

**THE EFFECT OF FOREIGN PORTFOLIO INVESTMENTS ON  
STOCK MARKET PERFORMANCE AT THE NAIROBI  
SECURITIES EXCHANGE**

**KENNETH NGUGI MUIRURI**

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## DECLARATION

I declare that this research project report is my original work and has never been submitted to any other university for assessment or award of a degree. All information from other sources has been acknowledged.

Signature:..........

Date: ..... 25/11/2022 .....

Kenneth Ngugi Muiruri,  
D63/60472/2013

This research project has been submitted for examination with my approval as University of Nairobi Supervisor

Signature:..........

Date: ..... 09 November 2022 .....

Prof. Cyrus Iraya  
Department of Finance and Accounting  
Faculty of Business and Management Sciences,  
University of Nairobi

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## LIST OF ABBREVIATIONS AND ACRONYMS

<b>ADF</b>	Augmented Dickey and Fuller
<b>APT</b>	Arbitrage Pricing Theory
<b>ARMA</b>	Auto Regressive Moving Average Models
<b>BSE</b>	Bombay Stock Exchange
<b>CAPM</b>	Capital Asset Pricing Model
<b>FII</b>	Foreign Institutional Investor
<b>FPEI</b>	Foreign Portfolio Equity Investments
<b>FPI</b>	Foreign Portfolio Investments
<b>FDI</b>	Foreign Direct Investments
<b>MSCI</b>	Morgan Stanley Capital International
<b>NSE</b>	Nairobi Securities Exchange
<b>PPMC</b>	Pearson Product Moment Correlation
<b>REER</b>	Real Effective Exchange Rate
<b>ROE</b>	Return on Equity
<b>ROI</b>	Return on Investment
<b>ROA</b>	Return on Assets
<b>VAR</b>	Vector Autoregression
<b>VECM</b>	Vector Error Correction Mode
<b>VIF</b>	Variable Inflated Factor



## ABSTRACT

While the role of foreign investments in the development of a country's securities market is often touted in policy, there is inconclusive evidence on the effect of foreign portfolio investment on stock exchange performance due to the conditional nature of economic characteristics of the recipient country. The objective of the study was to establish the effect of foreign portfolio investments on the stock performance at the Nairobi Securities Exchange. Owing to the presence of other indicators influencing stock market performance, the effect of control variables (exchange rates, interest rates, market capitalization) on the relationship between foreign portfolio investments on the stock performance was also examined. A descriptive research design was adopted for the study. Secondary data was collected from the NSE and CBK databases. The data comprised of the monthly Net Foreign Investors Transactions for Foreign Portfolio Investment, NSE All Share Index (NASI) for stock market returns, market capitalization, exchange rates (KSH/USD) and interest rates. The monthly data covered a 10-year period (2009-2018). Collected data was cleaned and taken through diagnostic tests: logarithmic transformation, Augmented Dickey-Fuller (ADF) tests for unit roots, and autocorrelations. Linear regression models were developed to estimate the relationship between foreign portfolio investments and stock market performance from the transformed dataset. In the absence of control variables, regression coefficients indicate that foreign portfolio investments had a positive and statistically significant effect on stock market performance. When control variables were added to the regression model, findings revealed that foreign portfolio investment had a negative, but not statistically significant effect on stock market performance. Exchange rate and interest rates had a negative and statistically significant effect on stock market performance, while market capitalization had a positive and statistically significant effect on stock market performance. The study recommends a sound monetary and fiscal policy framework if the country is to reap the benefits of foreign capital inflow in the long run.

## **CHAPTER ONE: INTRODUCTION**

### **1.1. Background to the Study**

Securities markets play a critical role in economic growth and development. The development of securities markets ensures liquidity for investment, drives access to productive investment opportunities, enables investment diversification, and grows market capitalization (Saqib, 2013). Securities markets promote long-term investment in the economy, boosting domestic capital accumulation, and attracts foreign portfolio investment (Silva et al., 2018).

The functions of securities markets, which are essentially capital formation, liquidity, and risk management, have been found to exert a positive influence on economic growth both in less developed, emerging and developed economies (Qamruzzaman & Wei, 2018). Financial intermediaries like capital markets promote economic growth by diversifying the risk and inducing the investors to hold and invest in riskier investment projects. This is because it is composed of liquidity generating and price uncovering mechanisms for a motley number of financial instruments (Saqib, 2013; Silva et al., 2018).

Foreign investors participate in securities markets through Foreign Portfolio Investments (FPI). FPIs include securities and assets, including stocks, bonds, or any other debt instruments offered by companies or foreign governments, as well as include mutual funds and exchange traded funds invested in overseas markets. They are passive investments made with the expectation of a return (Razin & Goldstein, 2005). Even though FPIs allow investors to enter a market on commercial terms, without the challenge of setting up and running an enterprise, they are an important source of development funds for a country.

The role of foreign investments in a country's securities market is an area of interest, owing to the potential effects on the economy and other macroeconomic indicators. As the volume of foreign capital flows into a stock market increases, the market experiences larger effects associated with the activities of the foreign investors (Alessandri & Mumtaz, 2017). These effects can either be positive or negative depending on the direction of the FPIs. The inconclusive evidence on the effects of foreign capital inflows can be linked to the conditional nature of economic characteristics in the recipient country (Baba & Sevil, 2020).

To explore the connection between FPIs and stock market performance, the Arbitrage Pricing Theory by Ross (1976) can be employed. Its great advantage over a single factor model such as CAPM, is that it is a linear, multi-factor theory, and it is agnostic as to the identity of the factors. Their determination can either be based on pre-set out macroeconomic factors or conjecturing that apriori the factors are unknown Koskei (2016). Nyangoro (2013) used such a model while investigating the impact of short-term capital flows on the stock market performance and established that stock market returns are affected by the expected and unexpected portfolio flows. He also found that the price pressure hypotheses and base-broadening hypotheses are supported. The macroeconomic factors that he considered are changes in exchange rate and the Treasury bill rate. Koskei (2016) carried out a similar study looking at foreign equity sales, purchases, and turnover, however finding that they had no effect on the returns to investors on the NSE, however, the positive feedback theory held.

An analysis of the performance of African securities markets by Allen, Otchere and Senbet (2011) focused on why these markets remained appealing to investors considering the standard risk measures. Even with currency fluctuations that are harder to hedge against, African markets still performed well with the average annual return for the period in question being an

impressive 21.8%. Moreover, with the great financial crisis wreaking havoc on global stock returns, African markets fared rather well compared to their counterparts elsewhere. After performing a standard risk analysis, they found some even generated positive returns. These results point to the viability of African stock exchanges as investing opportunities because they ameliorate riskiness in investment facing global investors. They confirm that the outcomes of foreign portfolio investments differ depending on country specific characteristics (Alessandri & Mumtaz, 2017).

### **1.1.1. Foreign Portfolio Investment Activity**

FPI refers to foreign capital entering an economy to pursue opportunities in securities, bonds and in the money market (Ogbonna et al., 2019). FPIs are ideal for investors not looking to control the commercial activities of the company they want to invest in. They are a hands-off investment strategy, as opposed to Foreign Direct Investment (FDI) which is interested in exerting control over the institution they are investing in. FPIs are considered liquid based on the volatility of the market they are invested in. They are ideal for risk-averse investors who may want the option of leaving a market on short notice. FPIs are attractive short-term investments for investors having excess cash and wants to earn a profit from it and diversify risk (Qamruzzaman & Wei, 2018).

FPIs appear on the balance of accounts of a country and hence are used in its calculations. However, FPI flows are known to pose macroeconomic challenges due to their volatility. During the Asian crisis and sub-prime mortgage crisis, they were cited as a major culprit in the deterioration of overall balance of payments during the Asian crisis and sub-prime mortgage crisis (Dua & Garg, 2013).

Country-specific data for FPIs are found in economic and statistical databases maintained and published by the International Monetary Fund (IMF) and the World Bank, as well as private sector institutions such as banks. The data is also published by security markets. In Kenya, it is published by securities markets regulator, Capital Markets Authority, and the Central Bank of Kenya.

