

**THE EFFECT OF FOREIGN DIRECT INVESTMENT ON STOCK
MARKET PERFORMANCE IN KENYA**

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DECLARATION

This research proposal has not been submitted for examination in any university or institution of higher learning for the award of a degree or an academic certificate.

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This research project has been presented for examination with my approval as The University of Nairobi supervisor.

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DEDICATION

I dedicate this work to the Almighty God and my family who encouraged and prayed for me.

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LIST OF ABBREVIATIONS

| | |
|--------------------|---|
| ADF | Augmented Dicky Fuller |
| AR | Autoregressive Model |
| ARDL | Autoregressive Distributed Lag Models |
| BNY | Bank of New York |
| CMA | Capital Markets Authority |
| CV | Covariance |
| CPI | Consumer Price Index |
| ECM | Error Correction Model |
| EMH | Efficient Market Hypothesis |
| FDI | Foreign Direct Investment |
| FPI | Foreign Portfolio Investments |
| FTSE | Financial Times Stock Exchange |
| GDP | Gross Domestic Product |
| GNP | Gross National Product |
| GFCF | Gross Fixed Capital Formation |
| IPP | Independent Power Producer |
| KLCI | Kuala Lumpur Composite Index |
| KPSS | Kwiatkowski Phillips Schmidt Shin |
| MNEs | Multinational Enterprises |
| MSCI | Morgan Stanley Capital Investment |
| NASDAQ | National Association of Securities Dealers Automated Quotations |
| NSE | Nairobi Securities Exchange |
| NYSE | New York Stock Exchange |
| OECD | Organization of Economic Co-operation and Development. |
| OLS | Ordinary Least Squares |
| PP | Philip Peron's test |
| SENSEX | The stock market index of the Bombay Stock Exchange |
| S&P 500 | Standard and Poor's 500 Index |
| UNCTAD | United Nations Conference on Trade and Development |
| UN | United Nations |
| VAR | Vector Autoregressive Model |

ABSTRACT

The Capital Market Authority has approved various reforms on the Nairobi Stock Exchange such; as the approval for demutualization of the stock exchange, self-listing of the NSE and the soon to be launched derivatives exchange. These reforms were done to improve the corporate governance of the NSE and to enable it handle different types of securities. This would have the catalytic effect of attracting foreign and local investors to the stock market, new listings for equities, and bonds. This research examines the effect of FDI on the Nairobi Stock Exchange. These inflows are as result of these new laws and regulations by CMA and the government of Kenya. The annual data range for the study was from 1980 to 2017. The response variable was the stock market performance which was assessed by the NSE 20 share index and the independent variables were GNP per capita, the rate of inflation, GNS as proportion of GDP and FDI as a proportion of GDP. The data was analyzed based on a descriptive case study and using regression analysis. Diagnostic tests were done on the data to check that the assumptions of the Ordinary Least Squares Method are not violated. From the regression analysis only 31.5% of the variations in the performance of the stock market were explained by the selected independent variables while 68.5% were from other factors not covered in the study. The model was statistically significant in predicting the stock market performance as indicated by the F statistic. GNP per capita was observed to have a positive and significant relationship with stock market performance it made a significant contribution to the model while inflation rate was not significant, negatively correlated with stock market performance and didn't make a significant contribution to the model. Savings and FDI had a positive and insignificant relationship with stock market performance.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Foreign Direct Investment (FDI) is the shifting of capital across countries. It results in increases in the GDP of the receiving country, creation of jobs, technology transfer, improvement of managerial expertise, training of employees, international production networks, new markets access, and due to the inflow of foreign currency it can also prevent fluctuation of the domestic currency of the receiving country leading to a stable currency. (Encarnation & Wells, 1985; Boddewyn, 1985). Most FDI is from industrialized countries to non-industrialized countries and due to this, these countries have established laws and regulations to encourage foreign direct investment.

The development of stock markets and their performance in developing countries has been shown to be positively influenced by FDI. A triangular causal relationship has been noted between FDI and stock market growth. FDI stimulates the expansion of a country's economy, which has a beneficial effect on equity market expansion, and the conclusion is that FDI encourages and influences the development of the stock exchange (Anokye & Tweneboah, 2008)

This study was guided by three theories which were; the modern portfolio theory, efficient market hypothesis and Tobin's Q theory. These theories expound on the interrelationship between FDI inflows and equity market performance. The modern portfolio theory explains how investors in making FDI decisions consider stock markets or countries with high returns and low levels of risk. This would therefore mean that low risk countries receive large amounts of FDI which affects the stock market performance.

The efficient market hypothesis describes an efficient market and how FDI increases the number of market participants, listed securities and lowering of transaction costs and how these affect the performance of the stock market. Tobin's Q theory states that; the valuation of all the companies listed on the stock market should be equal to the sum of the corporate assets. It shows that the movement in the stock prices is reflected in changes in consumption and investment (domestic and foreign). Therefore, FDI affects the movement in the stock prices on the stock market and hence affects market performance.

Further, there have been various empirical works which explained the effect of FDI on the receiving country and stock market performance. Romer (1993) stated that FDI in emerging economies transferred business knowledge and contributed to advancement of technology while others asserted that FDI in an environment of protectionism and market interventions by regulatory institutions would hurt allocation of resources and lead to the lagged growth of a country's economy (Diaz-Alejandro & Brecher, 1977; Brecher, 1983; Smith & Boyd, 1999). Kunal and Phani (2017) observed that FDI inflow was positively related to equity market performance. This finding was supported by Ali (2014) who observed that FDI inflows had a beneficial impact on the equity market and economic growth was essential for stock market development.

1.1.1 Foreign Direct Investment

Piana (2005) defined FDI as the financial investment which leads to substantial authority on the management or control of an investee firm. The investment can be either through a greenfield investment, mergers or acquisitions. FDI consists of acquisition or creation of assets. Froot (1993) defined FDI as expenditure in foreign countries to acquire or

expand MNEs control of capital while Shenkar (2007) defined FDI as direct investment in the production or other types of investments with an aim of acquiring effective control. He emphasized that the distinction between FDI and FPI was that FDI was the investment in real assets such as production and assembly plants, and distribution centers while FPI was the investment in financial assets.

FDI is categorized into, horizontal and vertical FDI. Horizontal FDI occurs when an MNE starts manufacturing similar goods produced in its home country in another country. This is also called geographical diversification. Vertical FDI occurs when an MNE produces goods in another country which are intermediate goods and are to be used as inputs in its home country (Shenkar,2007). The classification of FDI by Shenkar (2007) was supported by Dunning (1988) who put forward the eclectic paradigm, which stated that, a national firm has various options to enhance growth. It could variegate horizontally or laterally by introducing new product lines or vertically into new business lines, including production of intellectual property, it can enter into mergers or acquisitions with other companies, or it could invest in international markets. If the firm chooses to exploit foreign markets it is called an international enterprise and for it to compete with indigenous enterprises, it must have additional economies of scale (Hirsch ,1976).

1.1.2 Stock Market Performance

Koller et al. (2010) defined the performance of the stock market as an assessment of returns on shares over a period. A stock market's performance is measured using an index. FTSE Russell (2018), defined an equity index as a portfolio of shares selected to assess the performance of a specified variable. This variable maybe an industry, economic

sector, asset class or an investment scheme. These group of financial assets which constitute the index are called a basket and are weighted. An index is a depiction of the performance of each security as it would be laborious to track the performance of an individual financial asset in real time, especially in cases where the constituents are numerous.

Cytonn (2018) stated that the assessment of the performance of the stock market is significant because portfolio managers use the stock market index as a benchmark. Hence the decision to use either a passive or active investment strategy is aided by the measures of performance. Indices are used as the base of creating new types of financial securities such as Exchange Traded Funds (ETFs) and to measure the risk of buying a certain stock.

1.1.3 FDI and Stock Market Performance

FDI has become a major capital source for most emerging economies in this era of globalization because it contributes to the growth of the economy and influences performance of the stock market in emerging economies. Various scholars have observed a triangular causality between FDI inflows and performance or development of the equity market. Foreign Direct Investment facilitates growth of the economy, this growth of the economy positively affects the development and performance of the stock market. The conclusion is that FDI enhances development of a stock market (Anokye & Tweneboah, 2008). Tchana (2015) stated that FDI and measures of stock market development had a simultaneous and positive impact on each other. He stated that the two-way link between FDI and stock market performance could be explained in two ways. The first was; FDI affected stock market development and performance through effects of its investment

spillover. This was because, increased FDI heightened the possibility of MNEs affiliates listing on the domestic stock market, since multinationals tend to be from industrialized countries where financing through listings on the domestic stock market was the norm.

Tchana (2015) study also advanced a political hypothesis that Foreign Direct Investment inflows encouraged the country's leaders to enact laws and guidelines that enhanced trading and operations of the stock exchange specifically with regards to investor protection and improvement of corporate governance. This enhanced stock market development as measured by increased capitalization. Kamunde (2012) concluded that the relationship between NSE All Share Index (NASI) and capitalization of the market was positive and significant. Therefore, an increase in stock market capitalization leads to an increase in the market index which measures the performance of the stock market.

