021) looked into the correlation between Ghana's mutual funds' performance and macroeconomic factors. Mutual funds' financial performance was positively affected by exchange rate, inflation, T-bill, and GDP growth in the long run, but the rate of monetary policy had a negative and homogeneous impact. As for the effects of T-Bill and monetary policy on the financial performance of mutual funds, they discovered that these factors had different and substantial negative and positive effects in the short run. Mutual funds in Kenya are the subject of the current research.

Mutuku and Ng'eny (2015) examined the correlation between nominal GDP and stock price fluctuations. In any case, they proved that GDP has a beneficial effect on stock values. The research, on the other hand, relied on nominal GDP data series translated into natural methods and presented quarterly. Because of the potential reliability of real GDP and monthly data series, this may restrict generalization. The goal of this research was to use monthly data sets to analyze actual GDP.

2.4.3 Exchange Rates and Equity Mutual Funds Performance

The term "exchange rate" describes the percentage that different states charge one other for trading products. From the perspective of the lender, interest rates represent the fee for lending money, whereas from the borrower's it represents the cost of capital or the price of money for a given length of time (Mainga, 2014). The outlook for long-term economic growth and inflation, as well as changes in government policy and crises affecting the domestic and global financial markets, are among the many economic events that can cause interest rates to fluctuate. But occurrences like this in the economy are not common. The interest rate does not fluctuate as much in relation to the business cycle, which is the expansion and contraction of the economy over time.

A key macroeconomic indicator that correlates with GDP growth is interest rate (Alam& Uddin, 2009). Higher interest rates discourage investment and capital expenditure, according to research by Laopodis (2009). There will be pressure on the local currency as a result of the influx of foreign cash brought about by the higher interest rate. Because of this, the central bank will raise interest rates, which will have a devastating effect on the economy. The distribution of wealth between lenders and borrowers, the amount of investment spending on plants, equipment, and technology, and the degree of consumer expenditure on assets are all affected by changes in interest rates. Mainga (2014) notes that it also affects the value of monetary assets, bonds, and stock market mutual funds.

Four developing economies—China, India, Brazil, and India—were studied by Gay (2008) to determine the effect of macroeconomic variables on stock return. His analysis of oil prices and exchange rates, two of his preferred macroeconomic factors, found no statistically significant correlation with his stock market index. This is a cross-national study, and it

primarily focused on four developing economies. In contrast, this study only looked at Kenya, hence the results are only applicable to that country.

According to Najarzadeh (2009), there is a strong long-term equilibrium relationship between the Tehran Stock Exchange stock price index and variables of the real exchange rate and inflation. They also claim that shocks caused by these two variables have a negative long-term impact on the index, but a positive short-term impact. Shocks induced by changes in the inflation rate have a more significant effect on the real return of equities than shocks caused by changes in the exchange rate. Equity funds in Kenya will form the basis of the present investigation.

The impact of macroeconomic variables on the profitability of Kenyan mutual funds was investigated by Kariuki (2014). Funds available for investment, interest rates, inflation, and currency exchange rates were the five independent variables analyzed. Mutual fund performance was found to be significantly and adversely affected by exchange rate, according to the study. The study employed multiple regression analysis to ascertain the link between the variables and ROI as a performance metric. A risk-adjusted measure of performance, the Sharpe ratio will be used to quantify performance in this study. In addition, panel regression, a more better approach that may cover a wider sample, was used in the current study.

Mohammardreza and Esmaeel (2013) looked at how the Iranian economy's two main pillars, the exchange rate and inflation rate, affected the performance of mutual funds. This study's hypotheses are explored by analyzing monthly data from all mutual funds' panel from 2008 to 2011. The study's findings demonstrated a strong positive correlation among

inflation, the exchange rate, and fund return. The research was conducted in Iran, a country with a more advanced market than Kenya.

Abugri (2008) conducted research in four Latin American nations to find out if certain macroeconomic variables, such as interest rates, money supply, and currency rates, have a substantial impact on market returns. Results showed that crude oil prices had a substantial effect on mutual fund returns, which in turn were influenced by the country's macroeconomic variables. This is a cross-national study, and it primarily focused on four Latin American nations. In contrast to the current study, which concentrated on Kenya, by providing state-specific results.

2.5 Summary of Literature Review and Research Gaps

The empirical literature review substantiates research gaps, which encompass background gaps, conceptual gaps, and methodological gaps. The majority of research on macroeconomic factors and performance was conducted in other countries. Similarly, the majority of studies utilized ROA as a performance determinant and were founded on all types of mutual funds. Additionally, the majority of studies implemented multiple regression analysis.

Table 2.1: Summary and Research Gap

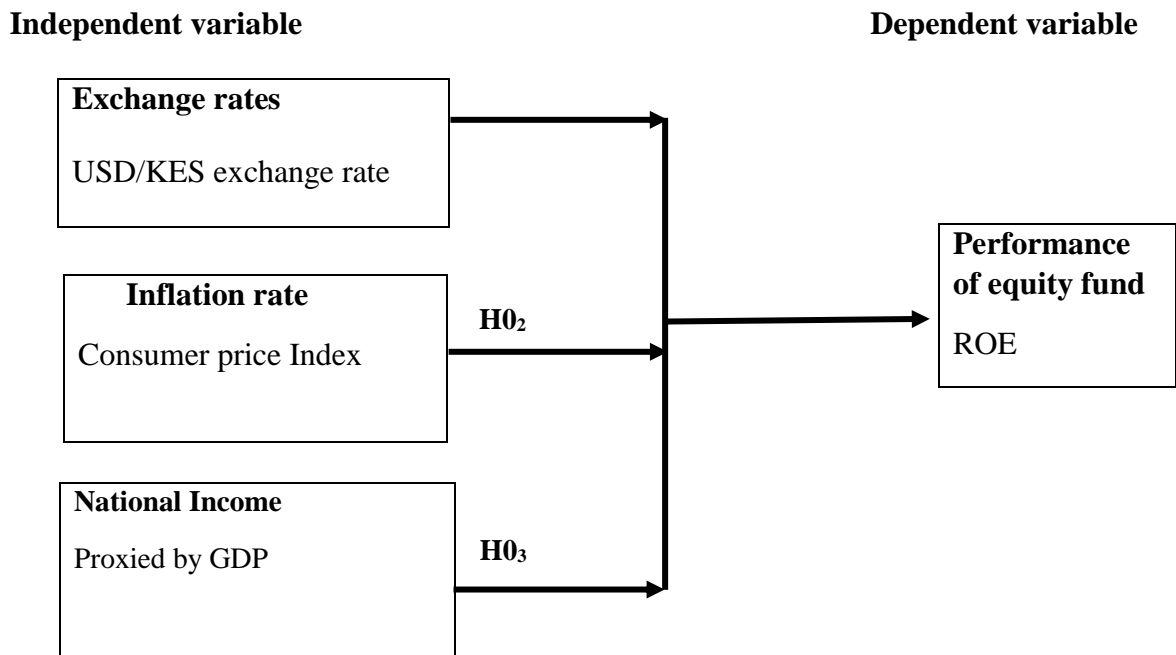
| Author & Year | Title | Findings | Gap |
|--------------------------|---|--|---|
| Leyian (2017) | Effects of macro-economic variables on the financial performance of mutual funds in Kenya | Inflation rate and exchange rate have a negative and statistically significant effect on financial performance | Study recommended longer period study and use of other variables of which this study involved GDP. This study focused on equity funds and adopted panel data regression method. |
| Kariuki (2014) | Effect of macro-economic variables on financial performance of mutual fund industry in Kenya. | Results indicate that inflation rate and GDP had a positive effect on financial performance of mutual funds. Exchange rate negatively affected financial performance | The current study sought to address the inconsistencies in results of Leyian's and Kariuki's effect on inflation rate. This study used STATA unlike SPSS on former study. |
| Adjei (2021) | Macroeconomic determinants of mutual funds' performance in Ghana | The study documents homogenous long-run significant positive impacts of exchange rate, inflation and GDP | The current study was carried out in Kenya unlike this study which was in Ghana. The current study focused on equity funds and not mutual fund in general. |

| | | | |
|------------------------------|---|---|--|
| Ade Noor (2017) | Effect of macro-economic factors on performance on the Nairobi Stock Exchange | on mutual funds. The study found out that there was an inverse moderate and significant relationship between inflation and performance of NSE. | The current study incorporated other variables as recommended by this study like exchange rate. The current study focused on equity funds and not NSE. |
| Muthomi and Muturi (2019) | Factors affecting mutual funds in Kenya. | Stock selection and market timing are the only factors that affect the performance of mutual funds in Kenya. | The current study used ROE as a performance measure of equity funds while this study used Jensen's alpha. |