### **1.1.2. Stock Market Performance**

A stock market index can be used to measure stock market performance. Simiyu (1992) defined an index as a device that reflects some phenomenon by its variation or changes in magnitude, but which is not capable of accurate measurement in itself or of direct valuation in practice. It gives a quick, overall picture of the changes taking place. Indices should have a high degree of scientific accuracy as possible, when comparing the present levels of the market with the past levels. In Kenya, the Nairobi Securities Exchange (NSE) has seven indices for measuring and tracking market performance. They include NSE All Share Index, NSE 20 Share Index, NSE 25 Share Index, FTSE NSE Kenya 15 Index, FTSE NSE Kenya 25 Index, FTSE NSE Kenya Govt. Bond Index, FTSE ASEA Pan African Index.

While indices are an accepted tool for assessing stock market performance, Osoro (2013) notes that indices may suffer from issues such as improper weighting, which may devalue the extent to which they reflect securities market performance or serve the utility needs of the investors. If the indices are concentrated on large cap stocks, equal-weighted index, fundamental index, an efficient index, or minimum volatility index, there is a significant risk of underperformance. Besides, cap weighting reduces diversification of the portfolio as the

stocks comprising such indices usually comprise a large fraction of the markets value (Waithaka, 2014).

Apart from indices, stock market performance can also be measured through market capitalization, which is the market price of the shares, for each listed share multiplied by outstanding shares, for each listed share in the market. These are then added together to get the total market capitalization. Changes in this value occur due to fluctuations in stock prices, issuance of new or bonus shares. In addition, market turnover shows the inflows and outflows of cash out of the market. To obtain the necessary figures, we examine the actively traded shares in a defined period, say a day, month, year etc. Changes occur due to fluctuation in share prices or number of shares traded on a particular day (Cakici & Topyan, 2014).

Stock market performance can also be assessed through financial ratios such as return on Investment (ROI), Return in Assets (ROA) and Return on Equity (ROE). Each of these ratios have their advantages and disadvantages, and as such have specific use cases where they are most beneficial (Borosky, 2019). ROE expresses the ratio between net profit and total shareholder's equity. The ratio accounts for the debts the business unit might have, so it is a measure of the returns on net assets. On its own, ROE cannot be used to definitively report in the performance of any given stock largely because it does not consider intangible assets such as brand equity. However, it is very useful as one of a combination of measures that can be used to assess the overall performance of a stock as part of the analysis needed to make investment decisions (Majed & Qabajeh, 2012). ROA is a ratio expressing the net profits after tax versus total assets. This is an absolute ratio that gives the rate of return based on the total assets of the firm. It is widely used to analyze stock market returns (Borosky, 2019).

### **1.1.3. Foreign Portfolio Investment Activity and Stock Market Performance**

Studies conducted to measure the effects of portfolio investments on local stock market returns indicate various effects. The condition that needs to be met is that the contribution of the portfolio investments in the local stock market should be substantial for any significant effects to be noted. Hatem (2017) found that in the UK and in Ukraine, there was a significant relationship between ROE and stock market returns, as compared to ROA. They concluded that ROE would be a better measure of stock returns compared to ROA.

In the Kenyan context, Nyaga (2017) also found that there is a significant relationship between market capitalization and portfolio investments, and exchange rate fluctuations influence market capitalization. This relationship can be explained by the additional capital entering the stock market from foreign sources as portfolio investments. Avci (2015) hypothesized that portfolio investments tend to be made in bull markets, and in so doing, they drive share prices away from the fundamentals. This is interesting because while portfolio investments are made for capital gains, it seems that they affect the market in which they are made, in ways that can distort that market. This can then be seen to influence stock returns.

Gathenya (2015) studied the relationship between foreign portfolio equity investment and market capitalization in the Kenyan market with an interest in the strength and direction of the relationship and found that there are statistically significant relationships between the variables. Nyangoro (2013) studied the effect of foreign portfolio inflows on stock market performance at the NSE and found that returns were affected by lagged values rather than coincident value. In addition, expected foreign portfolio flows had a positive and significant

relationship with stock market performance. FPI signaled confidence in the market, stimulating additional investment by local investors.

These studies indicate that the expected relationship between stock market performance and foreign portfolio investment is positive. However, due to the paucity of studies addressing this relationship, it remains an active area of research, with sufficient empirical studies needed to provide the basis for the positive link between the variables.

#### **1.1.4. Foreign Portfolio Investment and Stock Market Performance at the Nairobi Securities Exchange**

The Nairobi Stock Exchange was informally established in the 1920's as a Europeans only stock trading market, only after independence were Africans accepted to join and trade (NSE, 2022). As of June 2011, the Nairobi Securities Exchange has evolved to offer additional financial instruments other than shares. Clearing and settlement of shares at the NSE was automated after the Central Depository System was commissioned in 2004. On February 2008, NSE All-Share Index (NASI) was initiated. This is in addition to the NSE 20 Index. More indices were added on November 2011 when the NSE in conjunction with FTSE International floated the FTSE NSE Kenya 15 and FTSE NSE Kenya 25 Indices (NSE, 2021).

The NSE's regulator, the Capital Markets Authority, (CMA), was created in 1990 to champion and enable the orderly and efficient development of the capital market in Kenya. An illustration of this development mandate would be the CMA(Amendments) Act of January 1995, which led to the partial lifting of restrictions on inward foreign portfolio flows, allowing foreigners to acquire up to 20% of issued share capital of listed firms (Ngugi, 2003). A remarkable development was the complete lifting of the foreign shareholding ceiling, such that they can



now own 100% of any listed stock, as of June 2015. However, even though foreign investors dominate trading at the NSE, long term shareholding has been a stable 20% (Ochenge et al., 2020).

The market capitalization of the NSE has grown from USD 10 billion to 22 billion in the 2011-2018 period. In that period, foreign portfolio investment has ranged from 19% to 22% (Rogers et al., 2020). Nyangoro (2013) found a large increase of the foreign investment turnover from a bottom of KES 695 million in 1996 to KES 78.765 billion by end of 2011, accounting for 51.9% of total turnover. Foreign portfolio investments seemed to track stock market index for most of that period, a pattern broken by the IPO hype of late 2000s and the Global financial crisis, but restored thereafter (Rogers et al., 2020).

## **1.2. Research Problem**

Since the stock market liberalizations of the 1980s and 1990s, debate has raged whether foreign portfolio investments to emerging markets promote or impede local stock markets (Henry, 2000; Rogers et al., 2019). Some researchers support the notion that they do (Levine & Zervos, 1998; Vagias & Van Dijk, 2011), others dispute this assertion (Agudelo, 2010; Vo, 2016).

Foreign portfolio flows could precipitate financial crises which could dampen regulator enthusiasm for stock market liberalizations, as well as dampen local investment in the stock market, creating liquidity issues, and depressing market performance (Vo, 2016). Analysis of equity flows into emerging markets and found that when capital left, it did so faster than when it came in, which may help explain the crises suffered by some Asian and Latin American countries at the time (Bekaert, Harvey & Lumsdaine, 1999). Koskei (2016) mentions that

uncertainties surrounding the flows of FPI could trigger unforeseen behavior of the returns from stocks at both the macro level and micro level. Conversely, massive surges of incoming funds may cause the expansion of the economy as the central bank releases counterpart domestic currency, which may feed into the inflationary process. The surge is associated with currency appreciation, which can cause a mismatch between assets and their prices, and occasioning losses to local firms (Koskei, 2016).

In Kenya, by 2018, the market capitalization stood at USD 22 billion, with long term foreign portfolio investment ranging from 19% to 22% (Rogers et al., 2019). Over the 2011 to 2018 period, monthly trading in shares by foreign based investors varied between 50% and 70%, meaning that despite the low percentage of ownership, foreign investors dominated trade at the exchange (Rogers et al., 2019). There are many benefits of foreign investment flows to a country like Kenya. For instance, FPIs increased the quantity and portability of financing available for financial institutions. They also partially meet the capital needs of domestic companies, hence complementing foreign debt finance (Koskei, 2016). FPIs also induces a vibrant stock market, reinforcing it, therefore lubricating the ease in movement of shares. They also bring in foreign exchange to a country. Nyang'oro (2013) found that the quantity of external investment in the market ratchet up returns and hence how the exchange performs. Incoming external portfolio funds boost stock prices when they land which may be caused by enhanced demand. Prices are also highly sensitive to lagged period's unanticipated flows.