1.1.4 FDI and Stock Market Performance in Kenya

The Government of Kenya prioritized the attraction of Foreign Direct Investment as an integral policy pillar, and to actualize this, it enacted legislation that would drive the influx of FDI into Kenya. It enacted the following Acts: Investment Promotion Act of Kenya, the Partnership Act, Foreign Investment Act, Protection Act, and the Companies Ordinance Act. These Acts were to provide the required legal operating environment to facilitate and attract FDI. This action was followed by the abolishing of 75 per cent threshold of foreign ownership in listed companies through the amendment to the Capital Markets Regulations (Foreign Investors) Regulations via a June 11 gazette notice. This led to an increase of new listings on the NSE. (Anyanzwa, 2015) Kenya's FDI is tracked in two forms, i.e. FDI stock and FDI Inflows. FDI stock as per UNCTAD (2017) is presented at historical cost or book value, which reflects the cost of the investment at the

time it was made. For many countries, FDI stocks are computed by either summing up Foreign Direct Investment flows over a specified time or aggregating flows to an FDI stock acquired annually from official national sources or the detailed summary of assets and liabilities from the IMF database.

The Nairobi Securities Exchange is the only stock market in Kenya and it is the largest of the 5 stock exchanges in East and Central Africa. It is rated among the top exchanges in Africa and it has an average market capitalization of USD 20 Billion. It is regulated by the Capital Markets Authority which is set up under an Act of Parliament. To track its performance the NSE uses indices of different types to track its performance. It has the following equity indices to track equity performance; Nairobi Stock Exchange 20 share index, Nairobi Stock Exchange 25 share index and the Nairobi Stock Exchange All share index. It has also partnered with FTSE, the index company to develop an index series which complied with the industry's best practice and which would aid investors develop structured financial securities based on indices. These indices which were developed were; Financial Times Stock Exchange NSE 15 Index, Financial Times Stock Exchange NSE Kenya Government Bond Index and Financial Times Stock Exchange NSE Kenya 25 Index. (NSE,2014).

In Kenya, various scholars have researched the effect of FDI on stock market returns or stock market performance. These include; Gachanja and Kosimbei (2015) who researched on the strong association between foreign portfolio equity inflows and equity returns on the NSE. They concluded that there was a strong and beneficial link between foreign equity inflows and returns of the stock market and hence foreign equity flows affected the performance of the market. Bitok, Tenai, Chenuos &Kosgei (2014)

investigated the factors influencing the development of Capital Markets in developing Economy. They concluded that the following factors influenced the growth and development of the NSE; investor education and awareness, robust regulatory and legal framework, a conducive macroeconomic environment, improved infrastructure and increased participation of foreign investors. Foreign investors increase the FDI inflows into Kenya, which affect the performance of the NSE.

1.2 Research Problem

Three concepts have been discussed by various researchers on the association between Foreign Direct Investment and development of the equity market. (Soumare & Tchana, 2011). These researchers use total market capitalization as a metric to assess the magnitude of stock market expansion. However, it has been demonstrated by Nyanaro and Elly (2017) that indicators of stock market performance are market capitalization, liquidity and stock prices. It can therefore be concluded that factors that affect stock market development will also affect the stock market performance. The concepts put forward by Soumare and Tchana (2011) are; FDI net inflows increases the circulation of money in the receiving country and this promotes stock mark development of the stock market. This concept is supported by studies done by Henry (2000) and Desai et al. (2006).

The second concept suggests that FDI inflows compels the enactment of market friendly policies, regulations and laws by the host country government that have the effect of improving the performance of the stock market. This was supported by researches done by; Rajan and Zingales (2003) and Kholdy and Sohrabian (2008). The last concept is that an efficient capital market attracts FDI as MNEs perceive such market to be investment

friendly and the government encourages international investments and globalization. This concept was supported by Desai et al. (2006), who further asserted that the higher the efficiency of a shares market, the higher the liquidity and this leads to a lower cost of capital. The increased liquidity and reduced cost of capital attracts more FDI

Saurai (2014) concluded that Foreign Direct Investment and the development of the Zimbabwe Stock Exchange had a long run relationship. He however noted no direct cause and effect from equity market development to FDI or from FDI to equity market development. This implied that the stock market performance or development was also affected by other factors. Aurangzeb (2012) concluded that the effect of FDI and exchange rates on stock market performance was positive and significant while inflation had an insignificant and negative impact on the stock market performance.

Ishioro (2013) concluded that the association between the growth of the economy and equity market development was statistically significant. Sanningammanavara & Kumar (2014) used more than one macroeconomic variable in their study. They concluded that only GDP, GFCF and gross domestic savings had a positive influence on the Sensex performance. Inflation rate, net FDI flows, exchange rate, real interest rate and unemployment rate negatively affected the performance of Sensex. It can be seen from the various studies that the significance of the variables also depends on the country the research was conducted. Badullahewage (2018) confirmed that the effect of macroeconomic variables varied from country to country. The effect was dependent on the factors and their effectiveness. From the various researches the major factors that affect the performance of the stock market are; FDI, economic growth (GDP), inflation rate and savings level (GNS) in a country.

Kenya's Vision 2030 under pillar 4 proposed the advancement of financial services to create a robust and vibrant financial sector that would create employment and mobilize a high level of savings to facilitate Kenya's investment needs. Part of the macroeconomic goals were to increase savings rates by 13% from 17% to 30% of GDP in 10 years, increase capitalization of the stock market by 40% from 50% to 90% of GDP. Up to 10% of GDP in terms of savings for investment was expected to be realized from remittances, FDI, development grants and sovereign bonds. (Kenya Vision 2030). The government has enacted policies and laws to target each of these variables separately without considering the causality between these variables. The government has different regulators for the pension industry, cooperatives the stock market, the banking industry, insurance and investment promotion. There have been proposals to merge these bodies under one regulatory body to have a unified approach to the financial sector reforms. However, no study has been done to exhaustively show the correlation between, FDI, stock market performance, inflation rate, savings rate and economic growth.

Most studies in Kenya focused on the effect of foreign portfolio flows on the capitalization of the stock market such as Nyaga (2014) and Gathenya (2015) on how the stock market in Kenya is affected by foreign portfolio flows. Tobiko (2015) focused on the cause and effect relationship between FDI and the NSE while Njane (2017) analyzed the effect of FDI on the stock market. The research by Nyaga (2014) and Gathenya (2015) focused on one part of FDI which was, the portfolio flows to the Nairobi Stock Exchange and omitted the FDI inflows into Kenya in any given year. The research by Tobiko (2015) only focused on the dynamic relationship between NSE index and FDI. It excluded other variables like inflation rate, Gross National Product and interest rates which have been

shown to have a significant impact on the performance of the equity market. Njane (2017) used capitalization of the equity market to assess the development of the equity market. However, Kamunde (2012) concluded that most of the developments in the stock market were better illustrated by the NSE 20 share index than the Nairobi Stock Exchange All share index which is a market capitalization weighted index, and hence the NSE 20 share index was a better measure with which to assess the performance of the stock market. This research therefore sets out to respond to the following research question; Is there any effect of FDI on stock market performance in Kenya?

1.3 Research Objective

To evaluate the effect of FDI on the performance of the stock market in Kenya.

1.4 Value of the Study

This study will explain and demonstrate statistically the effect of FDI on the Nairobi Stock Exchange performance. It will contribute to the existing knowledge base by demonstrating the complimentary or the substituting role of Foreign Direct Inflows on equity market performance in Kenya. It will show if the growth of the economy, rate of inflation and the national savings rate have any effect on stock market performance. It will also expound on the various theories and empirical studies which explain the relationship between FDI and stock market performance.

The study will also inform policy holders on the key drivers of stock exchange performance. It will aid the government in identifying the key sources of FDI to Kenya and how to increase future FDI investments and to enact laws and regulations which encourage the complementarity of FDI and stock market performance because it has been proven that FDI has positive impact on the host country's economy.

In addition to the above, this study will also assist multilateral lenders which include; IMF, African Development Bank and the World Bank, which have over the years advised various emerging economies in Africa, to start or develop effective capital markets. A beneficial association between FDI and stock market performance aids these institutions in advising its members to enact rules, procedures, laws to encourage FDI.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This section draws on literature in FDI and its effect on the performance of the stock market. We have analyzed theoretical work on FDIs and their effect on stock market performance based on the information obtained from secondary sources such as; finance and economic books, finance journals and published articles. The chapter also identifies any research gaps that may exist.

2.2 Theoretical Review

The interrelationship between foreign direct investment and stock market performance is explained by various theories. In this study three theories were discussed. These are; Efficient Market Hypothesis (EMH), Modern Portfolio Theory and Tobin's Q theory.