2.6 Conceptual framework

The framework delineates the researcher's conception and interactions about the variables under investigation. The theoretical framework will be derived from a literature review to clarify the selection of the approach to be employed. This study will have three independent variables which include; exchange rate, national income and inflation rate, and a dependent variable which is performance of equity funds.

Figure 2.1 Conceptual Framework



Source: Author (2023)

Exchange rate is the initial macroeconomic determinant that this paper implements. A weighted average of the national currency to the currencies of its primary trading partner, which is the US dollar, is used to determine the exchange rate. Weighted values are also adjusted to account for inflationary fluctuations. Inflation is determined by the average change in the prices of a market basket of products and services that consumers pay over

time. The GDP is a metric that quantifies the national income and production of an economy. The total expenditure for all products and services produced within a country within a specified time frame is equivalent to GDP. Equity mutual funds will be evaluated using the Return on Equity measure.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology which will be used to carry out the study. It will cover the research design, population of the study, sampling techniques, instrumentation data collection and data analysis technic, data presentation method and research ethics.

3.2 Study Area

The study incorporated all mutual funds with equity portfolio. This involved 23 equity funds in Kenya. All equity funds were used to eliminate cases of sampling error.

3.3 Research Design

The research design is the organization of conditions for the collection and analysis of data in a manner that is intended to convey relevance to the research purpose while minimizing the cost of the process. A well-designed research methodology optimizes the efficiency of research operations, resulting in the acquisition of maximum knowledge while minimizing the expenditure of effort, time, and money. A longitudinal research approach was employed to determine the impact of macro-economic variables on the performance of mutual funds. Longitudinal studies utilize ongoing or repeated measurements over extended durations to determine the correlation between the variables.

3.4 Population of the study

The term population refers to the entire collection of components that are important to the study. Target population was mutual funds with equity portfolio in Kenya. There exists 23

mutual funds with equity portfolio in Kenya. (Capital Markets Authority 2023)

3.4.1 Sampling Technique

A sample is a representation of a target population. This study adopted census sampling. A census method entails complete enumeration where the entire population is used in the study majorly due to avoidance of sampling error and situations where the population is small (Mugenda & Mugenda, 2013)

3.5 Data collection

Secondary data was used for this study since they were readily available and were collected from the financial statements of respective companies. Data for Gross Domestic Product, exchange rates and inflation rates for the year 2018 to 2022 was collected and constitute annual average figures for the period under study from KBS, IMF, World Bank and CBK. Annual data pertaining to the unit trust performance was collected from published reports on websites. Attached in Appendix II is the data extraction tool adopted for this study.

3.6 Data Analysis

The statistical model or analysis used to evaluate the data is discussed in this part together with the variable measurements. First entered into an Excel file, the data was checked for anomalies and then sent to Stata program for analysis. Data was examined using descriptive statistics and inferential statistics. Descriptive statistics helped to make the data of the study understandable by using the mean and standard deviation.

Panel regression was employed in inferential research. The relationship between equity mutual funds and selected macroeconomic determinants was examined using panel data analysis. A data set that includes observations of multiple entities over multiple time periods is referred to as panel data. Conducted prior to inferential analysis were diagnostic tests for

panel regression analysis. Consequently, the equation below illustrates the performance of equity funds as a function of inflation, national income, and exchange rate.

Model:

$$Y_{i,t} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + e_{it}$$

Where:

i differentiates the equity funds and ranges from 1 to N where N is the number of equity mutual funds

t differentiates the observation times under study in this case 1 to 5 years

Y = performance of equity fund using Sharpe ratio

$\beta_1, \beta_2, \beta_3$ = Regression coefficient

X_1 = Inflation rate

X_2 = GDP

X_3 = Exchange rate

3.7 Diagnostic Tests

The tests confirm there is no breach of the Classical Linear Regression Model's assumptions.

The study is at risk of obtaining parameter estimates that are inefficient, inconsistent, and biased if a breach occurs. Pre-estimation and post-estimation diagnostic tests were implemented in the investigation, which encompassed evaluations of normality, multicollinearity, and stationarity.

3.7.1 Stationarity

Gujarati (2003) contends that the failure to consider the non-stationary nature of data during the estimation process may result in biased results. The study's panel data will include both cross-sectional and time series data. Consequently, it is imperative to ascertain its stationarity in order to prevent any bias that may arise from the assumption that the variables in the time series data are stationary. The presence of stationarity was evaluated using the Augmented Dickey Fuller test. The variables that are affected are subjected to differencing when there is a unit root.

3.7.2 Multicollinearity

Cooper and Schindler (2008) state that testing for multicollinearity is important because it stops indeterminate regression coefficients and unending standard errors from influencing the null hypothesis's acceptance or rejection. It is possible to draw the wrong conclusions due to faulty inferences when there is high multicollinearity.

3.7.2 Normality

Analysis of normality is conducted to ascertain the distribution of variables in a study. Departures from a normal distribution of variables might lead to erroneous assessments. This thesis utilized the criteria established by Bera and Jarque (1981) to evaluate normality. The null hypothesis for this test operated on the assumption of a normal distribution, whereas the alternative hypothesis operated under the assumption of a non-normal distribution. A significance level of 0.05 was employed. A p value less than 0.05 gives sufficient evidence to reject the null hypothesis, therefore indicating that the data does not adhere to a normal distribution.

3.7.3 Heteroscedasticity and Autocorrelation test

The panel data regression findings were examined to identify econometric issues, such as heteroscedasticity and autocorrelation. Heteroscedasticity occurs when the standard deviations of a variable, observed over a certain time period, are not constant. Autocorrelation is the measure of correlation between the values of a variable in distinct observations within the dataset. The researchers employed a Breusch and Pagan test to identify heteroscedasticity and conducted a Wooldridge test to ascertain the presence of autocorrelation in the panel data, in order to prevent biased estimations of standard errors and coefficients.

3.7.3 Hausman test

This research utilized the Hausman test to determine the most suitable model for the regression analysis. The study of panel data employs two primary methodologies: fixed effects and random effects. While the fixed effects model is suitable for analyzing the average effect of a variable inside a specific group, random effects models are better suitable for examining the broader effect of a variable across numerous groups.

A Hausman test was done to find the best way to describe the data with fixed effects or random effects. This test's null hypothesis asserts that the random effects model is the most suitable choice. If the estimate obtained from the test is greater than 0.05, a fixed effect model is employed.

3.8 Ethical consideration

Researchers have a responsibility to their profession, clients, and participants and must uphold high ethical standards to safeguard the integrity and accuracy of the data they collect.