Due to their short-term nature, and the potential adverse effects that could arise if there was a sudden reversal of these flows, there is an additional compelling reason to try and understand foreign portfolio flows. In addition, though a lot of the literature agrees that in general, foreign portfolio investment has a statistically significant impact on the securities exchange, no

conclusive consensus exists on the impact of foreign portfolio investment on the various measures of stock exchange performance including returns. Research on this issue remains inconclusive and controversial and persuasive authors can be found on both sides of the debate (Qamruzzaman & Wei, 2018; Rogers et al., 2019). This therefore creates a gap that is going to be addressed by this study.

### **1.3. Research Objective**

To establish the effect of foreign portfolio investments on the stock performance at the Nairobi Securities Exchange.

### **1.4. Value of the Study**

This study seeks to understand the impact of FPIs on stock returns at the Nairobi Securities Market. Understanding this impact would be useful to several key groups. First and foremost are the policy makers. Understanding the impact of foreign investors would help them craft more appropriate policies to either encourage more or less of this investment based on the benefits or lack thereof, as viewed through the lens of various development goals the country has set for itself, such as Vision 2030.

Secondly, are researchers and students as this study would contribute to the growing literature focusing on the relationship of foreign investment and returns. Investors, especially local ones would benefit from understanding the role of foreign investment on stocks in the Securities market, therefore enabling them craft appropriate strategies to benefit from the same. Finally, the Nairobi Securities Exchange benefits from understanding the dynamics of FPIs and their influence on the development and growth of the securities market.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1. Introduction**

This chapter contains a review of the theories supporting the study, followed by the empirical aspects of each objective. Additionally, the conceptual framework will visually lay out the relationships between the variables being studied, the theories supporting the study and the various relationships among them. Finally, the research gap being investigated will be stated.

### **2.2. Theoretical Review**

This section is an examination of the major theories underpinning the study of the relationship between foreign portfolio investments and stock market returns.

#### **2.2.1. The Arbitrage Pricing Theory (APT)**

APT was developed in a seminal paper by Ross (1976) to try and overcome the weaknesses of the Capital Asset Pricing Model (CAPM). These weaknesses included many unrealistic assumptions, difficulty in testing and the reliance on only one systematic factor (stock market) affecting returns without considering the macroeconomic environment. The basic idea behind APT is that only a few systematic factors affect the long-term average returns on financials. Even though many factors may impact the quotidian price fluctuation of distinct securities, nevertheless there are key pressures that shift agglomerations of massive portfolios. Individual securities' returns, in a defined amount of time, is contingent on an array of foreseen and unforeseen events.

Forecasted events are built into the investors' projections of the returns of the singular securities and subsequently into the market price. However, in general, unanticipated events

are the ones that ultimately influence the returns of the securities. Even though the investors realize that unreckoned events may transpire, they lack knowledge of the vectors of these changes, however, they usually know the responsiveness of asset returns to these events. Because they are the main source of risk, realized portfolio returns depend on a set of systematic factors which are common to all portfolios. Disparate portfolios have unlike responsiveness to each systematic factor. Therefore, these factors, being the primary source of risk, are also the principle causes of unanticipated as well as realized returns. Two financial assets/ portfolios, with the similar responsiveness to these factors are highly interchangeable and may differ only in the constraints in quantity of diversifiable risk that they may still underpin. If so, these substitutes should offer the same return and sell for the same price.

ATP does have several weaknesses, the most glaring is that due to the indeterminacy of the factors, some statistical tests could not be carried out properly (Dhrymes et al.,1984). In addition, they questioned the assertion that three to five factors/elements viewed as adequate by other authors gave an adequate account for the risk, as the more securities were included in the APT model, the greater the number of elements needed to adequately employ the model. Gregory and Koraczyk (1993) assert that research into identifying relevant universal factors has only garnered mixed success. The assumption by APT that returns are affected by a multiple factor rather than just the market risk makes it relevant for this study.

### **2.2.2. Base Broadening Hypothesis**

Merton (1987) held that the barriers that prevent investment by foreign investors in foreign markets are ‘informational.’ He came up with a segmentation model that illustrated how

widening the investor pool for a stock and in extension the market may increase stock prices by risk pooling.

Clark and Berko (1997) observed that American investors had increased the purchase of foreign shares at 25 times the rate observed in the past 10 years in emerging markets. Applying Merton's model to emerging markets (which is the base broadening hypothesis) they found that there were two reasons that an increase in foreign participation could have propelled share prices to a higher level, all things being equal. Widening the investor pool expands the investments variegation and enhances apportionment of risk, bringing down the investors' required risk surcharge for Mexico (the market they were studying) specific volatility (Merton,1987) and Errunza and Losq (1985 and 1989).

Garg & Bodla (2007) found that 'base broadening' hypothesis presupposes that widening the investor pool by including foreign investors leads to more diversity therefore diminishing risk, hence bringing down the needed risk premium. Therefore, there is a lasting increment in the share price through dissemination of risk which signals larger returns. This hypothesis finds its basis on the notion that inception of the FPIs completes the market, promotes knowledge movement, therefore enhancing the investment options for investors, makes the market more transparent, and has minimal impact on the volatility. For this study, this hypothesis is useful because I hold that foreign inflows will result in Nairobi Securities exchange share prices rising permanently.

### **2.2.3. Price Pressure Hypothesis**

The price pressure hypothesis suggests that increase in prices accompanying heightened trading activity results from fleeting surge in fall of liquidity meant to soak up appetite from

foreign entry. Price increases caused by this activity would be reversed in due course. Hence, price increases are brought about by expectations and information mismatches among the investors. As the market absorbs these demand shocks, the stocks asking rates regress to earlier levels. Ingress of foreign based investors in the bourse signals good performance and novel information. Kraus and Stoll (1972) seem to be the first to use this hypothesis to explain why a temporary price increase was recorded at the stock market with the large-scale purchase of block shares, a phenomenon which occurs without the introduction of new information in the stock market.

Warther (1995) established that investor activity likely shifts security prices from new information being unveiled and price pressure, and the markets' reaction to information disclosure induces prices to go in the same direction as investor's activity, hence investor activity flows will move in tandem with returns on security. Bekaert et al. (2002) found that investor activities were elevated after relaxation of market rules and argued that this was due to portfolio recalibration. Their study supported price pressure hypothesis with investor's activity shocks at the onset raising returns. Ben-Rephael, Kandel and Wohl (2011) found that aggregate day to day flows to equity mutual funds were both positively autocorrelated and correlated with lag returns. However, this effect was reversed within 10 days, showing that investor inflows could temporarily displace share prices from their fundamentals, supporting price pressure hypothesis.

Pavabutr and Yan (2003) found that portfolios possessed by foreign investors had lessened risk premium. Risk premiums were diminished in stocks preferred by foreign investors and decreased steadily as the markets were liberated. However, according to Warther (1995) he did not find any evidence that returns were antagonistically associated with previous investor

activity but found a positive relation between investors activity and successive returns and a negative relation between returns and succeeding activity, which contradicts the price pressure hypothesis.

Nyang'oro (2013) investigated whether sudden flows possess a remembrance effect on returns at the NSE. These outcomes buttress the price-pressure hypothesis that unexpected influxes of funds at first elevate prices quoted, however it is anticipated that these prices will relapse back to mirror the condition of the exchange immediately the unpredicted funds influxes have been accounted for. Past returns do not notably impact current returns, since information on bygone returns has already been factored in by foreign investors executing their investment decisions. For this study, I will reject this hypothesis because I hold that foreign inflows will result in Nairobi Securities exchange share prices rising permanently.

### **2.3. Determinants of Stock Market Performance**

In addition to foreign portfolio investments, this section reviews other determinants such as exchange rates, interest rates, and market capitalization.