2.2.1 Efficient Market Hypothesis (EMH)

This is a theory advanced by Fama (1970) and Roberts (1967). It describes a perfect market as a market where there are multiple rational market participants whose aim is to maximize profits and who actively compete, with each participant trying to predict future prices of various securities and where a large percentage of currently available information is almost free and accessible to all interested parties. In a market which is efficient, individual security prices reflect historical, current and future information. This is caused by competition between the many intuitive market participants.

In a market which is efficient, at any time the actual price will approximate its intrinsic value. (Fama,1970). Three distinct levels of market efficiency were identified by Fama. Weak Form EMH, Semi-strong form EMH and Strong form EMH.Strong Form EMH affirms that an efficient market reflects all historical, current and future information

relevant to the value of a security and is incorporated in the market price of the share in real time. Semi-strong Form EMH asserts that in an efficient market, market price of shares will reflect all current information in the market. Weak Form EMH affirms that in a market which is efficient all historical data is factored in the price of the security.

Arshad and Rizvi (2015) using multifractal de-trended fluctuation analysis (MFDFA) showed that the efficiency of the Malaysian market decreased during the Asian financial crisis due to the enforcement of capital controls by the Malaysian government. This affected investor perceptions and liquidity which created inefficiencies in the Malaysian market. They also concluded that the removal of foreign participation controls in South Korea in 1993 attracted the influx of foreign inflows which created bubbles and thus relative inefficiency on the stock market. This demonstrated that foreign capital controls affected FDI which then affected the number of participants in the market which then affected the stock market efficiency in the Malaysian and South Korean stock market.

Palmgren and Ylander (2015) stated that higher FDI implied higher market efficiency in Kenya, Mauritius, Morocco and Tunisia and recommended that African countries relax FDI regulations. This higher FDI in Kenya, Mauritius, Morocco and Tunisia confirmed Fama's condition of multiple rational market participants whose aim is to maximize profits and try to forecast future security prices because the increased entry of multinational enterprises into these countries leads to high levels of trading on the stock market, issue of more securities and the increase in the speed of dissemination of information, as the stock exchange improves its rules and regulations in order to attract more players and hence FDI does affect stock market performance by increasing its efficiency as explained by the Efficient Market Hypothesis.

2.2.2 Portfolio Theory

The theory was put forward by Markowitz (1952). He formulated the risk measure and the expected return of an asset portfolio. He demonstrated the formula for calculating the expected rate of return and variance of an asset portfolio and that the variance is a useful metric to evaluate the risk of a portfolio of assets under certain assumptions. The formula demonstrated the importance of diversifying investments to minimize portfolio risk and how to effectively and efficiently diversify. According to Dunning (1993), there are four different kinds of motives for FDI. These are, strategic resource seeking, market seeking, resource seeking, and efficiency seeking.

Efficiency seekers set out to streamline structures of established investments to benefit from common governance. These advantages originate from risk diversification and economies of scale and scope.

Benjamin and Laincz (2005) examined the portfolio diversification motive for FDI. They developed a model of optimal portfolio diversification for global companies which must allocate FDI among the various target countries. They demonstrated that risk hedging affected FDI decisions, because multinational enterprises seek to invest in countries which give the least risk at a specified level of return or the maximum return at a specified level of risk as explained by Portfolio theory. This leads to an increase in the return of their multinational portfolio or a decrease in the risk of the portfolio.

Azizan and Sorooshian (2014) analyzed the relationship between modern portfolio theory and stock market performance with an emphasis on Malaysian stock market and Asian Indices. They used the S&P 500 as a benchmark. They observed that from the year 2006 to 2010, S&P 500 was the best performing stock market but in 2009 and 2010 it was

dominated by the Kuala Lumpur Composite Index (KLCI). This change in dominance was due to the instability of the Europe market that has an influence on the US economy. The Europe market influences the US economy through the flow of FDI and hence the decreased FDI affected the performance of the S&P 500. This demonstrated that modern portfolio theory explains the positive effect of FDI on stock market performance.

2.2.3 Tobin's Q Theory

Tobin's q postulates that the total valuation of all the listed companies on the equity market should almost be equivalent to their total book value. The Q ratio for a single firm is computed as the total equity market capitalization of the company divided by the total book valuation of the firm, (Tobin & Brainard ,1968; Tobin ,1969; Tobin & Brainard,1977; and Tobin,1978). A Q ratio of between 0 and 1 suggests that the replacement value is greater than the market value and hence the stock is undervalued, this Q ratio is referred to as a low Q ratio. While a Q ratio of greater than 1 suggests that the market price of equity is greater than the firm's value of replacement and hence the stock is overvalued, this Q ratio is referred to as a high Q ratio. The main factor behind buys or sell decisions in this model by James Tobin was this measure of valuation.

Tobin's Q can also be used to calculate the valuation of the entire market in ratio to the sum of all the corporate assets. The formula for this is; total market capitalization of the stock market divided by the total book value of all the listed firms. Tobin's studies demonstrated that the movement in share prices reflected the variations in consumption (savings) and investment (domestic and foreign) and hence the level of foreign and domestic investment influenced the movement of prices of assets in the stock market.

This movement of the prices of assets was reflected in the movements in the equity market index, which is a measure of the performance of the stock market. Tobin's Q therefore showed the level of FDI had a beneficial influence on the performance of the equity market.

2.3 Determinants of Stock Market Performance

Tripathi and Seth (2014) concluded that stock market indicators and inflation had a significant correlation while Si-Yu Ho and Lyke (2016) concluded that; rate of savings, real income level, flow of private capital, financial intermediary development, gross domestic investment and FPI were important factors which influenced the development of the stock market.

2.3.1 Foreign Direct Investment

Various studies have shown that there is causality between development of the stock market and FDI. These are; Kannan and Karthik (2011) who researched the effect of FDI on the stock exchange in India, Adaramola and Obisesan (2015) who studied the impact of Foreign Direct Investment on the expansion of the Nigeria Stock Exchange and Shahbaz, Lean and Kalim (2013) who studied the impact of Foreign Direct Inflows on the expansion of the Pakistan Stock Exchange.

These three studies used the capitalization of the market as a measure of the stock market development. They observed that there was a complementarity effect of FDI on the stock exchanges of India, Nigeria and Pakistan. Kamunde (2012) concluded that the NSE indices had a positive and significant relationship with market capitalization. The NSE 20 share index is used to assess the performance of the NSE and hence since FDI has a

complementarity effect on the market capitalization, it then affects the performance of the stock exchange.

2.3.2 Inflation Rate

The Kenya Bureau of Statistics has two definitions for inflation; twelve-month inflation and annual average inflation. Twelve-month inflation is referred to as the inflation rate and it is the monthly proportionate change in consumer price index presented as a percentage. Annual average inflation is the proportionate change in the annual average consumer price index (CPI) of the corresponding months presented as a percentage.

Vena (2014) researched on the effect of inflation on the returns of the stock market He observed that the stock market returns had a positive correlation to the inflation rate. He stated that the level of influence exacted by inflation on stock market returns was high and this demonstrated that investments could perform well in the stock market regardless of the inflation rate. The results by Vena (2014) agreed with the Fisher Hypothesis which states that; an adjustment in the inflation rate leads to a change in returns of the stock market and thus this change in stock returns acts as a good hedge against inflation. Due to the positive correlation of inflation and the returns of the stock market, the change in the rate of inflation is expected to affect the performance of the stock market.

2.3.3 Gross Domestic Savings

The World Bank (2016) defined Gross Domestic Savings as the difference between GDP and final consumption. GNSs are measured against gross national disposable Income, which is calculated as GDP plus net income and transfers. GNS is measured relative to GDP. Nsofor (2016) studied the effect of savings on the Nigerian Stock Exchange. He concluded that savings had a significant and beneficial effect on the Nigerian Stock

Market. He observed that the amount of savings from private investors positively affects stock market through individual quest to improve their standard of living by investing in securities for future returns. Statistically he stated that a 1% increase in savings, will cause approximately a 75% increase in development of the equity market. The investment of savings in securities on the equity market increase the performance of the equity market.

2.3.4 Economic Growth

The 1993 System of National Accounts states that; Gross National Product (GNP) is also called Gross National Income (GNI). GNI is used to measure the sum of the total value added (domestic and foreign) claimed by residents of a particular country. It is used to summarize country's level of development or growth. Since GNI is a function of GDP, then; an increase in GDP will increase GNI or GNP.

Karunanayake, Valadkhani and O'Brien (2012) researched the relationship between returns of the equity market and GDP growth rates in four English speaking economies localized in three separate continents. They concluded that; in the US, there were US specific cross-mean spillovers from GDP growth towards its equity markets while cross mean spill overs from equity market returns towards the GDP growth were present in United States of America and Australia. This illustrated that the economic growth of an economy affected the performance of the stock exchange.

2.4 Empirical Studies

In the past, scholars have investigated the effect of different macroeconomic variables with an emphasis on foreign direct investment and their impact on stock exchange performance.