The study rigorously followed ethical standards. Similarly, unethical actions like as manipulation and forgery were avoided. The study acquired a research authorization from NACOSTI, which was used for the purpose of collecting data.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

The scope of this chapter includes the examination of data, its presentation, and its interpretation. Statistical analysis of the data was conducted using descriptive and panel regression techniques. It included analysis of correlation, multi collinearity and hausman tests.

4.2 Descriptive Statistics

Descriptive statistics is performed on research data to present fundamental characteristics of the data. The study yields statistical measures like standard deviation, mean, skewness, and kurtosis. The table presents a concise overview of the descriptive statistics.

Table 4.1: Descriptive Analysis

| Variable | Mean | Standard Deviation | Skewness | Kurtosis | Jacque era (p-value) | B |
|-----------------|-------------|-------------------------------|-----------------|-----------------|-------------------------------------|----------|
| ROE | 0.2734 | 2.749 | 1.6105 | 4.28 | 0.0547 | |
| Inflation | 5.769 | 1.051 | 0.8737 | 2.342 | 0.0643 | |
| Exchange rate | 107.47 | 6.08 | 0.8737 | 2.133 | 0.0823 | |
| GDP | 9013634 | 545096.8 | 0.3636 | 1.7428 | 0.0708 | |

Source: Field data; (2023).

A dataset exhibits symmetry when it seems identical on all sides of a central point, as measured. Kurtosis, on the other hand, is a statistic that determines whether the data is more peaked or flatter compared to a normal distribution. A normal distribution is defined as one in which both the Skewness and Kurtosis values are exactly equal to zero. A statistical figure is deemed normal according to the Monte Carlo criteria if its skewness is below 2 and its kurtosis is below 6. Non-normal figures are defined as having Skewness values ranging from 2.0 to 3.0 and Kurtosis values ranging from 6.0 to 21.0. When the p-value of the Jaque-Bera test for the normal distribution is equal to or greater than 0.05, it suggests that the residuals of the variables in the study conform to a normal distribution based on the descriptive statistics.

4.3 Panel Unit Root Test

Root tests were performed to help answer the issue of having a potentially false regression in order to confirm that the panel data used was stationery. Several unit root tests, including Augmented Dickey-Fuller and IM Pesaran shin, were utilized as demonstrated below. The results are displayed in Table 4.2.

Table 4.2: Unit Root Tests

| Variable | Augmented DickeyFuller | Im Pesaran |
|-------------------------------|-----------------------------------|----------------------------|
| Performance of equity fund | 208.4550 (0.0000) | -3.0981 (0.0002) |
| Exchange rate | 0.0897 (0.0000) | 1.6694 (0.0019) |
| Inflation rate | 0.1676 (0.0000) | 1.2579 (0.0002) |
| GDP | 2.0712 (0.0444) | -0.0301 (0.0210) |

Source: Field data: (2023)

Given the presence of non-balanced panel data, it was crucial to perform several unit root tests. A p-value more than 0.05 suggests the existence of unit roots (H0), whereas a p-value less than 0.05 shows the absence of unit roots. The P values for all the unit root tests done were below 0.05, indicating the absence of a unit root.

4.4 Correlation Analysis

The study conducted a pairwise correlational analysis in determining the strength and direction of the nexus between independent variables and dependent variables (Kothari, 2013). Table 4.3 indicates correlational results

Table 4.3 Correlation Analysis Results

| | ROALn | FOREXLn | INFLATLn | GDPLn |
|-------------|---------------------|------------------|------------------|--------|
| ROALn | 1.0000 | | | |
| FOREXLn | -0.7397 (0.0309) | 1.000 | | |
| INFLATIONLn | -0.5140 (0.0401) | 0.0219 0.0000 | 1.0000 | |
| GDPLn | 0.6901 (0.0450) | 0.4479 0.0000 | 0.7802 0.0000 | 1.0000 |

Source: Field data; (2023)

Table 4.3 indicates that both foreign exchange rate (FOEXLn) and inflation (INFLATIONLn) had a negative significant moderate correlation with equity funds, with correlation coefficients of -0.7397 (p= 0.0309) and -0.5140 (p=0.0401), implying that depreciation of the Kenyan currency and high inflation negatively affected equity funds. National income (GDPLn) had a positive significant moderate correlation with equity funds, with a correlation coefficient of 0.6901 (p=0.0450), implying that an increase in national income promotes equity funds.

4.4.1 Multicollinearity

Variance inflation factors and tolerance values were used to test for multi-collinearity. Multi collinearity arises when two or rather more variables that are independent correlate (Cooper & Schindler, 2011).

Table 4.4 Multicollinearity Test

| Variable | Tolerance | VIF |
|----------------|-----------|--------|
| Exchange rate | 0.9613 | 1.0384 |
| Inflation rate | 0.9850 | 1.0338 |
| GDP | 0.9623 | 1.0483 |

Source: Field data; (2023)

The variance inflation factors VIF from the coefficient table are below 10 indicating no multi-collinearity problem. The values of tolerance from the coefficient table are less than one hence no multi-Collinearity problem.

4.4.2. Heteroscedasticity and Autocorrelation

An assessment of heteroscedasticity was performed using the Bruesch-Pagan Lagrange Multiplier procedure. The absence of heteroscedasticity in the variance structure of the model is indicated by the p-value in Table 4.5, which is below 0.05.

Table 4.5 Test for Heteroscedasticity

Bruesch-Pagan Lagrange Multiplier Panel Heteroscedasticity Test

Chibar = 56.23

P- value > chi2 =0.000

Testing for autocorrelation was done using Wooldridge test for serial correlation. Table 4.5 shows that the p-value is less than 0.05, indicating no autocorrelation.

Table 4.6. Autocorrelation test

Wooldridge test for autocorrelation in panel data

H0: no first order autocorrelation

F(1, 10)= 0.922

Prob> F = 0.3595

Source: Field data, (2023)

4.5 Regression Results

Linear regression analysis was conducted to describe the relationship between study variables. The study adopted a random effects model from Hausman test conducted.

4.5.1 Hausman Test

The researchers used a Hausman test to find out if the study would be better served by a fixed effect or random effect model. According to Borenstein, Hedges, Higgins, and Rothstein (2010), a Hausman test is the best way to decide between a fixed effect and a random effect model. According to the null hypothesis, the independent variables do not correlate significantly with the individual effects. In a fixed effect model, the alternative hypothesis or rejection of the null hypothesis favors the random effect, but the null hypothesis is tested using the random effect. Table 4.7 displays the results.

Table 4.7: Hausman Test

| | (b) | (B) | (b-B) | sqrt(diag(V_b-V_B)) |
|-----------|--------------|---------------|-------------------|----------------------------|
| | Fixed | Random | Difference | S.E. |
| Forex | -0.0399438 | -0.0402624 | 0.0003186 | 0.0053724 |
| Inflation | -0.0158684 | -0.0155119 | -0.0003565 | 0.0044803 |
| GDP | 0.1059081 | 0.1008141 | 0.005094 | 0.0126175 |

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\text{chi2}(4) = (b-B)'[(V_b-V_B)^{-1}](b-B)$$

$$= 0.16$$

$$\text{Prob}>\text{chi2} = 0.8943$$

Source: Field data; (2023)

Results in the table 4.7 indicated a prob>chi2 value of 0.8943 which is more than critical P value at 0.05 level of significance which implies that a random effect model is the best was adopted. The study hence used a random effect regression model.

4.5.2.1 Regression Random Effects of ROE on Exchange rate

The study sought to establish results on the null hypothesis Ho1: Exchange rate has no significant influence on financial performance of equity funds in Kenya. Table 4.8 contains the findings.