#### **2.3.1. Foreign Portfolio Investments**

Rai and Bhanumurthy (2004) in their paper point out that most FII is inherently momentary, and therefore can have both way directional causation with returns of other local commercial markets such as foreign exchange, money, and stock markets. FII exerts a more substantial effect on the local markets in the short run and a genuine impact on the long run. Their study looked at the predictors of FII in India, and whether return and risk in the stock market have any impact on the FII inflow into India. Their sample comprised data of the months from January 1994 to November, of the BSE. Using the Threshold-ARCH procedure, they found a



positive relationship of FII with the BSE and inflation with the U.S, and negative relationship with inflation in India, ex ante risk on the S&P 500 and BSE and returns on the S&P 500.

Dahlquist and Goransson (2001) studied the investment operations of foreign investors in relation to the opening of equity markets and found strong connections between the trading of foreign based investors and local based market returns. In the duration after the opening of the markets, net acquisitions by foreign countries-based investors led to a lasting rise in stock prices, indicating that domestic firms lowered their cost of capital.

### **2.3.2. Exchange Rates**

Bhattacharya and Mukherjee (2005) carried out a study whose main aim was to determine the predictive and delayed interrelationships between the BSE, net Foreign Institutional Investor inflows and exchange rate. They sampled the BSE Sensitive index, the months from January 1993 to March 2005. Indices of REER of the Indian Rupee proxies for the exchange rate. They executed a Toda-Yamamoto Granger non-causality test. They found a two-way direction causality between stock returns and FIIs, but a uni-directional from movements in exchange rate to the BSE sensitive index (At 10% level of significance). Finally, they did not find any causal link between net investments by FIIs and exchange rate.

An examination of the long- and short-term relationships among share prices, Dollar/Rupee exchange rate and Indian Net Foreign Institutional Investors using month to month data from April of 1993 to March of 2004 by Badhani (2005). He employed the Johansen co-integration test which revealed a long-term relationship between Foreign Institutional Investors flow and share prices, and between Foreign Institutional Investors flow and exchange rates. However, a similar association was lacking between exchange rates and share prices. Further test, the

VECM and Toda-Yamamoto procedure showed that there is a unidirectional long-term Granger causality with respect to exchange rate and Foreign Institutional Investors investment flow. This is an indication that FII use momentum trading in respect to the exchange rate. The base broadening hypothesis and positive feedback hypothesis were confirmed as a persistent two-way causation was found between FII flow and stock prices. In the short run however, VAR test showed that causality ran from movement in exchange rate to share returns and not vice versa.

After conducting a panel estimation study, Koskei (2016) found that risk from the exchange rate influences Kenya's listed institutions' stock returns. Kariguh (2012) also found that the exchange rate is a major element in the determination of the market's performance. However, there exists an exchange rate risk that creates unpredictability in the market, as assets devalue due to cheapening of the domestic currency against the foreign investors' currency.

### **2.3.3. Interest Rates**

After examining the link between portfolio flows and stock market performance, Nyangoro (2013) found that because of their significant coefficients, exchange rate and the interest rates do determine stock market performance. Theoretically, the T-Bill captures the risk-free rate and so may reflect improvement in asset returns. In a study examining the long run associations between money market interest rates and stock market returns in their native Zimbabwe, Kganyago and Gumbo (2015) found corroboration of strong, attributable, inverse, and one-way causal link between the money market interest rate and stock market returns in the long run. Arhenful et al. (2021) probed the effect of interest rates on Stock prices in Ghana, finding that the expected relationship of a decrease in stock prices with an increase in interest rates.

#### **2.3.4. Market Capitalization**

Market capitalization is the grand total of retail value of all quoted stock of listed companies. It is the total value of the domestic stock. It is a metric quantifying the stock market's dimensions and ranks among the main gauges of stock market maturation Levine (2003). Senbet and Otchere (2010) noted that increase in reform efforts integrating African bourses globally have only been marginally successful, as these markets remain thin and illiquid. This is despite the record returns they deliver therefore hampering their financial globalization. The major setback affecting stock markets in Africa is the paucity of stocks, of which they form an outsized proportion of total market capitalization. The study also noted that there is inadequate supervision by regulatory authorities.

Additionally, Nyangoro (2013) also noted that the quick development of stock markets in emerging markets has attracted considerable attention from foreign investors who direct foreign currencies into the markets. While enacting liberalization reforms of emerging markets is anticipated to increase equities liquidity and increase their orders, the consequence is that a greater proportion of market's total value is from external investors which is not the case in the advanced economies. Foreign portfolio investment is crucial as an indicator of market returns and variability, or sudden outflows of this investment disproportionately and negatively affects these markets.

#### **2.4. Empirical Review**

Clark and Berko (1997) investigated the notable positive correlation between month-to-month foreigner's purchases and Mexican equities and Mexican equities returns. Their sample ranged from January 1989 to March 1996. The data was obtained from the Central Bank of Mexico

and the National Banking and Securities Commission. They separated the Mexican flow data into publicized (primarily from published accounts in the International Financing Review) and unpublicized (total inflows less publicized inflows.) flows. Market capitalization statistics and stock price index are from the Mexican stock exchange. Additional regressors for this study included movement in foreign(non-Mexican) stock prices, level and change in Mexican interest rates, percentage change in the dollar/peso exchange rate, within the month volatility of Mexican stock prices, political risk measures and a measure of revisions to aggregate earnings forecast of Mexican stocks/ For world prices, The MSCI World stock index and S&P 500 price index. They found that foreign inflows to emerging markets significantly influence emerging equity returns. Surprise foreign purchases totaling 1% of the capitalization of the bourse are associated with concurrent price increases of about 13%. This was in line with the base broadening hypothesis where spread risk and enhanced liquidity from incoming foreign funds produce lasting price rises. Moreover, they did not find any evidence of return reversals or positive feedback trading, thus rejecting the positive feedback hypothesis.

Angelovska (2020) investigated the impact of foreigners' trades on equity prices on the Macedonian Stock Exchange. She analyzed monthly data for the period January 2005 to December 2009, acquired from Macedonian Stock Exchange and Macedonian Central Securities Depository. To test for the stationarity of the of the foreigner's net inflows, the ADF test was employed. Autocorrelation was tested for in the monthly series. She found evidence that the investor base was broadened, with 1% of monthly net inflows as a fraction of previous months' market grand market value, linked to a 7% rise in monthly returns on The Macedonian exchange. Moreover, unexpected two months lagged foreigner's net inflows were shown to

induce an increase of 8.05 percentage point in the month-to-month returns. The price pressure hypothesis was rejected since the rise in the prices seemed persistent.

Kariguh (2012) studied the relationship between foreign investment activity and the NSE market returns in Kenya for the period between 2008 and 2013 using a regression model. The control variables were the exchange rate and market capitalization. She found that foreign investment boosts share prices when they flow in because of elevated demand. Movement of domestic funds are significant in determining the exchanges returns as purchases by domestic buyers' boost prices. Macroeconomic factors such as the exchange rate are also key in determining bourse. However, the currency exchange rate may be a source of market unpredictability as asset value diminishes due to currency depreciation.

Nyang'oro (2013) examined the NSE portfolio flows for the period April of 1996 to December of 2011. He was investigating the impact of foreign portfolio flows on the outcomes at the Nairobi Securities Exchange (NSE). He employed APT, with market return as a stand-in for bourse's performance. He created models of expected and unexpected foreign portfolio flows which were then included as deciding factors of market returns. To do this, various statistical tools were employed including a lag test based on the ARMA framework. He found that foreign investment affected the exchanges returns and these returns are affected by lagged, unexpected flows. However, flows by domestic investors are also important in increasing returns on the securities market as their participation pushes prices of the securities up. The participation of local investors may signal confidence in the market in the case of information asymmetries. Macroeconomic factors, exchange rate and the interest rates also affect returns, e.g., erosion of the exchange rate may also erode returns diminishing the attractiveness of the market to foreign investors. Moreover, stability of the interest rates is essential in providing a

conducive environment for foreign investors. Tying it all together, he concluded that while foreign portfolio flows significantly influence a fall in the cost of capital, underwrite growth, encouraging homegrown investment and general economic stability is also crucial in enhancing the bourse's performance.