Shahbaz, Lean and Kalim (2013) analyzed the impact of Foreign Direct Investment on the equity market development in Pakistan. The main objective of this research was to check the complimentary or substitution role of FDI on the Pakistan Equity Market. The results of this research confirmed the complementarity effect of FDI on the Pakistan Stock Exchange and ultimately the link between FDI, savings and market capilization was observed to significant and statistical positive. The development of the stock exchange was also affected by the gross domestic savings, per capita income and the inflation rate. The impact of Gross National Product implied that the growth of the economy was vital for the equity market development in Pakistan. In the short run, FDI and growth of the economy (GNP) positively impacted stock market development. Although the rate of inflation and the gross domestic savings had an inverse relationship with development of the stock exchange, they had no statistical significance. The study focused mainly on equity market development which is measured by liquidity or depth of the market, volatility, size, and level of integration with other economies and didn't analyze the effect on performance as measured by the stock market index which is more reactive to any market changes.

Raza et al. (2012) empirically investigated the effect of FDI in expanding a country's stock exchange and to analyze whether there is a relationship between the two variables. Their main objective was the complementarity effect of FDI on the stock exchange

advancement in Pakistan. It utilized data from 1976 to 2011. The research also researched on the effect of the following macroeconomic variables on the stock market performance in Pakistan; domestic savings, exchange rate movement and inflation. They concluded that Foreign Direct Investment and the other macroeconomic elements had a strong beneficial effect in performance of stock exchanges of Pakistan. The study confirmed that FDI inflows were mostly linked to stock market performance and that further research demonstrated a positive effect of FDI inflows on the performance of the stock market.

Claessens, Klingebiel and Schmukler (2001) analyzed the complementarity or substitution effect of FDI on the stock market. The study focused on aspects of stock exchange development which were: capitalization of the market, securities listing, volume of trade, and degree of new capital raising, for both the domestic and foreign dimension. The study results indicated that FDI was positively correlated with equity market capitalization and the market value of securities traded and hence FDI had a complementarity effect not a substitution effect to stock exchange development. They also concluded that FDI had a positive correlation with the level to which raising capital, listing of securities, and buying and selling of securities, had been shifting to the various international financial centers. This study used as part of its control variables; English legal origin which was argued to be correlated with efficiency of judiciary and enforcement of legal rights, including the strong protection of minority shareholder rights. It also used the size of the government deficit over GDP to measure macroeconomic performance. The use of English legal origin as a control for law order is not applicable to francophone countries which have their origin of law in France and have efficient judiciaries and the use of government deficit to measure for economic performance is

also not an efficient control variable since some countries have large government deficits and high economic growth. The study also noted it left out important variables from the model.

Vladimir, Tomislav and Irena (2012) investigated the long and short-run associations between Foreign Direct Investment and the Croatian equity market. Two co-integration approaches were used to evaluate the long-run association between the selected variables and the results suggested the lack of a long-run relationship between the selected variables. This absence of a long-term association was explained by the absence of a connection between FDI and GDP the Croatian economy. A two variable VAR model was used to investigate the short-run relationship. They concluded that FDI movements affected the development of the equity market.in the short run and in the long run. This study used FDI stock instead of FDI inflows this was due to the issue of stationarity of the FDI inflows series, however the study which they used FDI inflows was not presented and therefore not comparable to other researches and this would have contributed to knowledge on FDI stock vis a vis FDI flow series.

Persson and Malcus (2018) analyzed if stock market development in Sweden was affected by FDI. To analyze the relationship, net FDI inflow was used to measure FDI and OMX Affärsvärlden General Index (AFGX) was used to assess equity market development. A regression analysis was used to evaluate the impact of FDI on the equity market development and selected macroeconomic independent variables were also included in the model. Quarterly Swedish data observed between 1982 and 2017 was used. The relationship between the stock market and the first lag of FDI was demonstrated to be negative, but the regression output results indicated a beneficial impact in the later

quarters from FDI on equity market development. The study used the OMX Affärsvärlden General Index (AFGX), which is an all-share index, instead of the OMX Stockholm 30 Index which is a market capitalization weighted index whose base value is 125 as of September 30, 1986. This is the start of the researcher's data period and would have been a better measure to track stock market performance as it is more reactive to market changes.

Nyang'oro (2013) analyzed the effect of FPIs on the performance of Nairobi Securities Exchange (NSE) using a multifactor pricing model while proxying for stock market performance with the market return. He used monthly data from April 1996 to December 2011. To estimate the impact of portfolio flows on the stock market he used the arbitrage pricing theory (APT). The empirical results showed that lagged unexpected flows affected the returns of the stock market. He explained further that the equity market returns, and equity market performance were affected by the amount of FPI in the stock market. The implication was that foreign portfolio flows pushed stock prices up when they came in, which might have been caused by increased demand. This study focused on foreign portfolio inflows and ignored the inflows through other FDI sources as captured by the Central Bank Quarterly bulletins and statistical abstracts from the Kenya Bureau of Statistics.

Nyambura (2017) analyzed the effect of FDI on Nairobi Stock Exchange in Kenya. The independent variable was stock market development as measured by market capitalization as percentage of GDP. The control variables were inflation, real interest rate and Gross National Product or Gross National Income. She used annual secondary data for the period 1982 to 2016. The factors were analyzed to determine a connection

with stock market developments based on a descriptive research design and a multiple linear regression model. It was concluded that FDI, GNP per capita, and interest rates were positively correlated to equity market development while inflation rate was negatively correlated with the equity market development.

Tobiko (2015) analyzed the nature of the causal link between Stock Market Index in Kenya and Foreign Direct Investments. The study used panel data ranging from 1990-2014. NSE index data was obtained from the NSE website and data on Foreign Direct Investments was obtained from the World Bank website. Augmented Dickey Fuller (ADF) was used to test for Grainger Causality and Philips-Peron Tests was used to test for stationarity. The researcher concluded that there was no causal relationship between the NSE 20 share Index and FDI. The study however only used two variables in a period of twenty-five years in Kenya.

Aduda, Masila and Onsongo (2012) researched the factors affecting the development of the Nairobi Stock Exchange. A regression model was used to model the variables affecting stock market development and the date span was from 2005 to 2009. The regression results demonstrated that stock market development was affected by the following macro-economic factors; bank development income per capita, domestic savings, institutional quality and stock market liquidity. No relationship was observed between macroeconomic stability (inflation and capital flows) and equity market development. Institutional quality which was denoted by law and order, democratic accountability, transparency, ease of doing business and corruption index were observed to be important contributing factors to the development of the equity market because they affected FDI inflows.

Kaimba (2010) sought to understand the relationship between performance of the Nairobi Stock Exchange (NSE) 20 share index and selected macro-economic variables that influence the state of economy of Kenya (economic growth). The study used data from 1st January 1990 to 31st December 2009. NSE data was collected from the NSE database while data in respect to GDP, domestic savings, inflation rates, GDP growth rates, interest rates, capital inflows and exchange rates was collected from the CBK's various publications, economic surveys and statistical abstracts of the state, annual reports and quarterly bulletins of the CBK.

The study used the three stage Least Square Estimates to study the relationship between the selected macroeconomic variables, the NSE 20 share index and market capitalization. The study concluded that there exist strong relationships between Nairobi Stock Exchange 20 Share Index, market capitalization and the chosen macro-economic indicators involving GDP, GDP growth rates, domestic savings, exchange rate, and interest rates while the relationship with foreign portfolio flows and rate of inflation was found to be insignificant.

2.5 Conceptual Framework

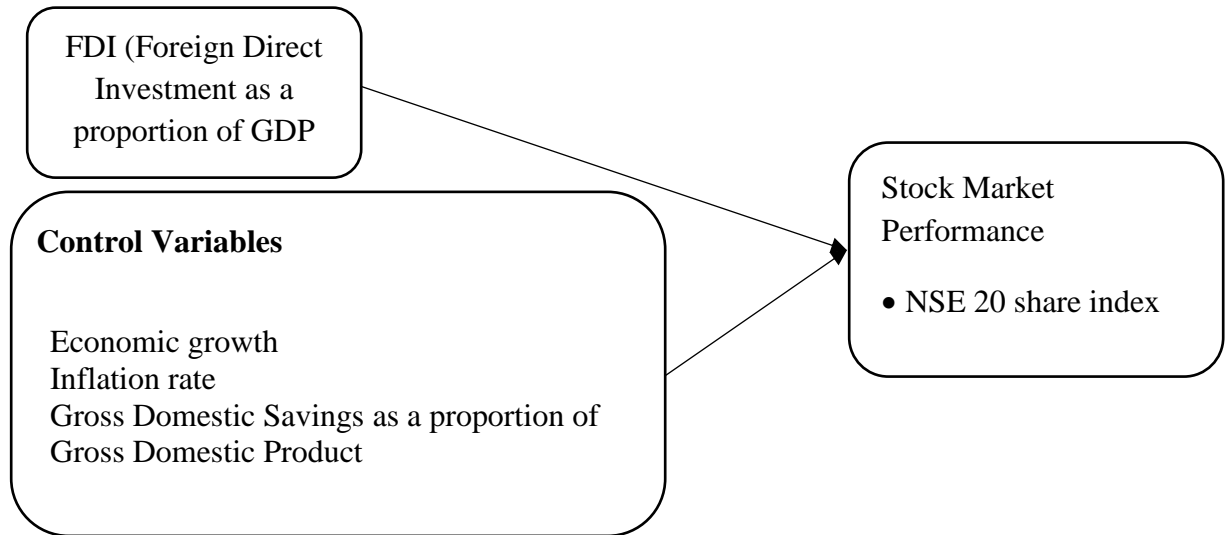
This research examined the effect of FDI on Nairobi Securities Exchange performance as measured by the Nairobi Stock Exchange 20 share index. The dependent variable was the equity market performance as measured by the Nairobi Stock Exchange 20 share index, while the independent variables are the economic growth which will be represented by GNP per capita, the rate of inflation and Gross Domestic Savings as a percentage of Gross Domestic Product.