Table 4.8: Regression Random influence of ROE on Exchange rate

| | | |
|---------------------------|------------------------|--------|
| Random-effects regression | No of observations = | 55 |
| No of groups | = | 11 |
| R-square: | Observation per group: | |
| within = 0.000 | minimum = | 5 |
| between = 0.000 | average = | 5.0 |
| overall = 0.3007 | maximum = | 5 |
| F(2,232) =15.96 | | |
| corr(u_i, Xb) = 0 | Prob > chi2 = | 0.0388 |

| LROA | Coef. | Std. Err. | z | P>z | [95% Co | Interval] |
|---------------|--------------|------------------|----------|---------------|----------------|------------------|
| Exchange rate | -.6078122 | .3084188 | -1.97 | 0.49 | -1.212302 | .0033225 |
| cons | 3.667425 | 1.442232 | 2.54 | 0.011 | .8407032 | 6.494147 |

Source: Field data, (2023)

The study using the random effect model showed that the exchange rate did not have a significant effect (Overall R square=0.000) on the differences in how well equity funds did financially. The calculated p-value was 0.049, which is less than the predetermined significance level of 0.05. The exchange rate value of -0.6078122 signifies that a rise of one percent in the exchange rate leads to a decrease in performance by 0.6078122. The correlation was found to be statistically significant because the p-value for the currency rate

was 0.049, which is lower than the selected significance level of 0.05. The regression model is illustrated below.

$$\text{ROE} = -0.6078122 + 3.667425X_1$$

Hence, the analysis rejected the null hypothesis that the exchange rate did not exert a substantial influence on the financial performance of equity funds in Kenya. The statistical significance of the impact of the exchange rate on financial performance was conclusively established. The evidence aligns with the research conducted by Kariuki (2014), which examined the influence of macroeconomic variables on the financial performance of mutual funds in Kenya. The investigation revealed that the exchange rate exerted a significant and adverse influence on the performance of the fund. Similarly, Najarzadeh (2009) found that variations in the currency exchange rate negatively impact the pricing of stocks on the Tehran Stock Exchange. A study undertaken by Kungu (2013) investigated the influence of macroeconomic factors on the financial performance of private equity firms in Kenya. The data indicate that there is a negative and weak correlation between the exchange rate and the return on investment. Nevertheless, the findings of this analysis contradict the conclusions of Gay (2008), which indicated that the exchange rate does not have a substantial impact on stock returns in four prominent emerging nations, namely Brazil, India, and China.

4.5.2.2 Influence of Inflation Rate on Performance of Equity Funds

The objective of this study was to ascertain the impact of inflation rate on the financial performance of equity funds. Hypothesis 2: The rate of inflation has no major effect on the financial performance of Kenyan equity funds. The resulting data are presented in Table 4.9.

Table 4.9: Regression Random Influence of ROE on Inflation

| | | | |
|---------------------------|-------------------------|---|--------|
| Random-effects regression | No of observations | = | 55 |
| | No of groups | = | 11 |
| R-square: | Observations per group: | | |
| within = 0.1832 | minimum = | | 5 |
| between = 0.7037 | average = | | 5.0 |
| overall = 0.3660 | maximum = | | 5 |
| corr(u_i, Xb) = 0 | Prob > chi2 | = | 0.0305 |

| ROE | Coef. | Std. Err. | z | P>z | [95% Conf. | Interval] |
|-----------|---|-----------|------|-------|------------|-----------|
| Inflation | -.2179768 | .1007646 | 2.16 | 0.031 | .4154717 | .0204818 |
| _cons | .20262 | .2886492 | 0.70 | 0.483 | .363114 | .7683701 |
| sigma_u | .05518951 | | | | | |
| sigma_e | .18277214 | | | | | |
| Rho | .08355975 (fraction of variance due to u_i) | | | | | |

Source: Field data, (2023)

Employing the random effect model, the analysis revealed that inflation accounted for 18.32% (Overall R square=0.1832) of the variability in the financial performance of equity funds. A negative coefficient of -0.2179768 for inflation indicates that a one percent increase in the exchange rate leads to a proportional decline in performance of 0.2179768. The analysis showed a p-value of 0.031. The association was determined to be statistically significant because the p-value for inflation was lower than the chosen significance level of 0.05. The regression model is displayed below.

$$ROE = -0.217968 + 0.2026281X_2$$

This study rejected the null hypothesis that inflation had no significant effect on the financial performance of equity funds and established that inflation does have a statistically significant impact on financial performance. These findings indicate that an increase in inflation would result in a decrease in the financial performance of equity funds. The results confirmed findings of Leyian (2017) who studied effects of macro-economic variables on performance of mutual funds in Kenya. Similar results were obtained by Ahuja, Makan and Chauhan (2012) who indicated that inflation rate had a significant impact on mutual funds in India. These findings also concurs with Shrestha & Subedi (2015) who noted that performance of stock price responded to inflation. However Pasaribu and Kowanda (2014) revealed that inflation does not affect performance of mutual funds. It also contradicts with the finding by Muriuki (2014) who established that there was no link between inflation and stock prices.

4.5.2.3 Influence of Gross Domestic Product on Performance of Equity Funds

The study sought to determine influence of GDP on financial performance of Commercial Banks. The null hypothesis Ho3: GDP has no significant influence on financial performance of Kenyan Commercial Banks. Table 4.10 contains the findings.

Table 4.10: Random influence of GDP on equity funds

| Random effect regression | No of observations = 55 | | | | | |
|--------------------------|-------------------------|-----------------------|------|-------|----------------------|----------|
| Group variable: No | No of groups = 11 | | | | | |
| R-square: | Observation per group: | | | | | |
| within = 0.000 | minimum = | | | | | 5 |
| between = 0.000 | Average = | | | | | 5.0 |
| overall = 0.3140 | maximum = | | | | | 5 |
| | Wald chi2(1) = | | | | | 3.98 |
| Corr(_i, X) = 0 | Prob > chi2 = | | | | | 0.0361 |
| | Coef. | Std. Err. | z | P>z | [95% Conf. Interval] | |
| GDP | .5742632 | .2879506 | 1.99 | 0.046 | 1.138636 | .0098904 |
| _cons | 10.02083 | .4.610848 | 2.17 | 0.030 | .9837354 | 19.05793 |
| sigma_u | .05474012 | | | | | |
| sigma_e | .18344662 | | | | | |
| rho | .08176126 | (variance due to u_i) | | | | |

Source: Field data, (2023)

The random model results showed GDP was 0% (Overall R sq=0.000) of the variation in financial performance of equity funds. The findings revealed a p-value =0.046. The value for GDP was 0.5742632. This relationship was further found to be statistically significant since the p-value for GDP was which was lower than the adopted significance level of 0.05. Regression equation is shown below.

$$ROE=0.5742632 + 10.02083X3$$

Accordingly, the analysis rejected the null hypothesis and determined that there was a statistically significant impact of GDP on financial performance. The results are consistent with the findings of Adjei (2021), who examined the correlation between macroeconomic factors and the performance of mutual funds in Ghana. The findings indicated a uniform and statistically significant long-term positive influence of GDP growth on the performance of mutual funds. The study conducted by Qureshi (2019) revealed a strong and statistically significant correlation between GDP and equity funds in nine emerging economies in Asia. This discovery is consistent with the observations made by Laicheni & Obwogi (2015), who documented a substantial association between nominal GDP and stock prices. Nevertheless, Garg and Srivastava (2019) shown that there is no correlation between GDP growth and the performance of mutual funds. The study contradicts the findings of Innocent, Shukla & Mulyungi (2018), which indicate that GDP is not a key determinant of stock market performance.

4.5.3 Multiple Regression Random effect model

The study investigated the influence of macroeconomic variables on performance of equity funds in Kenya. In this regression, the three independent variables were entered as a block.