Gathenya (2015) sought to investigate the impact of FPEIs on the development of the Nairobi Stock Exchange as proxied by its market capitalization for the period covered by the years 2004 to 2014. He used a PPMC analysis and came up with a simple regression model. The population was the stocks of the NSE. The stated major aims of the study were first to probe the character and strength of the association between the FPEIs and the evolution of the exchange in Kenya. Secondly, the extent to which FPEIs influence the market capitalization of the NSE and the direction of the causality relationship between the FPEIs and the evolution of the exchange. He found that the existence of foreign investment in the bourse generates increased activity at the stock market thus improving the functioning of the market. In particular, the participation of foreign investors in the stock markets helps to increase the liquidity of the market, increasing the price-earnings ratio and thus reducing capital's cost in the local economy. The liquidity of the stock market can thus be said to enhance the allocation of capital and can thus be considered as a critical factor in enhancing the economic maturation of a country. The level participation of the foreign investors in the stock market determines the demand of the shares trading in the stock exchange. With increased participation of the foreign investors, the demand for shares increased and this would lead to an increase in share prices as both the local and foreign investors chasing the finite stocks available in the market. The reverse is true when the foreign investors participation decreases.

## 2.5. Conceptual Framework

A conceptual framework assembles an interrelated collection of ideas that are broadly grounded on theories. They form a set of postulates which are derived from and supported by data or evidence taken from relevant areas of enquiry (Koskei, 2016). As a framework, it forms the basis of data collection for the research, and for developing the relevant model to be utilized in the study, that agrees with the empirical literature of the study.

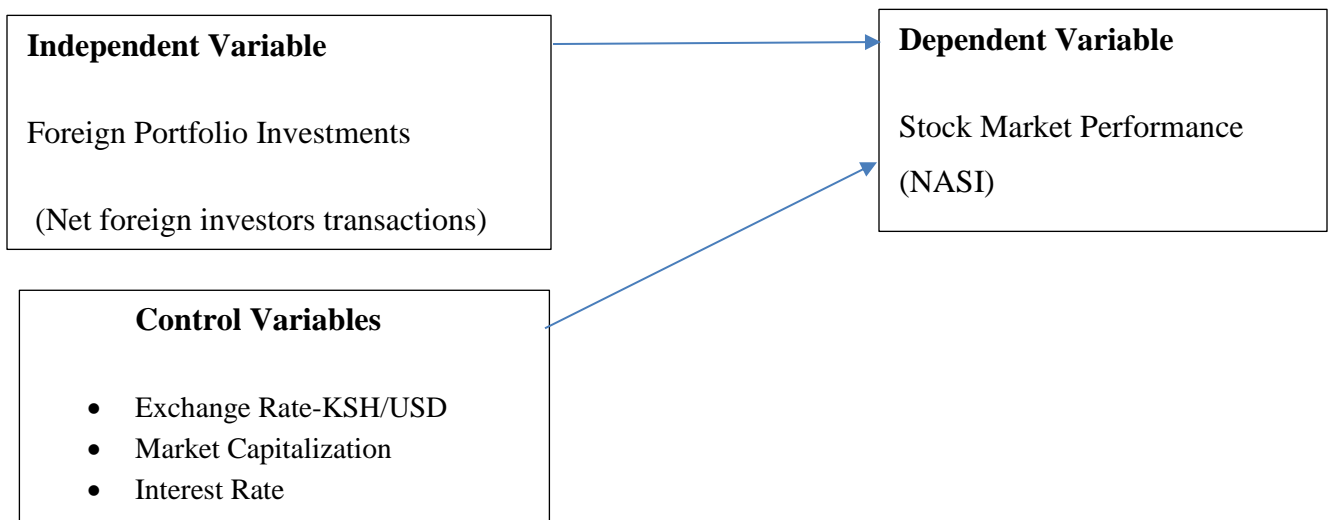


Figure 2.1: Conceptual framework

The conceptual framework explains the relationship between variables in this study. The independent variable is foreign portfolio investments. The independent variable is stock market performance. The control variables are the other indicators of stock market returns: exchange rate, market capitalization, and interest rates. The conceptual framework shows the hypothetical relationship between foreign portfolio investments and stock market performance, and the influence of the control variables on the relationship.

## **2.6. Summary of Literature**

A lot of research has been conducted that seeks to answer to what extent foreign investors impact on the local financial markets of emerging countries. In our case, we are naturally most concerned with Kenya. Attempts were made by Nyang'oro (2013) and Gathenya (2015) to deal with this issue conclusively, but questions remain concerning the causality's direction between foreign equity investments and market returns. Are investors attracted by well-functioning markets or are they just trying to diversify their portfolios to reduce risk, as in Markowitz (1952). To what extent are domestic investors participants in the development of our securities markets as opposed to Choe et al (1998). These are some of the gaps in the literature this study seeks to answer.



## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1.Introduction**

Research methodology comprises the research methods, design, and techniques that define and justify the selection of study population and sampling, data collection instruments, research procedures, and data analysis strategies chosen to investigate a specific phenomenon (Kothari, 2004). This study presents the research design, population and sample, data collection, diagnostic tests, and data analysis techniques chosen and justified for the investigation of the impact of foreign portfolio investments on stock market performance in Kenya.

### **3.2.Research Design**

The study adopted a descriptive research design. Descriptive research designs are chosen when the primary goal is to measure variables in their natural elements and are primarily concerned with describing the ‘who’, ‘what’, ‘where’, ‘when’, ‘where’ and ‘how much’ questions relating to a phenomenon being investigated (Creswell & Creswell, 2017). In this study, the choice of a descriptive design is justified by the fact that the study is interested in understanding the level of foreign portfolio investment activity at NSE, and how it impacts stock performance.

### **3.3.Data Collection**

Secondary data collection sheet was used to collect published data for the independent, control, and dependent variables. The data was downloaded from NSE and CBK databases. The data comprised of the monthly Net Foreign Investors Transactions for Foreign Portfolio Investment, NSE All Share Index (NASI) for stock market returns, market capitalization, exchange rates

(KSH/USD) and interest rates. The data covered a 10-year period, from January 2009 to January 2018.

### **3.4. Data Analysis**

All the data collected was cleaned before descriptive and inferential analysis. Descriptive statistics was used to summarize the data for all variables into means. For inferential statistics, diagnostic tests were performed on data before a linear regression model was used to estimate the relationship between the independent and dependent variables.

#### **3.5.1. Logarithmic Transformation**

Logarithmic transformation enables the use of natural logs of the values of the variables in analysis, as opposed to the raw values. Log transformations of data are recommended in econometrics for bigger values running into millions and billions. For the same percent error, bigger raw values increase the absolute error and the residuals. The natural logs for the variables were calculated and transformations saved in the data file for use in other diagnostic tests and regression analysis.

#### **3.5.2. Diagnostic Tests**

The diagnostic tests carried out were Augmented Dickey-Fuller (ADF) test for unit root and autocorrelations. ADF tests was used to test for stationarity in the time series data. ADF tests the null hypothesis that a unit root is present in the time series data. ADF is typically a negative value. The bigger the negative value, the stronger the rejection of the hypothesis of unit root being present in the data. Acceptance of the null hypothesis means that the data is not stationary. The rule of the thumb is that: if the Test Statistic value  $<$  Critical Values, reject null

hypothesis, and if the Test Statistic value > Critical values, accept the null hypothesis. In cases where the null hypothesis is accepted, the data must be transformed and lagged further.

Autocorrelations were computed to measure the degree of correlations of the variables having the same successive time intervals (t-month) and was concerned with determining how the lagged versions were related to the original/raw values in the time series. As a rule of the thumb, positive (+) values indicate positive autocorrelation while negative (-) values indicate negative autocorrelation. These values range from -1 to +1. Computing the lagged values for the variables yield findings on autocorrelations, partial autocorrelations, and the *Ljung-Box* test. The *Ljung-Box test* is a type of statistical test of whether any of a group of autocorrelations of a time series are different from zero. Instead of testing randomness at each distinct lag, it tests the "overall" randomness based on a number of lags and is therefore a portmanteau test. As a rule of the thumb, p values  $\leq 0.05$  denote a rejection of the null hypothesis that there is white noise in the variables.