The association of these variables is illustrated below;

Independent Variables

Dependent Variable

Figure 2.1 Conceptual Model



2.6 Summary of Literature Review

The literature review illustrated a strong theoretical and empirical background on how the foreign direct investment affects the stock market performance. The theories explain how FDI affects the stock market efficiency and how Multinational enterprise decisions are influenced by portfolio diversification motives with regards to maximization of returns and minimization of risks. This leads to foreign direct investments to different countries which is in the form mergers, acquisitions, joint ventures and establishing of subsidiaries which affects various macroeconomic variables such as inflation, the national savings rate and economic growth. These variables also affect the performance of the equity market.

The empirical studies have researched the effect and causal link between FDI and equity market development and performance. Most have concluded that the association between FDI and equity market performance is significant and positive. While some like Tobiko (2015) concluded that there was no causality between FDI and the NSE 20 share index while others like Vladimir, Tomislav and Irena (2012) concluded that there was no effect in the short run but FDI has a positive correlation with stock exchange performance in the long run.

These empirical studies have been done in developed countries while some have used 2 variables and short data range like Tobiko (2015). Others researched the effect of Foreign Direct Investment on development of the stock market and used capitalization of the stock market as a measure of equity market development instead of using the stock exchange index which as per Kamunde (2012) is more significant in describing the changes in the stock market.

This study therefore examined the effect of FDI on equity market performance as measured by the Nairobi Stock Exchange 20 share index and incorporate three control variables, which are economic growth, inflation rate and the gross national savings rate to address the gaps in the various empirical studies.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter expounds on the research design used in the study, the type of research, the population, the data collection methods used, and the data analysis method employed.

3.2 Research Design

This is the general plan used as a guideline in gathering, scrutinizing and analyzing data. In this study paper, a descriptive case study is applied to specify the relationship between variables. A descriptive case study is one that is detailed and focused, in which hypothesis and questions about an event or process are considered and articulated at the outset. The main aim of the descriptive case study is to scrutinize a sample in detail and comprehensively, based on an articulation of a descriptive theory. This research design is appropriate for this study because we will assess the performance of the Nairobi stock exchange in detail and how this is affected by FDI based on the various theories which explain the relationship between these variables.

3.3 Data Collection

Secondary data was used in this study. This was obtained from the annual statistical abstracts issued by the Kenya Bureau of Statistics, annual reports from the Nairobi Securities Exchange and the world bank and IMF database for FDI data and macroeconomic variables. NSE 20 share index data was retrieved from the statistical abstracts while FDI as a proportion of GDP, GNP per capita, GNP as a proportion of GDP and inflation were retrieved from the IMF and World Bank database. The annual data used was used from 1980 to 2017.

3.4 Data Analysis

Analysis of collected macroeconomic data was done using Statistical Package for Social Sciences (SPSS). SPSS was used to perform diagnostic tests; correlation analysis and regression analysis. Correlation analysis measured the degree of association between two or more variables. Correlation analysis was used to assess the degree and magnitude of association between the independent variable which was the performance of the stock market and the explanatory variables which are; FDI, GNP per capita, inflation and Gross National Savings. Regression analysis was utilized to model the relationship between the response variable and the explanatory variables. Regression analysis showed the relationship between the stock market performance, which was the response variable and FDI, economic growth, inflation rate and savings rate which were the predictor variables.

3.4.1 Diagnostic Tests

Due to the nature of financial time series data, diagnostic tests were done to ascertain the linearity, or lack thereof of the variables to decipher the most appropriate model to use. Relationships between variables may at times appear linear, but upon further investigation, a non-linear model would best be employed to explain the relationship. Other tests were performed on the data in case of violation of the assumptions

The response variable was tested for Normality. This tested the assumption that the residuals of the response variable are normally distributed around the mean. There are several tests for normality such as Kolmogorov-Smirnov which is appropriate for huge data ($N > 100$) and Shapiro-Wilk test which is useful in this study since it is the most appropriate for small data ($N = 38$). The hypothesis to be tested will be H_0 , the sample data of the response variable (NSE 20 share index) is normally distributed. H_1 , the sample data

of the response variable is not normally distributed. The chosen significance level will be 0.05. If the calculated p-value is less than 0.05 then the researcher will reject the null hypothesis which states that the data is normally distributed. If the calculated p-value is greater than 0.05, then the researcher will accept the null hypothesis. If any non-normality is detected, we will use natural log transformations to test correct the non-normality or the 2-step data transformation using fractional rank and inverse distribution in SPSS.

Homoscedasticity is the assumption that the variance of the error term is constant. If the variance of the error terms is not constant, then there is no homoscedasticity and hence, heteroskedasticity has occurred. To test for homoscedasticity researcher will use Breusch-Pagan test based on the following hypothesis; H_0 , there is no heteroskedasticity and H_1 , there is heteroskedasticity. The alpha value is 0.05. If the calculated p-value is less than the tabulated value at $\alpha=0.05$, then we will accept the null hypothesis of no heteroskedasticity, if it is greater, we will reject the null hypothesis.

Time series data is affected by Serial Correlation. Serial correlation contravenes the Gauss Markov presumption that the error terms are not correlated with each other across time and there is no correlation between the error terms and the independent variables. For an OLS to be best linear unbiased estimate the serial correlation must be corrected. We will use the Durbin-Watson Test. The range of the Durbin-Watson statistic is from 0 to 4. Non-autocorrelation is observed when the value is near 2, positive autocorrelation is when the value is toward 0 and negative autocorrelation is observed when the value is toward 4.

Stationarity means the variable is integrated of order zero or has no unit root. One of the shortcomings associated with time series data (which will be used in this study), is lack of independence of observations across time i.e. non-stationary series which may lead to either spurious or inconsistent regression problems where null hypotheses end up being rejected while they ought to be accepted. This will be done by used of Augmented Dickey-Fuller (ADF) test for unit root. The decision rule for the test is; if the t-critical is less than the calculated t-statistic, then accept the alternative. The results of ADF will be compared with the results of Philips Peron test and KPSS test.

3.4.2 Analytical Model

To evaluate the effect of FDI on stock market performance the equation below was modelled;

$$Y = \alpha_1 + \alpha_2 FDI + \alpha_3 GNPC + \alpha_4 INF + \alpha_5 SAV + \mu_T$$

Y The performance of the stock market is measured by the NSE 20 share index

FDI Foreign Direct Investment as a proportion of Gross Domestic Product,

GNPC Gross National Product per capita as a measure for economic growth,

INF The rate of inflation

3.4.3 Test of Significance

To evaluate the statistical significance of the regression model, the F-test will be utilized while the t -test was used to evaluate t statistical significance of the independent variables.

If the significance value is less than the tabulated value at $\alpha=0.05$, then the regression model will be deemed statistically significant in forecasting how FDI inflows, GNP per capita, Inflation rate and the Gross National Savings affect the stock market performance in Kenya.

CHAPTER FOUR:DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter analyzes the diagnostic test results of the data used and the regression analysis results of the NSE 20 share index (the dependent variable) and the independent variables which were FDI as a proportion of GDP, GNP per capita, GNS as a proportion of GDP and inflation. Annual data was used from 1980 to 2017 and it was analyzed using SPSS.

4.2 Diagnostic Tests

This section examines the tests of the multiple linear regression assumptions and the treatment of the data in case of violation of the assumptions.