Table 4.11: Regression Random Effect GLS Model

| ROA | Coef. | St.Err. | z- valu e | p- value | [95% Conf Interval] | Si g |
|--------------------|---------|---------|----------------------|-------------|---------------------------|---------|
| FOREX | -.382 | .331 | -1.16 | .023 | -1.047 .282 | |
| INFLATION | -.266 | 2.579 | -0.10 | .018 | -5.443 4.911 | |
| GDP | | 9.4367 | 1.71 | .036 | 0 0 | * |
| Constant | -1.597 | 32.581 | -0.05 | .961 | -67.006 63.811 | |
| Mean dependent var | 0.273 | | SD dependent var | 2.749 | | |
| R-squared | 0.590 | | Number of obs | 55 | | |
| F-test | 1.676 | | Prob > F | 0.184 | | |
| Akaike crit. (AIC) | 269.153 | | Bayesian crit. (BIC) | 277.182 | | |

*** $p < .01$, ** $p < .05$, * $p < .1$

The overall regression model is as shown below:

$$\text{ROA} = -1.597 - 0.382\text{FOREX} - 0.266\text{INFLATION} + 6.436\text{GDP}$$

The results obtained from random effect model indicated that macroeconomic variables accounted for 59% (R square= 0.590) of the total variation in financial performance of equity funds. From the findings, exchange rate had a regression coefficient of -0.382 implying that a unit increase in exchange rate would result in a decrease of 0.382 units in financial performance. This relationship was further found to be statistically significant since the p-value was 0.023 which was lower than the adopted significance level of 0.05. Exchange rate was therefore found to be significantly and negatively related to financial performance of equity funds in Kenya.

The study established that inflation rate had a regression coefficient of -0.266 implying that a unit increase in inflation rate would result in a decrease of 0.266 units in financial performance. This effect was further found to be statistically significant since the p-value

was 0.018 which was lower than the adopted significance level of 0.05. Inflation rate was found to be negatively related to financial performance of equity funds in Kenya.

From the findings, GDP had a regression coefficient of 6.436 implying that a unit increase in GDP across time among equity funds would result in an increase of 6.436 units of financial performance. This influence was found to be statistically significant since the p-value was 0.036 which was lower than the adopted significance level of 0.05. Gross Domestic Product was found to be significantly and positively related to financial performance of equity funds in Kenya.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a concise overview of the primary results of the study, the conclusions and recommendations, and concludes by highlighting additional research recommendations.

5.2 Summary of the Findings

The primary aim of this study was to determine the impact of macroeconomic variables on the performance of equity funds. The specific objectives derived from this overarching aim were to ascertain the impact of inflation rate, currency rate, and GDP on the performance of equity funds. The data for this study were obtained from secondary sources extracted from the financial statements of equity funds issued from 2018 to 2022. Stationarity was confirmed using the unit root test. The Augmented Dickey Fuller and IM Pesaran tests for unit root confirmed the absence of a unit root, therefore confirming the stationarity of the data. The aim of stationarity was to obtain a significant sample that would demonstrate the future behavior of the series as consistently stationary. An analysis of the Hausman test was conducted using the random effects model. This was accomplished using STATA system version 15.00.

5.2.1 Influence of Exchange rate on performance of equity funds

The primary objective of the study was to assess the influence of currency exchange rates on the financial performance of equity funds. The results of a random effects simple regression analysis indicated that the exchange rate to returns of equity funds ($p = 0.49$, $p < 0.05$) significantly and negatively affected financial performance. After controlling for other factors in the model, a random effect multiple regression analysis revealed that a one-unit change in the exchange rate would result in a substantial and inverse change in financial performance. Hence, the valuation of the currency significantly influences the performance of equity funds in Kenya. Hence, the first null hypothesis was rejected.

5.2.2 Influence of Inflation Rate on Performance of Equity Funds

The second objective of the study was to establish the effect of inflation rate on performance of equity funds. Random effect simple regression analysis indicated that inflation rate to returns on equity = 0.031 ($p < 0.05$) had a significant and negative influence on financial performance.

Random effect multiple regression analysis revealed that when other variables are controlled in the model, a unit change of inflation rate would result to a significant change in performance in the opposite direction. Thus, inflation rate has got influence on performance of equity funds in Kenya. The second null hypothesis was therefore rejected.

5.2.3 Gross Domestic Product Influence on Performance of Equity Funds

The third objective of the study was to establish how GDP influence financial performance of equity funds. Random effect linear regression showed that GDP had a positive significant effect $p = 0.046$ ($p < 0.05$). Hence, GDP has got a significant influence on performance of

Kenyan equity funds. Therefore, the third null hypothesis was rejected.

5.3 Conclusion

Several logical inferences were made based on the given empirical data. The primary aim of the research was to assess the influence of currency rates on the financial performance of stock index funds. The research findings suggest that fluctuations in currency rates significantly deteriorate the financial performance of equities funds in Kenya. An appreciation in the currency rate leads to a decrease in the performance of equity mutual funds. Hence, the performance of equities funds is greatly influenced by the inflation rate.

The study's second aim was to assess the influence of inflation on the performance of equity funds. The study's findings indicate that the linear regression results provide substantial evidence of the noteworthy influence of the inflation rate on the financial performance of equity funds. Hence, the performance of stock funds is significantly impacted by the inflation rate.

The study's third aim was to quantitatively assess the impact of GDP on the performance of equity funds. The research findings indicate that the performance of equity funds is notably and positively affected by GDP, as demonstrated by the results of sequential regression analysis. Hence, the performance of Kenyan equities funds is significantly impacted by the GDP.

5.4 Recommendation

The results indicate that there is a negative correlation between the performance of equity funds and the inflation rate and exchange rate. Consequently, it is crucial for equity fund managers to diversify their portfolios in both domestic and international markets to mitigate against such exposures and prevent losses. Equity fund managers must implement strategies such as hedging by purchasing spot contracts to protect against potential negative outcomes and mitigate exchange rate exposure.

Furthermore, the study proposes that equity fund managers should regularly base their decisions on research pertaining to the macroeconomic environment in order to enhance the success of their stock pricing. Their investments will provide improved value for money over time.

5.5 Recommendation for further studies

The research findings indicate that 41% of the fluctuations in the performance of equity funds might be attributed to external causes. That implies that research should be conducted to incorporate more macroeconomic factors. These factors may encompass political risks, export revenues, investment behaviour, employment or unemployment, money supply, and other related variables.

Mutual funds are primarily categorized into equity funds, bond funds, money market and fixed income funds. This study focused on equity funds. Studies should be done focusing on the other mutual funds with a focus on both microeconomic and macroeconomic factors.

The study conducted for a period of five years and there is a need for future studies to undertake a longer duration. In addition, the study evaluated 11 equity funds and recommends more equity funds to be studied.

Further studies need to incorporate other financial performance measures such as Sharpe index, Treynor ratio or Jensen's index as opposed to Return on Equity. A moderating variable can be included in other studies for example size of the equity fund.

REFERENCES

- Abugri, B. (2008). Empirical relationship between macroeconomic volatility and stock returns: Evidence from Latin American Markets. *International Review of Financial Analysis*, 17(2), 396- 410.
- Adjei G., Addai B., and Kwasi G. (2021). Macroeconomic determinants of mutual funds' performance in Ghana. *Cogent Economics & Finance*, 9:1, 1913876, DOI: 10.1080/23322039.2021.1913876
- Adler, M. & Dumas, B. (1984). Exposure to currency risk: Definition and Measurement, *Financial Management*, summer 1984, 13: 41-50.
- Agrawl, G. & Jain, M. (2013). Investor's perception towards Mutual Funds in comparison to other investments. *Journal of Indian Research*, 1(4), 115-131.
- Ahmad W., Roomi M. & Ramzan M. (2015). A comparative Study on Performance of open and closed-ended Mutual funds in Pakistan. *International Journal of Accounting and Finance Reporting*, 5(1), 301-314.
- Ahmed E., Rehab A., and Asuli A. (2020). Performance evaluation of mutual funds in Egypt. *International Academic Journal for Economics and Administrative Sciences*, 2(1) (2020)93-117.
- Ahuja, Avneet and Makan (2015). A study of effect of macroeconomic variables on stock market: Indian perspective. <https://ssrn.com/abstract=2178481>.
- Ajide F. M. (2016). Financial Innovation and Sustainable Development in selected Countries in West Africa. *Innovation Finance*, 15(2), 85-112.