### 3.5.3. Econometric Models

To estimate the relationship between foreign portfolio investments and stock market performance, two regression models were developed.

The first model tested the effect of foreign portfolio investments on stock market performance.

The model was represented as:

$$R = \beta_0 + \beta_1 F_1 + e \dots \dots \dots (1)$$

Where R = Stock Market Performance

$\beta$  = Assets responsiveness to a variation in the systematic factor

$F_1$  = Foreign Portfolio Investments

The second model demonstrated the effect of foreign portfolio investments on stock performance with other indicators of stock performance (exchange rates, interest rates, market capitalization) as controls. The model was represented as:

$$R = \beta_0 + \beta_1 F_1 + \beta_2 F_2 + \beta_3 F_3 + \beta_4 F_4 + e \dots \dots \dots (2)$$

Where  $R$  = Stock Market Performance

$\beta$  = Assets responsiveness to a variation in the systematic factor

$F_1$  = Foreign Portfolio Investments

$F_2$  = Exchange Rates

$F_3$  = Market Capitalization

$F_4$  = Interest rate

$e$  = Error term

### 3.5.4. Operationalization of Study Variables

The study variables were independent variables, dependent variables, and control variables.

These variables and their measurements in the study are presented in the operationalization table below.

Table 3.1: Operationalization of study variables

<b>Variable</b>	<b>Measurement</b>
<b>Independent Variable</b>	
Net Foreign Portfolio Investments	Net Foreign Investors Transactions
<b>Control Variables</b>	
Exchange Rates	KSHS/USD Exchange Rates
Market Capitalization	Monthly Market Capitalization
Interest Rates	91-day Treasury Bill Rate
<b>Dependent Variable</b>	
Stock Market Performance	NASI

## CHAPTER FOUR: RESULTS AND DISCUSSIONS

### 4.1.Introduction

The chapter presents the results and interpretations, and captures the descriptive statistics for all the variables, diagnostic tests, and regression analysis.

### 4.2.Descriptive Analysis

Table 4.1: Descriptive Statistics

Variables	Maximum	Minimum	Mean	Standard Deviation
Net portfolio investments (billions)	13.20	-8.12	.614	3.15
Exchange rate	74.74	105.28	90.87	9.52
Interest rate (%)	21.65	1.6	8.59	3.48
Market capitalization (billions)	2,820	612	1,660.00	611.00
Stock market performance	191.23	52.82	121.26	37.16

For the independent variable, the net portfolio investments, the mean net purchases were KES 614 million, with a standard deviation of KES 3.15 billion. The maximum net purchase was KES 13.20 billion and a minimum of KES-8.12 billion, in turnover registered over the same period.

For the control variables, the mean exchange rate over the period was 90.83692. The standard deviation was 9.519487. The minimum exchange rate reported over the period was 74.74, while the maximum was 105.28. The highest interest rate recorded over the Jan 2009 to December 2018 period was 21.65%, while the lowest was 1.6%. The mean stood at 8.58925%, with a standard deviation computed at 3.475429%. The mean for market capitalization, from Jan 2009 to December 2018 stood at KES 1,660 billion, with a standard deviation of KES 611

billion. Over the period, the lowest market capitalization recorded was KES 612 billion while the highest was 2,820 billion.

For the dependent variable, stock market performance as measured by the Nairobi Securities Exchange All Share Index (NASI), the mean performance stood at 121.26. Over the period, the minimum index reported was 52.82 while the maximum index recorded was 191.23. The trend analysis shows growth from 2009 to 2010, followed by a decline. NASI index grew 68 in December 2011 to a high of 162 in May 2015, followed by a decline in growth to 122 in January 2017 and a recovery to 191 in March 2018. However, from March 2018, the NASI index has been on a decline.

### **4.3. Logarithmic Transformation**

The data was transformed in excel to log base 10 ( $\log_{10}$ ) in order to make positively skewed data 'normal' to account for the curvature in the linear model and also to stabilize variations between the groups. All logarithmic transformations were saved in a data file and used for testing other diagnostic tests, before computing regression statistics.

### **4.4. Inferential Analysis**

#### **4.4.1 Diagnostic Tests**

Diagnostic were performed for normality, autocorrelation and multicollinearity, serial correlation and heteroskedasticity. The purpose of diagnostic tests was to demonstrate that the regression model adopted was robust.

In Augmented Dickey-Fuller test for unit roots, when the null hypothesis is accepted it implies that the data is not stationary, as a result logarithmic transformation must be performed until

the alternate hypothesis is accepted. In this study, analysis of lagged values of the variables were performed to achieve stationarity at Lag (4). The MacKinnon approximate p-value for the variables is reported as net foreign inflow (p value = 0.04862), exchange rates (p value = 0.22236), interest rates (p value = 0.15216), market capitalization (p value = 0.52257) and stock market performance (p value = 0.5401).

Table 4.2: Augmented Dickey-Fuller Test For Unit Root

Variable	Truncation Lag	P-value	Alternate Hypothesis
Net foreign inflow	4	0.04862	Stationary
Exchange rates	4	0.22236	Stationary
Interest rates	4	0.15216	Stationary
Market capitalization	4	0.52257	Stationary
Stock market performance	4	0.5401	Stationary

Autocorrelations of log transformed values was performed and the results indicate that the autocorrelation for all the variables was positive, with the Box-Ljung statistic showing statistically significant values, as indicated by net foreign inflows ( $r=0.195$ ,  $p=0.037$ ), exchange rates ( $r=0.975$ ,  $p=0.000$ ), interest rates ( $r=0.940$ ,  $p=0.000$ ), market capitalization ( $r=0.977$ ,  $p=0.000$ ), and stock market performance ( $r=0.975$ ,  $p=0.000$ ).

Table 4.3: Autocorrelation Statistics

Variables	Lag	Autocorrelation	Std. Error	Box-Ljung Statistic		
				Value	df	Sig.
Net foreign inflow	1	.195	.094	4.357	1	.037
Exchange rates	1	.975	.090	116.904	1	.000
Interest rates	1	.940	.090	108.730	1	.000
Market capitalization	1	.977	.090	117.549	1	.000
Stock market performance	1	.975	.090	116.869	1	.000



#### 4.4.2 Regression Analysis

Linear regression was used to test the effect of net foreign investments on stock market performance, by eliminating the control variables. The stock market performance is measured using the NASI index, a market cap weighted index consisting of all securities traded at NSE.

The summary statistics reveal an R Squared value of 0.203. This shows that net foreign inflow accounted for a 20.3% change in stock market performance.

Table 4.4: Model 1 Summary Statistics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.450 <sup>a</sup>	.203	.192	.1266
a. Predictors: (Constant), Net Foreign Inflow				

ANOVA was used to test the robustness of the regression model. The data covering 10 years yielded 120 observations for foreign portfolio investments; however, 45 observations were negative values. Logarithmic transformation handles negative values as missing values, hence the number of observations reported as total degrees of freedom (df) in the model is 75. The findings show that the regression model was statistically significant, as indicated by  $F(1,75) = 18.808, p = 0.000$ , at 95% confidence level. As a result, the model was appropriate for testing the relationship between foreign portfolio investment and stock market performance.

Table 4.5: Model 1 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.301	1	.301	18.808	.000 <sup>b</sup>
	Residual	1.186	74	.016		
	Total	1.487	75			
a. Dependent Variable: Stock Market Performance						
b. Predictors: (Constant), Net Foreign Inflow						

Regression coefficients indicate that foreign portfolio investments had a positive and statistically significant effect on stock market performance,  $\beta = 0.110$ ,  $p = 0.000$ , at 95% confidence level. This means that a unit increase in foreign portfolio investments increased stock market performance by a factor of 0.110.

Table 4.6: Model 1 Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.040	.232		4.494	.000
	Net Foreign Inflow	.110	.025	.450	4.337	.000

a. Dependent Variable: Stock Market Performance

The fitted model equation obtained when stock market performance is regressed against foreign portfolio investments is:

$$R = \beta_0 + 0.110F_1 + e \dots \dots \dots (3)$$

Multiple linear regression was used to establish the relationship between net foreign investments on stock performance, using the exchange rates, interest rates, and market capitalization as control variables. The summary statistics for Model 2 revealed a very high R Squared value of 0.995. This demonstrates that the variables: net foreign investment inflow, exchange rates, interest rates, and market capitalization explain 99.5% of changes in stock market performance.