4.2.1 Test of Normality of the response variable

This tests the assumption that the residuals of the response variable are normally distributed around the mean. The study used the Shapiro Wilk test which is suitable for a small data set (N=38). The hypothesis tested is:

H₀: The sample data of the response variable (NSE 20 share index) is normally distributed

H₁: The sample data of the response variable is not normally distributed

$\alpha = 0.05$

The results of the Shapiro Wilk test and the Kolmogorov-Smirnov are shown in table 4.1

Table 4.1 Test of Normality

| Tests of Normality | | | | | | |
|--------------------|--------------------|----|-------|--------------|----|-------|
| | Kolmogorov-Smirnov | | | Shapiro-Wilk | | |
| | Statistic | df | Sig. | Statistic | df | Sig. |
| NSE 20 Share Index | 0.150 | 38 | 0.031 | .922 | 38 | 0.012 |

Source: SPSS Output

Table 4.I shows that the value of p is less than 0.05 and hence we reject the null hypothesis, that the NSE 20 share index data is normally distributed and accept the alternative hypothesis of a non-normal distribution. The non-normality of the data was corrected through transformation of the NSE 20 share index data using natural logarithm transformation. Table 4.2 shows the SPSS test of normality output of the log-transformed data.

Table 4.2 Tests of Normality after Natural Log transformation

| Tests of Normality | | | | | | |
|--------------------|--------------------|----|-------|--------------|----|-------|
| | Kolmogorov-Smirnov | | | Shapiro-Wilk | | |
| | Statistic | df | Sig. | Statistic | df | Sig. |
| LogNSE20 | 0.208 | 38 | 0.000 | 0.872 | 38 | 0.000 |

Source: SPSS output

The p value of the log transformed data is still less than 0.05 and hence, the null hypothesis was rejected. The non-normality was therefore not corrected using natural logs. We will then use the two-step approach (Fractional rank and Inverse distribution) to convert continuous variables which don't have a normal distribution to become normally distributed. Step 1 involves transforming the variable into a percentile rank, the outcome of which will be uniformly

distributed probabilities. Step 2 applies the inverse-normal transformation to the results of the fractional rank to form a variable made up of normally distributed z-scores.

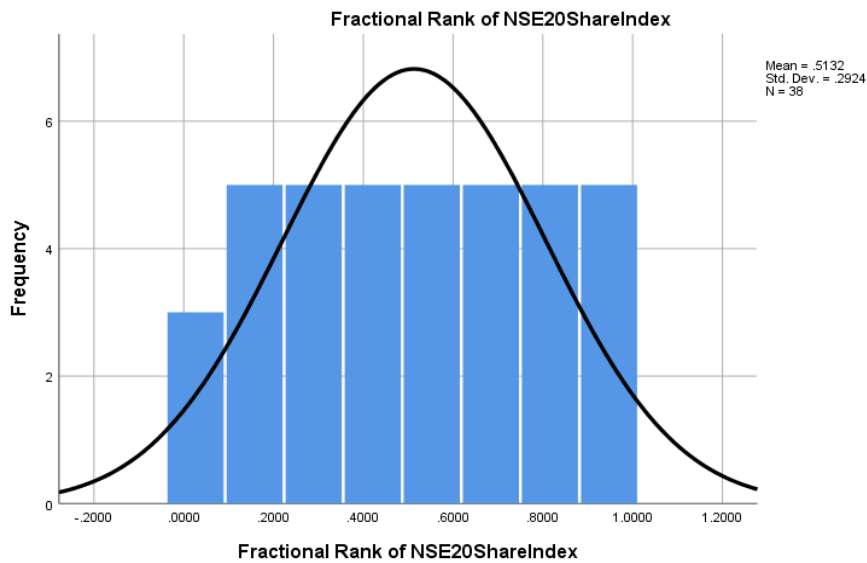
Table 4.3. Fractional Rank

| Created Variables | | | |
|---|-----------------|--------------|------------------------------------|
| Source Variable | Function | New Variable | Label |
| NSE20ShareIndex ^b | Fractional Rank | RNSE20Sh | Fractional Rank of NSE20ShareIndex |
| a. Mean rank of tied values is used for ties. | | | |
| b. Ranks are in ascending order. | | | |

Source: SPSS output

Table 4.3 shows the output of SPSS after using the fractional rank of the NSE 20 share index data.

Figure 4.1. Plot of fractional rank



Source: SPSS output

Figure 4.1 shows the distribution of the NSE 20 share index data after fractional rank.

The results of using the inverse distribution on the NSE 20 share index fractional rank are

shown as per figure 4.2. The NSE 20 share index data has been transformed and renamed NormNSE20 which now has a normal distribution.

Figure 4.2. Plot of normality of NormNSE20

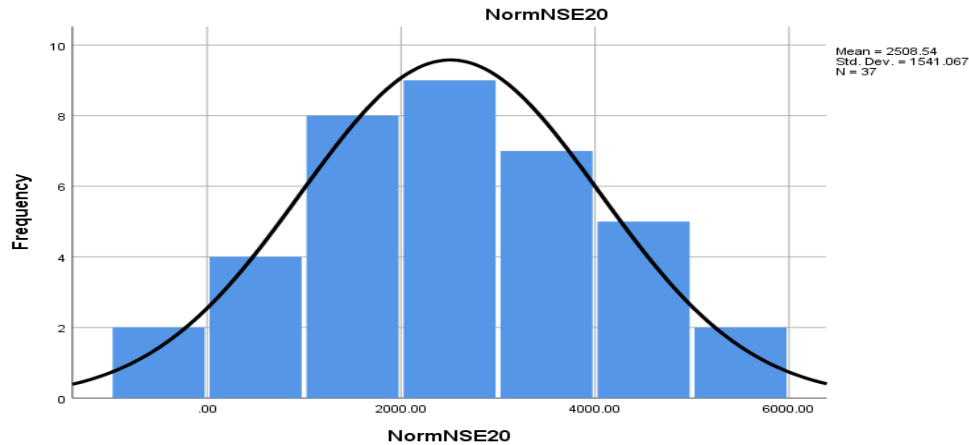


Table 4.4 shows the tests of normality on the 2 step transformed data, NormNSE20.

Table 4.4 Test of Normality on the 2 step transformed data

| Tests of Normality | | | | | | |
|--------------------|--------------------|----|-------|--------------|----|-------|
| | Kolmogorov-Smirnov | | | Shapiro-Wilk | | |
| | Statistic | df | Sig. | Statistic | df | Sig. |
| NormNSE20 | 0.023 | 37 | 0.200 | 0.995 | 37 | 1.000 |

Source: SPSS output

The p value of the 2 step transformed data is above 0.05 and hence we accept the null hypothesis of normality and conclude that the transformed response variable, NormNSE20 has a normal distribution. This is also illustrated by figure 4.2.

4.2.2 Test of Homoscedasticity

The Breusch-Pagan test was used to test for homoskedasticity. The SPSS results are as per table 4.5.

Breusch-Pagan and Koenker test statistics and sig-values.

Table 4.5 Test of heteroskedasticity

| | LM | Sig |
|---------|-------|-------|
| BP | 0.635 | 0.959 |
| Koenker | 0.602 | 0.963 |

Source: SPSS output

Null hypothesis: heteroskedasticity not present (homoskedasticity). If sig-value less than 0.05, reject the null hypothesis. The significance value is 0.959 which is above the significance value of 0.05. This is further supported by the Koenker test whose significance value is 0.963 which is above 0.05. We therefore accept the null hypothesis of no heteroskedasticity and conclude that the variance of the error term is constant.

4.2.3 Test of Serial correlation

This will be used to test there is no correlation between the error terms and the independent variables and that the error terms are not correlated with each other across time. The researcher used the Durbin Watson statistic to test for serial correlation. The results are as per table 4.5.

Table 4.6. Durbin Watson Test

| Model Summary | | | | | |
|----------------------|-------|----------|-------------------|----------------------------|---------------|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
| 1 | 0.697 | 0.486 | 0.422 | 1172.10243 | 0.703 |

Source: SPSS output

The Durbin Watson statistic ranges between 0 and 4. If the Dublin Watson statistic is significantly less than 2, this is an indication of positive serial correlation, if it is more than 2, this is an indication of negative serial correlation. A value of 2 indicate there is no serial correlation. The Durbin Watson statistic for the data is less than 2 and hence there is positive serial correlation. To correct for the positive serial correlation, we will use the Prais-Winsten estimation method. The Prais-Winsten estimator considers AR (1) serial correlation of the errors in a linear regression model. The procedure recursively estimates the coefficients and the error autocorrelation of the specified model until sufficient convergence of the AR (1) coefficient is reached. All estimates are obtained by OLS. Table 4.7 shows the Praise Winsten Rho Value. Table 4.8 shows the Durbin Watson statistic after correcting for positive serial correlation using the Prais Winsten estimation method

Table 4.7 The Prais-Winsten estimation method

| Autocorrelation Coefficient | |
|------------------------------------|------------|
| Rho (AR1) | Std. Error |
| 0.287 | 0.169 |

Source: SPSS output.

Table 4.8 Durbin Watson Test after serial correlation adjustment

| Regression Model Fit Summary | | | | |
|-------------------------------------|----------|-------------------|----------------------------|---------------|
| R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
| 0.562 | 0.315 | 0.208 | 1206.266 | 2.082 |

Source: SPSS output.