- Akama, T, Onyinkwa, J. & Jagongo, A. (2013). The framework for Index Funds in Kenya. *International Journal of Humanities and Societal Science*, 3(21), 195- 200.
- Alam, M. & Uddin, G. S. (2009). Relationship between interest rate and stock price: Empirical evidence from developed and developing countries. *International Journal of Business and Social Science*, 6(4), 92-97.
- Alexandri, M. B. (2013). Analysis of Mutual funds' performance and Persistence in Indonesia. *International Journal of Science and Research*, 6(14), 1404- 1408.
- Alvi, J. & Rehan, M. (2020). Factors affecting mutual fund performance in Pakistan. *Global Journal of Business, Economics and Management: Current issues*. 10(2), 124 - 143.
- Amunga, P. I. (2015). *Factors affecting performance of Mutual Funds in Kenya. Unpublished Master of Business Administration, University of Nairobi.*
- Bazo, J., Verdu, P., & Santos, A.A. (2010). The performance of socially responsible mutual funds: the role of fees and management companies. *Journal of Business Ethics*, 94(2), 243-263.
- Bera, A.K, & Jarque, C.M. (1981). Efficient tests for normality, homoscedasticity and serial independence of regression residuals: Monte Carlo evidence. *Economics Letters*, 7, 313-318.
- Bessler, W., Drobetz, W., & Zimmermann, H. (2009). Conditional performance evaluation for German equity mutual funds. *The European Journal of Finance*, 15(3), 287- 316.
- Budiono,D. P.,& Martens, M. (2010). Mutual funds selection based on funds characteristics.

Journal of Financial Research, 33(3), 249-265.

Cashman, G. D., Deli, D. N., Nardari, F., & Villupuram, S. (2012). Investors do respond to poor mutual fund performance: Evidence from inflows and outflows. *Financial Review*, 47(4), 719-739.

Cooper, D., & Schindler, P. (2008). *Business research methods* (10th Ed.) New York, McGraw- Hill/Irwin

Ciner, C, (2015). Are equities good financial hedges? A frequency domain perspective. *Review of Financial Economics*, 24:12- 17.

Cytonn Quarterly Bulletin. (2022). <https://cytonn.com/uploads/downloads/unit-trust-Funds-performance-q12022-cytonn-monthly-july-2022.pdf>.

Garg, M & Srivastava, S. (2019). Correlation among the macroeconomic variables and mutual funds in India: A descriptive study.

Gatuhu, M. T. (2014). The effect of foreign exchange rate fluctuation on the financial performance of listed companies in Kenya. Master's in Business Administration project, University of Nairobi.

Gay, R. D. (2008). Effect of macroeconomic variables on stock market returns for four emerging economies. *International business & economics research journal* 7(3), 42-56.

Goh, P. (2015). Intellectual capital performance of commercial banks in Malaysia. *Journal of Intellectual Capital*, 6(3), 385-396.

Government of Kenya. (2007). Kenya's Vision 2030 Popular Edition. Nairobi: Government of Kenya.

- Gujarati, D. (2003). *Basic Econometrics*. Irwin, NJ: McGraw-Hill.
- Humpe, A, and Macmillan, P. (2009). Can macroeconomic variables explain long term stock market movements? A comparison of the US and Japan. *Caslecliffe, School of economics & finance, University of St Andrews, Center for dynamic macroeconomic analysis working paper series*.
- Hussain, S. M., & Omrane, W. B. (2020). The effect of U.S macroeconomic news announcements on the Canadian stock market: Evidence using high- frequency data. *Finance Research Letters*, 38,101450.
- Iania L., Collagr, R. & Vereycken M. (2023). The impact of Uncertainty in Macroeconomic Variables in the USA. *Journal of Risk and Financial Management*. 2023; 16(3): 189.
- Ibrahim, M., & Aziz, H. (2003). Macroeconomic variables and the Malaysian equity market: A view through rolling subsamples. *Emerald Group Publishing Ltd*, 30(1), 6-27.
- Innocent, G., Shukla, J., & Mulyung, P. (2018). Effect of Macroeconomic Variabes on Stock Market Performance in Rwanda: Case study of Rwanda Stock Exchange. *European Journal of Economic and Financial Research*, 3 (1), 104-125.
- Jogongo, A. & Mutswenje, V. (2014). A Survey of factors affecting Investment Decisions a case of Individual Investors at NSE. *International Journal of Humanities and Social Science*, 4(4), 92-102.
- Kalayaan, C. S. (2013). Risk-adjusted performance of Equity and Balanced Funds in Philippines. *International Journal of Information Technology and Business*

Management, 14 (1) 49-62.

Kariuki, E. C. (2014). *Effect of Macro Economic Variables on Financial Performance of Mutual Funds Industry in Kenya*, (November). MBA Thesis Nairobi, KE: University of Nairobi.

Keohane, R. (2011). Neoliberal Institutionalism. *Security Studies: A Reader*.

Korir, M.C, William, S., Adam, S. & Charles, M, (2015). *Financial innovations and performance of commercial banks in Kenya*. *International Journal of Economics, Commerce and Management*, 3(5), 1242-1265.

Kothari, C. & Grag, G. (2013). *Research Methodology*. New Delhi: New Age International.

Kotishwar, A. (2017). Selected economic variables impact on mutual fund subscription and redemption- a study. *International Journal of Applied Business and Economic Research*, 15(1), 23.

Kravchuk, I. (2022). Performance of Equity Fund Investment Strategies in Poland. *Sustainability* 2022, 14, 13078. [https:// doi.org/10.3390/su142013078](https://doi.org/10.3390/su142013078).

Kungu, N. D. (2013). Effect of Selected Macroeconomic Variables on stock Returns in the East African Stock Exchange Market. *International Journal of Education and Research*, 305-320.

Kwon, C. S., & Shin, T.S. (1999). Co-integration and Causality between Macroeconomic Variables and Stock Market Returns. *Global Finance Journal*, 10(1), 71-81.

Laopodis, N. (2009). Fiscal policy and stock market efficiency: Evidence for the United States. *The quarterly review of Economics and Finance*, 49(2009) 633-650.

Laicheni, K. E., & Obwogi, T.N. (2015). Effect of Macroeconomic Variables on Stock

Returns in the East African Stock Exchange Market. *International Journal of Education and Research*, 305-320.

Lemeshko, O. & Rejnus, O (2015). Performance evaluation of equity mutual funds in countries with emerging economies. *Procedia Economics and Finance*, 30 (2015) 476-486.

Leyian, A. (2017). *Effects of Macro- economic factors on the financial performance of mutual funds in Kenya*. MBA Thesis Nairobi, KE: University of Nairobi.

Lobao, J., & Levi, A. (2016). The relation between mutual fund flows, stock returns and macroeconomic variables: Evidence from Portugal. *Portuguese Journal of Finance, Management and Accounting*, 2(4): 2183-3826.

Mainga, S. M. (2014). *Effect of macro-economic factors on stock returns at the Nairobi Stock exchange*. Unpublished Master of Business Administration, United States International University.