Table 4.7: Model 2 Summary Statistics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2	.998 <sup>a</sup>	.995	.995	.0098

a. Predictors: (Constant), Market Capitalization, Interest Rates, Net Foreign Inflow, Exchange Rates

ANOVA test for the robustness of Model 2 showed that it was statistically significant at 95% confidence interval,  $F(1,75) = 3850.516$ ,  $p = 0.000$ . The model is robust and useful for predicting the relationship between the independent variable, control variables and the dependent variable.

Table 4.8: Model 2 ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
2	Regression	1.480	4	.370	3850.516	.000 <sup>b</sup>
	Residual	.007	71	.000		
	Total	1.487	75			
a. Dependent Variable: Stock Market Performance						
b. Predictors: (Constant), Market Capitalization, Interest Rates, Net Foreign Inflow, Exchange Rates						

In the presence of control variables in the model, regression coefficients indicate that net foreign portfolio investments had a negative effect on stock market performance, however, the effect was not statistically significant,  $\beta = -0.003$ ,  $p = 0.130$ , at 95% confidence level. Exchange rates ( $\beta = -0.194$ ,  $p = 0.000$ ) and interest rates ( $\beta = -0.041$ ,  $p = 0.000$ ) had a negative and statistically significant effect on stock market performance. On the contrary, market capitalization had a positive and statistically significant effect on stock market performance ( $\beta = 0.855$ ,  $p = 0.000$ ), at 95% confidence level.

Table 4.9: Model 2 Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
2	(Constant)	-7.906	.085		-92.888	.000
	Net Foreign Inflow	-.003	.002	-.014	-1.530	.130
	Exchange Rates	-.194	.045	-.064	-4.366	.000
	Interest Rates	-.041	.006	-.064	-7.058	.000
	Market Capitalization	.855	.011	1.064	74.618	.000
a. Dependent Variable: Stock Market Performance						

The fitted model equation obtained when stock market performance is regressed against foreign portfolio investments and the control variables, exchange rates, interest rates, and market capitalization, is:

$$R = \beta_0 - 0.003F_1 - 0.194 F_2 - 0.041F_3 + 0.855F_4 + e \dots \dots \dots (4)$$

#### 4.5 Discussion of Findings

This study investigated the effect of foreign portfolio investments on stock market performance, with and without the influence of control variables (interest rates, exchange rates and market capitalization). The study used linear regression analysis to test the significance of these relationships.

The study covered a 10-year period, from January 2009 to December 2018. Trend analysis showed month to month fluctuations in net foreign portfolio investments over the period, with a mean of KES 614 million. The market did not register a sustained upward trajectory in foreign investment inflows. Even though the high capital flows are more frequent, they are punctuated by episodes of low flows, particularly in the last five years of the analysis. Overall, the trend analysis demonstrates great instability in net foreign portfolio investment flows, a

definitive feature of the short-term nature of FPIs. On the contrary, exchange rates showed increase, averaging at 90.84, but going as high as 105.28 for the period under analysis. Except for months in 2011 and 2016, interest rates have largely remained under the 10% mark, averaging at 8.59%. Market capitalization has registered an upward growth in the decade under analysis. The average was established as 1,660 billion.

Descriptive statistics show that the mean NASI was 121.26, with performance comparatively higher in the second half of the decade under analysis. Nonetheless, the performance was not as robust and remained well under the 200 level. These descriptive statistics indicate short cycles of up and down trends, with no sustained upward or downward trend. This is indicative of market volatility. From the perspective of foreign investors, many existing studies show a positive link on returns on investment (Qamruzzaman & Wei, 2018; Alessandri & Mumtaz, 2017; Silva et al., 2018). This is because one of the primary drivers of investing in foreign markets is to exploit the benefits of diversification, which substantially reduces investment risk. Additionally, the increased flow is associated with capital market liberalization and deregulation in developing countries. The demand for capital in these emerging markets sets the stage for capital to flow from capital-rich to capital-poor countries. While foreign portfolio investments provide local companies with access to global capital, the effect on the performance of the stock market is contested. The result in this study shows that over the 10 years (2009-2018), foreign portfolio investments had negative effect on stock market performance.

Existing studies show that foreign portfolio investments constitute 19-22% of market capitalization at NSE (Rogers et al., 2019). This means that foreign capital is only partially meeting the capital demands of local companies (Koskei, 2019). Most studies in Kenya,

including Nyang'oro (2013), Gathenya (2015), and Rogers et al., (2019) have showed that the effects of foreign portfolio investments are strongly linked to the nature of the flow. The effects increase when foreign capital flow increases and reduces when it falls.

Foreign portfolio investments are short-term in nature. As a result, their potential effects on the securities market reverse when flows decrease. When flows are sustained for a significant duration of time, they can increase the vibrancy of the stock market by increasing the movement of shares. Incoming investment flows can boost stock price. A study by Nyang'oro (2013) showed that increase in foreign portfolio investments can increase market returns. In the same way, a reversal in flows can lead to adverse effects. As Gathenya (2015) also demonstrated, when foreign investments increase, it enhances allocation of capital and subsequently market growth. The reverse is true when foreign investor participation decreases.

The proportion of foreign capital flows, as reported by Rogers et al., (2019) also suggest that there are other factors that are also contributing to the performance of the securities market. When the relationship between foreign portfolio investments and stock market performance was controlled by exchange rates, interest rates, and market capitalization, the effect was more salient. Without the control variables, foreign portfolio investigates had a negative effect on stock market performance, but it was not statistically significant ( $p=0.256$ ). However, when control variables were added to the model, net foreign inflow had a negative statistically significant effect on stock market performance ( $p=0.021$ ).

This study also showed that there was a negative and statistically significant effect of exchange rates and interest rates on stock market performance. While interest rates, for example the T-bill rates used in this study, are captured as risk-free, other studies such as Kganyago and

Gumbo (2015), carried out in Zimbabwe, have also reported an inverse relationship between interest rates and market returns in the long run. Arhenful et al. (2021), in Ghana, demonstrated that an increase in interest rates was associated with a decrease in stock prices.

While exchange rates and interest rates showed a negative relationship, market capitalization registered a positive relationship. In another study that introduced control variables in the relationship was Kariguh (2012), when investigating the effect of foreign investment on NSE market returns over a 5-year period (2013-2018). Findings showed a positive effect on share prices and by extension market capitalization. Similar to the present study, Kariguh (2012) also found a negative relationship between exchange rate and market performance. This negative association was explained by the fact that exchange rate causes market unpredictability and currency depreciation is linked to reducing asset prices in the market.

Another explanation provided by Nyang'oro (2013) is that when exchange rates and interest rates are stable, they provide a conducive environment for foreign investors and exert a positive effect on the relationship between foreign investments and market performance. However, when exchange rates and interest rates are eroded, they also erode market returns by exerting a negative influence on the attractiveness of the market to foreign investors. Further, Baba and Sevil (2020) showed that decreases in foreign capital inflows was also associated with increased depreciation of real effective exchange rate (REER).

There are other studies that have showed short-term and long-term benefits of foreign portfolio investments. In a study carried out in India by Rai and Bhanumurthy (2004), the researchers noted that FPIs are inherently momentary and can only exert a short-term effect on market performance. This was demonstrated using data covering a 3-month period. Findings showed

that FPIs had a positive effect on BSE returns. In another study covering a 7-year period in Mexico, Clark, and Berko (1997) showed that there was a positive correlation between foreigner's purchases and equity returns. Foreign inflows totaling 1% of the market capitalization was associated with a 13% increase in equity prices. They also found evidence of long-term positive effect on returns. Dahlquist and Goransson (2001) also showed that net acquisitions by foreign countries-based investors led to a lasting rise in stock price.



## **CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

### **5.1.Introduction**

This chapter presents the summary of findings on the phenomenon under investigation, conclusions drawn from the findings, and the recommendations for practice and further research.