After using the Prais Winsten estimation method to correct for positive serial correlation the Durbin Watson statistic is 2.082 which shows that the data doesn't have positive serial correlation or there is non-autocorrelation.

4.2.4 Test of Stationarity

To test for stationarity, the Augmented Dicky Fuller test was used. Table 4.9 shows the SPSS output for the test of stationarity.

Table 4.9 Test for Stationarity

| Test | NormNSE 20 | | GNP per capita | | Inflation rate | | GNS/GDP | | FDI/GDP | |
|---------|------------|-------|----------------|------|----------------|-------|------------|-------|-------------------------------|-------|
| | PP | ADF | PP | ADF | PP | ADF | PP | ADF | PP | ADF |
| P-Value | 0.01 | 0.134 | 0.99 | 0.99 | 0.062 | 0.027 | 0.0444 | 0.133 | 0.01 | 0.022 |
| | Stationary | | Stationary | | Stationary | | Stationary | | Stationary with the KPSS test | |

Source: SPSS output

The output from SPSS shows that the P values for the Augmented Dicky Fuller test and the Philip Peron's test are higher than the significance value of 0.05. However, the FDI/GDP series was non-stationary using the ADF test but on using the KPSS test the test statistic is 0.05 which is equal to the significance value and hence we can conclude that the time series has no unit root and hence it is stationary. We can also confirm the

absence of a unit root in the time series because the Durbin Watson Statistic is 2.082 which is higher than R squared of 0.315. If the series has a unit root, then the model has high R squared and small Durbin Watson statistic.

4.3 Test of correlation

A correlation coefficient is a statistical assessment of the magnitude and degree to which changes or adjustments to the value of a selected variable predict change to the value of another variable. If variables are positively correlated, the value increases or decreases in tandem. Correlation coefficient values range between +1 and -1. Table 4.10 shows the correlation coefficient table output form.

Table 4.10 Pearson Correlation coefficients

| Correlations | | | | | |
|------------------------|----------------|-----------|---------|----------------|----------------|
| | | NormNSE20 | FDI/GDP | GNP per capita | Inflation rate |
| Pearson Correlation | NormNSE20 | 1.000 | 0.418 | 0.647 | -0.138 |
| | FDI/GDP | 0.418 | 1.000 | 0.397 | 0.164 |
| | GNP per capita | 0.647 | 0.397 | 1.000 | -0.334 |
| | Inflation rate | -0.138 | 0.164 | -0.334 | 1.000 |
| | GNS/GDP | -0.059 | -0.304 | -0.020 | -0.174 |

Source: SPSS output

From table 4.10 there was a positive correlation between FDI inflows as a percentage of GDP and GNP per capita with the NSE 20 share index while inflation and GNS as a percentage of GDP had a negative correlation. This result illustrates that FDI inflows and GNP per capita have a positive relationship and hence when either of the variables increases the performance of the stock market as measured by the NSE 20 share index.

Inflation rate and GNS as a proportion of GDP have a negative correlation in with the NSE performance as measured by the NSE 20 share index. This illustrates that these variables move in opposite directions when one variable has a positive or negative change. When inflation and GNS as a proportion of GDP increase then the NSE 20 share index decreases and hence the NSE performance decreases.

4.4 Regression results

The results from the SPSS output include the beta coefficients of the variables, the R and R square statistics, t statistics and the F statistic which is the test of significance of the model. Table 4.11 illustrates the model summary.

Table 4.11 Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------|----------|-------------------|----------------------------|
| 1 | 0.562 | 0.315 | 0.208 | 1206.266 |

Source: SPSS output

Table 4.11 above shows the model summary of the regression analysis of the response and the explanatory variables. The value of R is 0.562 which illustrates a strong positive relationship between the response variable, NSE 20 share index and the explanatory variable, FDI as proportion of GDP, inflation rate, GNP per capita and GNS as a proportion of GDP. The coefficient of determination or R squared is a statistical measure of how close the data are to the fitted regression line.

The R squared of the model is 0.315 and hence 31.5 % of the variability of the response variable can be explained collectively by the explanatory variable. The adjusted R squared is a modified R squared adjusted for the number of independent variables in the

model. It increases if new independent variables improve the model and decreases only if the new independent variables improve the model by less than expected. Since the adjusted R square has decreased it shows that added predictors did not improve the model as expected.

Table 4.12 shows the regression coefficients obtained after running the regression analysis in SPSS.

Table 4.12 Regression Coefficients

| | Unstandardized Coefficients | | Standardized Coefficients | t | Sig |
|----------------|-----------------------------|------------|---------------------------|--------|-------|
| | B | Std. Error | Beta | | |
| FDI/GDP | 336.437 | 284.417 | 0.195 | 1.183 | 0.246 |
| GNP per capita | 0.019 | 0.007 | 0.464 | 2.824 | 0.008 |
| Inflation rate | -9.216 | 29.819 | -0.050 | -0.309 | 0.759 |
| GNS/GDP | 14.600 | 90.021 | 0.024 | 0.162 | 0.872 |
| (Constant) | 1272.691 | 1305.176 | | 0.975 | 0.337 |

Source: SPSS output

The B value under unstandardized coefficients illustrates the relationship between NSE performance and each explanatory variable. A positive value leads to the conclusion that a positive relationship exists between the predictor and the outcome whereas a negative coefficient represents a negative relationship. For these data; Inflation rate has a negative B value while GNP per capita, GNS as a proportion of GDP and FDI as a proportion of GDP have positive values. The B value also illustrates to what degree each predictor variable has affected the NSE's performance if all the other variables are held constant.

For example, if all the explanatory variables are held constant the value of the NSE 20 share index will be 1272.691 which is the B constant. The fitted model is therefore;

$$Y = 1272.691 + 336.437 \text{ FDI} + 0.019\text{GNPC} - 9.216\text{INF} + 14.6\text{SAV} + \mu_T$$

Each B value has an associated standard error which illustrates to what extent these values would vary across different samples, and these errors are used to establish whether the B value varies significantly from zero. This is done by using the t-statistic. Hence, if the t-statistic linked with a B value is significant then that variable is a significantly varies from zero. Significance is determined by checking the column labelled Sig in table 4.12. If the value in the column is less than 0.05, then the B value of the explanatory variable is significant, and the variable's impact is significant in the model.

From the SPSS output in table 4.12, it was noted that GNP per capita was significant and made a significant contribution to the model because its significance value is less than 0.05 while, FDI as a proportion of GDP, inflation rate and GNS as a proportion of GDP were not significant because their significance values were more than 0.05 and hence, they didn't make a significant contribution to the model. GNP per capita had a higher t-statistic than FDI inflows as a proportion of GDP and hence GNP per capita had slightly more impact than FDI inflows as a proportion of GDP.

Table 4.13 shows the F test statistic output from SPSS. The F statistic illustrates how well the model fits the data.

Table 4.13 Analysis of Variance

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|-------|------------|----------------|----|--------------|-------|-------|
| 1 | Regression | 41232567.985 | 4 | 10308141.996 | 6.751 | 0.000 |
| | Residual | 50390551.783 | 33 | 1526986.418 | | |
| | Total | 91623119.769 | 37 | | | |

Source: SPSS output

From the results in table 4.13 above, the conclusion was that the model was a good fit as the calculated p-value 0.00 was less than $p=0.005$. It therefore meant that, the model was statistically significant in explaining how FDI inflows as a proportion of GDP, Inflation rate, GNP per capita and GNS as a proportion of GDP affects the NSE's performance

4.5 Discussion of research findings

The objective of this research was to analyze the effect of FDI on the performance of the NSE. The study tried to explain that the dependent variable, which was the performance of the stock market was affected by inflation rate, GNP per capita, GNS as a proportion of GDP and FDI as a proportion of GDP. From the diagnostic tests performed on the data; the NSE 20 share index was observed to lack a normal distribution as per the Shapiro Wilk test and even after the transformation of the data using natural logarithms the data did not have a normal distribution.

A two-step approach involving fractional rank and inverse distribution was performed on the NSE 20 share index data and it thereafter had a normal distribution. The test of homoskedasticity illustrated that there was no heteroskedasticity while the test for serial correlation using the Durbin Watson statistic revealed the presence of positive serial correlation. The positive serial correlation was adjusted for using the Prais-Winsten

estimation test and this was confirmed by the Durbin Watson statistic having a value of 2.082 which proved that the transformed data had no serial correlation.

The time series data was tested for the presence of unit roots by using the Augmented Dickey Fuller test whose results were corroborated by the Philip Peron's test and the KPSS test. The time series data was observed to lack unit roots. The transformed data which comprised; the dependent variable now renamed NormNSE20 because it was transformed and now had a normal distribution, data corrected for serial which was inflation, GNP per capita, GNS as a proportion of GDP and FDI as a proportion of GDP were input into SPSS and a regression analysis performed.