Manjezi, L. (2012). *Portfolio performance evaluation of South African mutual funds 2001-2006*. Unpublished master's thesis. University of Agder, Kristiansand, Norway.

Mbiola, O. J. (2013). *Performance evaluation of unit trusts in South Africa over the last two decades*. Unpublished master's thesis. University of Witwatersrand, Johannesburg, South Africa.

Misati, R., Nyamongo, E., & Kamau, A. (2011). Interest rate pass-through in Kenya. *International Journal of Development Issues*, 10, 170-182.

Mohammadreza, M, and Esmaeel, R. (2013). The Effect of Economic factors on the efficiency of mutual funds in Iran. *Technical Journal of Engineering and Applied*

Science. 3, 2051-0853.

Muriuki, K. (2014). *The Effect of Inflation and Interest Rates on Stock Market Returns of Firms Listed in the Nairobi Securities Exchange*. Nairobi: Unpublished Thesis.

Muthaura, P. (2013). *Financing Options through the capital markets*. Nairobi: Capital Market Authority.

Muthomi, T. & Muturi, W. (2019). Factors affecting performance of Mutual funds in Kenya. *International Journal of Social Sciences and Information Technology*, 2412-0294.

Mutuku., C & Ng'eny, K. L. (2015). Macroeconomic variables and the Kenyan Equity Market: A time series Analysis. *Business and Economic Research*, 5 (1), 1-10.

Najarzadeh, R. (2009). Effects of the fluctuations of foreign exchange and price shocks on stock price index of Tehran Stock Exchange.

Nderitu, J. (2012). Mutual Fund Performance; Funds and Country Specific Characteristics: A Comparative Study of Pakistan and India Equity Funds. *Journal of Poverty, Investment and Development*, Vol.37.

Nicolescu, L. (2020). Macroeconomic Factors and Capital Markets. Selected experiences in Central and Eastern Europe. *Management Dynamics in the Knowledge Economy*, 8(2), 159-174.

Njau, D. K. (2013). *The Effect of Selected Macroeconomic Variables on the Financial Performance of Private Equity Firms in Kenya* (Doctoral dissertation).

Nthimba, A.N., Jagongo, J., & Wamugo, L. (2021). Fund size and performance of unit trust funds in Kenya. *Journal of Finance and Accounting*, 9(1), 8-15. Doi: 10.

11648/j.jfa.20210901.12.

- Nyanamba, E., Muturi, W., & Nyangau, A. (2015). Factors Affecting Profitability of Mutual Funds in Kenya. *International Journal of Economics Commerce and Management*, 2348 0386.
- Olweny, T., & Omondi, K (2011). The effects of Macro-economic factors on stock return volatility in the Nairobi Stock Exchange, Kenya. *Economic and Finance Review*, 1(10), 34-48.
- Pal, K., & Mittal, R. (2011). Impact of macroeconomic indicators on Indian capital markets. *The Journal of Risk Finance*, 10(4), 321-332.
- Panigrahi, A., Karwa, P., and Joshi, p. (2019). Impact of Macroeconomic Variables on the Performance of Mutual Funds. A selective study. *Economic Policy and Research*, 15(1), 29.
- Pasaribu, R., and Kowanda, D. (2014). The effect of interest rate, inflation rate and foreign capital market to equity mutual funds rate of return. *Journal Akuntansi & Manajemen*, 25(1), 1-17.
- Qureshi, F., Kultan, A. M., (2019). Dynamics of mutual funds and stock markets Asian developing economies. *Journal of Asian Economies*, 65, 101-135.
- Shano, M., Ganesh, P. (2014). Performance of equity funds in Kenya over the period 2005-2009.
- Shrestha, P.K., & Subedi, B.R. (2015) Determinants of Stock Market Performance in Nepal. *NRB Economic Review*, 26(2), 33-42.

- Singh, A., & Sharma, A. K. (2016). An empirical analysis of macroeconomic and bank-specific factors affecting liquidity of Indian banks. *Future Business Journal*, 2(1), 40-53.
- Singh, T., Mehta, S., & Varsha, M.S. (2011). Macro-economic factors and stock returns: Evidence from Taiwan. *Journal of Economic and International Finance*, 2(4), 217- 227.
- Sunday, O. (2019). Performance of mutual funds: Evidence from Nigeria. *Amity Journal of Management Research*, 4 (2), (1-15).
- Verdú, P., & Santos, A. A. (2010). The performance of socially responsible mutual funds: the role of fees and management companies. *Journal of Business Ethics*, 94(2), 243-263
- Wagwa, O. F. (2021). *Macroeconomic variables and performance of stock prices of companies listed at Nairobi Securities Exchange, Kenya*. Unpublished Thesis, Kenyatta University.
- Wengert, G. (2011). Mutual Fund Flow and Past Information: Is the Brazilian Investor Smart.

APPENDICES

Appendix I: List of Mutual Funds under Capital Market Authority Reports

1. Absa Unit Trust Fund
2. ADAM Unit Trust Scheme
3. Africa Alliance Kenya Unit Trust Scheme
4. Apollo Unit Trust Scheme
5. British- American Unit Trust Scheme
6. CIC Unit Trust Scheme
7. Co-op Trust Fund
8. Cytonn Unit Trust Scheme
9. Diaspora Unit Trust Scheme
10. Dyer and Blair Unit Trust Scheme
11. Enwealth Capital Unit Trust Scheme
12. GenAfrica Unit Trust Scheme
13. Genghis Unit Trust Funds
14. ICEA Unit Trust Scheme
15. Jubilee Unit Trust Collective Investment Scheme

16. KCB Unit Trust Scheme
17. Madison Unit Trust Fund
18. Nabo Africa Funds
19. NCBA Unit Trust Fund
20. Old Mutual Unit Trust Scheme
21. Sanlam Unit Trust Scheme
22. Standard Investment Trust Funds
23. Zimele Unit Trust Scheme

Source: Capital Markets Authority website (2023).

Appendix II: Data Collection Guide

| EQUITY MUTUAL FUND | YEAR | ROE | EXCHANGE RATE | GDP | INFLATION RATE |
|-------------------------------|-------------|------------|--------------------------|------------|---------------------------|
| 1 | 2018 | | | | |
| 1 | 2019 | | | | |
| 1 | 2020 | | | | |
| 1 | 2021 | | | | |
| 1 | 2022 | | | | |
| 2 | 2018 | | | | |
| 2 | 2019 | | | | |
| 2 | 2020 | | | | |
| 2 | 2021 | | | | |
| 2 | 2022 | | | | |






Appendix III: Data Analyzed

| Code | Firm | Year | ROE | FOREX | INFLATION | GDP | ROALn | FOREXLn |
|------|---------------------------|------|---------|----------|-----------|---------|----------|----------|
| 1 | Absa Unit Trust Fund | 2018 | -0.1209 | 101.3008 | 4.695 | 8330891 | -2.11279 | 4.618095 |
| 1 | Absa Unit Trust Fund | 2019 | -0.1209 | 101.9917 | 5.115833 | 8756946 | -2.11279 | 4.624891 |
| 1 | Absa Unit Trust Fund | 2020 | -0.1209 | 106.4508 | 5.285833 | 8733060 | -2.11279 | 4.667683 |
| 1 | Absa Unit Trust Fund | 2021 | -0.1209 | 109.6375 | 6.110833 | 9395942 | -2.11279 | 4.697179 |
| 1 | Absa Unit Trust Fund | 2022 | -0.1209 | 117.865 | 7.6375 | 9851329 | -2.11279 | 4.76954 |
| 2 | African Alliance Kenya | 2018 | -0.086 | 101.3008 | 4.695 | 8330891 | -2.45341 | 4.618095 |
| 2 | African Alliance Kenya | 2019 | 0.066 | 101.9917 | 5.115833 | 8756946 | -2.7181 | 4.624891 |
| 2 | African Alliance Kenya | 2020 | 0.113 | 106.4508 | 5.285833 | 8733060 | -2.18037 | 4.667683 |
| 2 | African Alliance Kenya | 2021 | 0.066 | 109.6375 | 6.110833 | 9395942 | -2.7181 | 4.697179 |
| 2 | African Alliance Kenya | 2022 | -0.086 | 117.865 | 7.6375 | 9851329 | -2.45341 | 4.76954 |
| 3 | Appollo Unit Trust | 2018 | -0.0816 | 101.3008 | 4.695 | 8330891 | -2.50593 | 4.618095 |
| 3 | Appollo Unit Trust | 2019 | 0.2174 | 101.9917 | 5.115833 | 8756946 | -1.52602 | 4.624891 |
| 3 | Appollo Unit Trust | 2020 | -0.1454 | 106.4508 | 5.285833 | 8733060 | -1.92827 | 4.667683 |