### **5.2.Summary of Findings**

The objective of the study was to investigate the effect of foreign portfolio investments on stock performance, with exchange rates, interest rates, and market capitalization as the control variables. Secondary data was collected from NSE and CBK and analyzed for descriptive and inferential statistics. Descriptive analyses show that the mean net portfolio investment was KES 614 million over the 10-year period. The trend for FPIs was marked by high rate of fluctuations characterized by growth punctuated by negative flows, with high flows recorded in the second half of the decade being analyzed (2014-2018). The short-term nature of FPIs may have been linked to the dynamic upward and downward fluctuations in growth.

A similar trend of growth was reported for exchange rates, interest rates, and market capitalization. The mean exchange rate was 90.84, while that for interest rates was 8.58925%. The exchange rate was relatively low between 2009 and 2011, before briefly shooting above the 100 level. For the next phase of the study period, the exchange rates stabilized until 2016 where it shot again to levels above 100. The same trend was observed in interest rates where lower values were recorded between 2009 to 2010, followed by a sharp rise in 2010, and a downward movement from 2015 to 2015. Just like in exchange rates, there was an increase in interest rates from 2016 onwards. The trend in market capitalization was inverse of the

observations recorded for exchange rates and interest rates. While exchange and interest rates were low between 2009 to 2010, market capitalization was recording steady growth. When exchange rates and interest rates shot up in 2011, market capitalization began declining and this continued until 2015. From 2016 onwards, market capitalization growth has been characterized by downward fluctuation.

Stock market performance, as measured by NASI, reported a mean of 121.26 during the period, where NASI fluctuated from a low of 52.82 to a high of 191.23. The years 2009 and 2010 recorded a slowing NASI growth followed by a sharp rise in 2011. From 2015 to 2016 there was steady growth followed by a decline in 2017, a momentary rise in March 2018, and subsequent decline in stock market performance. To understand how foreign portfolio investments and the control variables had influenced the trajectory of stock market performance growth, regression analysis was used to test hypotheses. Findings showed that, in the absence of control variables, NFPIs had a negative but not significant relationship with stock market performance. In the presence of control variables in the model, NFPIs had a negative and statistically significant effect on stock market performance.

### **5.3. Conclusion**

The study sought to establish the relationship between FDIs and stock market performance. FDIs were measured through net foreign capital inflows, while stock market performance was measured through NASI, which is a market capitalization weighted index that consists of all securities traded on the Nairobi Securities Exchange. Over the 2009 to 2018 analysis period, findings reveal that the net foreign portfolio investments on the NSE had a negative effect on stock market performance.

The performance of the securities market is also influenced by other indicators other than foreign investments in market instruments. Some of these indicators that were identified in literature were exchange rates, interest rates, and market capitalization. In an extended regression model, these variables were inputted as control variables. When NASI was regressed with the independent variable and control variables, the results demonstrated that net FPIs had a negative and statistically significant effect on stock performance.

The relationship can be explained by the characteristic nature of FPIs as short-term investments, that unless sustained over a long period of time can only yield momentary positive impact on stock market performance. At the same time, it is important to note that the positive effect can only be realized in a market environment with stable exchange and interest rates. As the results indicate, both exchange rate and interest rate had a negative influence on stock market performance.

#### **5.4.Recommendations**

Large capital inflows in an economy are generally theorized to lead to long term growth; however, in the absence of a sound monetary and fiscal policy environment, it can also create risks and vulnerabilities in the market. Slowed down or highly volatile inflows can lead to reversals of the gains. Policymakers can strive to reap the benefits of large FPI inflows, but it is prudent to note that excessive capital inflows can sow seeds of financial vulnerabilities and precipitate market crisis. To accrue the benefits of increased FPI flow without the risks, a country must consider monetary and fiscal policies that enable it to accurately identify the sources of risks and establish tools for risk management. As our discussions show, foreign capital inflows exert a heterogenous impact on other macroeconomic indicators. For instance,

it can lead to an increase in asset prices in the securities market. However, when exchange rates and interest rates are eroded, they also erode market returns by exerting a negative influence on the attractiveness of the market to foreign investors. Decrease in foreign capital inflows can lead to increased depreciation of real effective exchange rate.

### **5.5.Limitations of the Study**

The data from the study was obtained from the NSE and CBK, and comprises secondary data. This data may contain some inaccuracies due to errors during collection, storage and transfer to the researcher. The cost of raw data acquisition and manipulation is quite high without reimbursement, creating a heavy financial burden on young researchers. The study utilized the 91-day treasury bill to stand in for interest rates as well as USD/KES as proxy for the exchange rate. Rates such as the 182-day T-Bill rate or even the overnight interbank lending rate may just have been as suitable. Other exchange rates such as the EUR/KES, or even the SDR may have served just as well as the ubiquitous USD/KES. Finally, the study was limited in the number of variables that could be used as controls in the study, and inflation for example could have been as suitable control variable. Analyzing the overall stock market, instead of specific stocks, provided a global view of the effects of net foreign portfolio effects on these stocks. However, a finer grained view focusing on specific sectors or even stocks could highlight interesting behavior in the interaction of net foreign portfolio inflows and such stocks, e.g. maybe foreign portfolio flows are targeted towards a particular sector, or stocks rather than the overall market.

## **5.6.Suggestions for Further Study**

In the future, studies could use different proxies for exchange rates and interest rates to study this phenomenon. Exchange rates other than the USD/KES, could highlight how diverse currencies interact with our securities exchange, leading to new and exciting opportunities for local investors and other stakeholders. In addition, a finer grained view, taking a sectoral or even company specific approach, of how net foreign portfolio flows interact with stocks on the NSE, could inform stakeholders on steps they need to take to make sure they benefit from these flows. Authorities can surveil these firms to make sure that these flows do not adversely affect the macroeconomic environment.

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## **APPENDICES**

### **APPENDIX I**

#### **Population**

	<b>Name of Firm</b>		<b>Name of Firm</b>
1	Eaagads Ltd	33	Bamburi Cement Ltd
2	Kakuzi Plc	34	Crown Paints Kenya Plc
3	Kapchorua Tea Kenya Plc	35	East African Cables Ltd
4	Limuru Tea Plc	36	East African Portland Cement Ltd
5	Sasini Plc	37	KenolKobil Ltd
6	Williamson Tea Kenya Plc	38	Kenya Electricity Generating Company Plc
7	Car and General (K) Ltd	39	Kenya Power and Lighting Company Plc
8	ABSA Bank Kenya Plc	40	Total Kenya Ltd
9	BK Group Plc	41	Umeme Ltd
10	Co-operative Bank of Kenya Ltd	42	Britam Holdings Plc
11	Diamond Trust Bank Kenya Ltd	43	CIC Insurance Group Ltd
12	Equity Group Holdings Plc	44	Jubilee Holdings Ltd
13	HF Group Ltd	45	Kenya Re-Insurance Corporation Ltd
14	I & M Holdings Plc	46	Liberty Kenya Holdings Ltd
15	KCB Group Plc	47	Sanlam Kenya Plc
16	National Bank of Kenya Ltd	48	Centum Investment Company Plc
17	NCBA Group Plc	49	Home Afrika Ltd
18	Stanbic Holdings Plc	50	Kurwitu Ventures Ltd
19	Standard Chartered Bank Kenya Ltd	51	Olympia Capital Holdings Ltd
20	Deacons (East Africa) Plc	52	Trans-Century Plc
21	Eveready East Africa Ltd	53	Nairobi Securities Exchange Plc
22	Express Kenya Plc	54	BOC Kenya Plc
23	Kenya Airways Plc	55	British American Tobacco Kenya Plc
24	Longhorn Publishers Plc	56	Carbacid Investments Plc
25	Nairobi Business Ventures Ltd	57	East African Breweries Ltd
26	Nation Media Group Plc	58	Flame Tree Group Holdings Ltd
27	Sameer Africa Plc	59	Kenya Orchards Ltd
28	Standard Group Plc	60	Mumias Sugar Company Ltd
29	TPS Eastern Africa (Serena) Ltd	61	Unga Group Ltd
30	Uchumi Supermarket Plc	62	Safaricom Plc
31	WPP ScanGroup Plc		
32	ARM Cement Plc		