| | | | | | | | | |
|---|--------------------|------|---------|----------|----------|---------|----------|----------|
| 3 | Appolo Unit Trust | 2021 | 0.105 | 109.6375 | 6.110833 | 9395942 | -2.25379 | 4.697179 |
| 3 | Appolo Unit Trust | 2022 | -0.0464 | 117.865 | 7.6375 | 9851329 | -3.07046 | 4.76954 |
| 4 | CIC Unit Trust | 2018 | -0.0826 | 101.3008 | 4.695 | 8330891 | -2.49375 | 4.618095 |
| 4 | CIC Unit Trust | 2019 | 0.1275 | 101.9917 | 5.115833 | 8756946 | -2.05964 | 4.624891 |
| 4 | CIC Unit Trust | 2020 | -0.109 | 106.4508 | 5.285833 | 8733060 | -2.21641 | 4.667683 |
| 4 | CIC Unit Trust | 2021 | 0.108 | 109.6375 | 6.110833 | 9395942 | -2.22562 | 4.697179 |
| 4 | CIC Unit Trust | 2022 | -0.0705 | 117.865 | 7.6375 | 9851329 | -2.65214 | 4.76954 |
| 5 | Cytonn Unit Trust | 2018 | 0.0161 | 101.3008 | 4.695 | 8330891 | -4.12825 | 4.618095 |
| 5 | Cytonn Unit Trust | 2019 | 0.0323 | 101.9917 | 5.115833 | 8756946 | -3.43166 | 4.624891 |
| 5 | Cytonn Unit Trust | 2020 | -0.056 | 106.4508 | 5.285833 | 8733060 | -2.8824 | 4.667683 |
| 5 | Cytonn Unit Trust | 2021 | 0.04 | 109.6375 | 6.110833 | 9395942 | -3.21888 | 4.697179 |
| 5 | Cytonn Unit Trust | 2022 | -0.081 | 117.865 | 7.6375 | 9851329 | -2.51331 | 4.76954 |
| 6 | KCB Unit Trust | 2018 | 0.055 | 101.3008 | 4.695 | 8330891 | -2.90042 | 4.618095 |
| 6 | KCB Unit Trust | 2019 | 0.077 | 101.9917 | 5.115833 | 8756946 | -2.56395 | 4.624891 |
| 6 | KCB Unit Trust | 2020 | 0.033 | 106.4508 | 5.285833 | 8733060 | -3.41125 | 4.667683 |
| 6 | KCB Unit Trust | 2021 | 0.121 | 109.6375 | 6.110833 | 9395942 | -2.11196 | 4.697179 |
| 6 | KCB Unit Trust | 2022 | 0.0715 | 117.865 | 7.6375 | 9851329 | -2.63806 | 4.76954 |
| 7 | Madison Unit Trust | 2018 | 0.095 | 101.3008 | 4.695 | 8330891 | -2.35388 | 4.618095 |
| 7 | Madison Unit Trust | 2019 | 0.145 | 101.9917 | 5.115833 | 8756946 | -1.93102 | 4.624891 |
| 7 | Madison Unit Trust | 2020 | 0.029 | 106.4508 | 5.285833 | 8733060 | -3.54046 | 4.667683 |
| 7 | Madison Unit Trust | 2021 | 0.0896 | 109.6375 | 6.110833 | 9395942 | -2.41166 | 4.697179 |
| 7 | Madison Unit Trust | 2022 | 0.0878 | 117.865 | 7.6375 | 9851329 | -2.43168 | 4.76954 |
| 8 | Nabo Africa | 2018 | -0.0503 | 101.3008 | 4.695 | 8330891 | -2.98909 | 4.618095 |

| | | | | | | | | |
|----|-------------------|------|---------|----------|----------|---------|----------|----------|
| 8 | Nabo Africa | 2019 | -0.132 | 101.9917 | 5.115833 | 8756946 | -2.02495 | 4.624891 |
| 8 | Nabo Africa | 2020 | -0.04 | 106.4508 | 5.285833 | 8733060 | -3.21888 | 4.667683 |
| 8 | Nabo Africa | 2021 | 0.021 | 109.6375 | 6.110833 | 9395942 | -3.86323 | 4.697179 |
| 8 | Nabo Africa | 2022 | -0.0503 | 117.865 | 7.6375 | 9851329 | -2.98909 | 4.76954 |
| 9 | NCBA Unit Trust | 2018 | -0.12 | 101.3008 | 4.695 | 8330891 | -2.12026 | 4.618095 |
| 9 | NCBA Unit Trust | 2019 | 0.19 | 101.9917 | 5.115833 | 8756946 | -1.66073 | 4.624891 |
| 9 | NCBA Unit Trust | 2020 | -0.111 | 106.4508 | 5.285833 | 8733060 | -2.19823 | 4.667683 |
| 9 | NCBA Unit Trust | 2021 | 0.09 | 109.6375 | 6.110833 | 9395942 | -2.40795 | 4.697179 |
| 9 | NCBA Unit Trust | 2022 | -0.105 | 117.865 | 7.6375 | 9851329 | -2.25379 | 4.76954 |
| 10 | Old Mutual Trust | 2018 | -6.53 | 101.3008 | 4.695 | 8330891 | 1.876407 | 4.618095 |
| 10 | Old Mutual Trust | 2019 | 14.77 | 101.9917 | 5.115833 | 8756946 | 2.692598 | 4.624891 |
| 10 | Old Mutual Trust | 2020 | -4.48 | 106.4508 | 5.285833 | 8733060 | 1.499623 | 4.667683 |
| 10 | Old Mutual Trust | 2021 | 11.44 | 109.6375 | 6.110833 | 9395942 | 2.437116 | 4.697179 |
| 10 | Old Mutual Trust | 2022 | -0.1151 | 117.865 | 7.6375 | 9851329 | -2.16195 | 4.76954 |
| 11 | Sanlam Unit Trust | 2018 | -0.148 | 101.3008 | 4.695 | 8330891 | -1.91054 | 4.618095 |
| 11 | Sanlam Unit Trust | 2019 | 0.247 | 101.9917 | 5.115833 | 8756946 | -1.39837 | 4.624891 |
| 11 | Sanlam Unit Trust | 2020 | 0.066 | 106.4508 | 5.285833 | 8733060 | -2.7181 | 4.667683 |
| 11 | Sanlam Unit Trust | 2021 | 0.071 | 109.6375 | 6.110833 | 9395942 | -2.64508 | 4.697179 |
| 11 | Sanlam Unit Trust | 2022 | -0.125 | 117.865 | 7.6375 | 9851329 | -2.07944 | 4.76954 |

Appendix IV: RESEARCH PERMIT

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