The results of the regression indicated that; inflation rate was negatively correlated with the performance of the stock market as illustrated by the Person Correlation coefficient. This shows that an increase in inflation decreases the performance of the stock market. GNP per capita, GNS as a proportion of GDP and FDI as proportion of GDP had a positive correlation with stock market performance. This meant that an increase in FDI, GNS and GNP results in an increase in stock market performance.

The regressors were observed to explain 31.5% of the variability of the stock market performance and hence 68.5% of the performance of the stock market is explained by other factors not in the model. These other factors may be qualitative as described by Bitok, Tenai, Chenuos and Kosgei (2014) who concluded that the growth and development of the NSE was also affected by strong operating legal environment, good and stable macroeconomic environment, investor education and awareness and improved infrastructure.

The model was also statistically significant in predicting the performance of the stock market as indicated by the F statistic. GNP per capita was observed to be significant and it made a significant contribution to the model while, FDI as a proportion of GDP, inflation rate and GNS as a proportion of GDP were not significant hence, they didn't make a significant contribution to the model. These findings complemented the conclusions of; Karunanayake, Valadkhani and O'Brien (2012), Kapoor and Sachan (2015) and Musa and Ibrahim (2014). Karunanayake, Valadkhani and O'Brien (2012) concluded that economic growth in US and Australia affected the performance of the stock market in these countries.

Kapoor and Sachan (2015) concluded that FDI had no significant impact on the stock market in India. They explained that FDI was not directly related to with stock market in India, but it provided the chance to industries for technological advancement, improvement of human resources and global competitive advantages. On the other hand, the Foreign Institutional Investors were directly concerned with the stock market of India and assisted in its development. Musa and Ibrahim (2014) concluded that FDI has a positive but insignificant impact on the stock market development of Nigeria while inflation had a negative and insignificant effect on stock market development. These findings contradict the findings of Anokye and Tweneboah (2008) and Raza et al (2012) who concluded that FDI and stock market development had a positive and significant relationship.

The findings also complement Badullahewage (2018) who observed that the effect of macroeconomic variables varied from country to country. The effect of different variables was dependent on the factors and their effectiveness. It can be seen that inflation has a

negative and insignificant effect on the NSE while savings has a positive and insignificant influence on the NSE. This supports the conclusion by Shahbaz, Lean and Kalim (2013) in Pakistan, where they concluded that inflation rate and gross domestic savings had an inverse relationship with development of the stock market and they had no statistical significance. This conclusion contradicts findings from other researchers in other countries and other studies in Kenya who concluded that inflation and savings had a positive and significant influence on the performance of the stock market such as Sanningammanavara and Kumar (2014) in India, Raza et al. (2012) in India, Vena (2014) in Kenya and Persson and Malcus (2018) in Sweden.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter includes the summary of the research findings, conclusions based on the study and recommendations from the study and suggestions for further research as well as limitations faced while carrying out the study.

5.2 Summary of Findings

This research sort to analyze the effect of FDI on the NSE performance. It used secondary data annual data from 1980 to 2017, which is a 38-year period. The response variable was the performance of the NSE which is evaluated by the NSE 20 share index and the independent variables were, FDI as a proportion of GDP, GNP per capita, inflation and GNS as a proportion of GDP. Diagnostic tests and regression analysis were done using SPSS software. The diagnostic tests done were; test for normality, which was done using the Shapiro Wilk test whose result showed that the NSE 20 share index data's residuals didn't have a normal distribution.

The data was then transformed using the 2-step approach, which involved fractional rank and inverse distribution. The transformed data was renamed NormNSE20 and the Shapiro Wilk test rerun which then showed that the transformed data's residuals had a normal distribution. The Durbin Warson statistic was used to test for serial correlation. The result revealed the presence of positive serial correlation. The positive serial correlation was corrected using the Prais-Winsten estimation method. After the correction the Durbin Watson statistic was 2.082 which showed that the data had no serial correlation.

The test for homoskedasticity was done using the Breusch Pagan test whose results were confirmed by using the Koenker test. The test results revealed that there was no heteroskedasticity and hence the variance of the error term was constant. Test of stationarity was done using the Augmented Dickey Fuller test whose results were confirmed using the Philip Peron's test and KPSS tests. These tests confirmed the absence of a unit root and hence the data was stationary.

Correlation analysis was done on the data and the results revealed that FDI and GNP per capita had a strong positive correlation with the performance of the NSE while inflation and savings had a weak negative correlation with the performance of the NSE. Results of the regression revealed that the explanatory variables were able to explain 31.5% of the variability in the response variable. Tests of significance using t-statistics showed that GNP per capita was significant and it made a significant contribution to the model, while, FDI, inflation and GNS per capita were insignificant and their contribution to the model wasn't significant. The model was also statistically significant as per the F statistic results.

5.3 Conclusion

From the results, FDI inflows and GNP per capita have a positive impact on the performance of the NSE while inflation rate has negative and insignificant impact on the stock market's performance. However, despite FDI and GNS having a positive impact they had an insignificant impact on the stock market's performance.

GNP per capita was used to proxy for economic growth and hence it shows that when the economy of a country expands, then there is a positive effect on the performance of the stock market. This supports Demirgüç-Kunt and Levine (1996) conclusion that there is a

positive relationship between stock market development and economic growth. The positive effect of FDI on the performance of the stock market supported the conclusions by Kaimba (2010), Persson and Malcus (2018), Vladimir, Tomislav and Irena (2012) and Claessens, Klingebiel and Schmukler (2001).

The positive effect of FDI, GNS and GNP per capita on the performance of the NSE maybe because FDI in addition to affecting the performance of the stock market also positively affects economic growth as per Petros (2012), who concluded that; FDI was positively and significantly associated with economic growth. The findings of his research indicated that foreign direct investment stimulated the economy and also improved the quality of the human resources through spillover effects. This supports the conclusions by Anokye & Tweneboah (2008) of a triangular causal relationship from FDI to positive effect on economic growth which subsequently affected the performance of the stock market. FDI also affects the savings in a country as per Salahuddin, Shahbaz & Chani (2011) who concluded that increased in FDI also raises the level of gross domestic savings.

Inflation had a negative and insignificant effect on the performance of the stock market. This conclusion completed the research by Coleman andTetty (2008) who concluded that inflation has a negative influence on stock market performance. They explained that higher inflation rates increased the cost of living and shifted resources from instruments of stock markets to consumables and thus reducing market instruments returns.

5.4 Recommendation

The government should continue enacting policies and remove barriers to trade this has the effect of improving the ease of doing business in Kenya as measured by the World Bank. These improved ratings will then attract more FDI into Kenya which then affects economic growth, savings and the performance of the stock market. The government should also through the Central Bank enact fiscal and monetary policies that decrease inflation because it has been noted to negatively affect the performance of the stock market.

5.5 Limitations of the study

The research relied on secondary data which was acquired from the statistical abstracts, economic surveys, the World Bank data base and the IMF data base. Secondary data maybe subject to errors and being out of data unlike primary data which is first-hand information.

The study also focused on selected variables which were quantitative and left qualitative factors that may affect the stock market performance. The quantitative variables were also not exhausted although they would not all be included in the model due to the problem of co-integration.

The study also used a time period of 38 years due to the lack of data of some variables beyond this period. A longer period would have aided the research capture a longer period of growth of the stock market performance and the other macroeconomic variables.

The study used annual data from January to December of each year for the following variables; GNP per capita, FDI as proportion of GDP, GNP as a proportion of GDP and the inflation rate while the NSE performance was represented by the observed index as at the last day of trading in each year. This is a limitation because the independent variables cover a period of 12 months while the NSE 20 share index is as at the last day of trading of the year.

5.6 Suggestions for Further Research

Further research should be carried out using qualitative factors and investors behavioral traits as per behavioral finance theories that influence the performance of the stock market. This will have the effect of increasing the R squared of the regression model. Further study should also incorporate the bonds performance, both corporate and government in order to assess the market as a whole. This is because part of the FDI inflows create free cashflows in the investee companies who then purchase corporate or government bonds which are listed on the bonds market and this affects the performance of the bonds market.

Further research should be done using a longer period. This will enable the researcher to capture the economic cycles of the Kenya economy and also trace the performance of the stock market as the population and economy of Kenya grew over the years.

Further research should be conducted by using the average NSE 20 share index annually for each year covered in the data range instead of the NSE 20 share index at the last day of trading in a year. This is to ensure that all the variables used cover a 12-month period and this may improve the value of R squared.

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APPENDICES

Appendix One: Regression Data

| Year | NSE 20 Share Index | FDI/GDP | GNP per capita | Inflation rate | GNS/GDP |
|------|-----------------------|---------|-------------------|-------------------|---------|
| 1980 | 379.12 | 1.087 | 3,212.46 | 13.866 | 4.659 |
| 1981 | 355.85 | 0.206 | 3,554.35 | 7.895 | 8.908 |
| 1982 | 350.31 | 0.202 | 3,842.33 | 13.821 | 12.346 |
| 1983 | 382.23 | 0.397 | 4,224.79 | 11.603 | 14.866 |
| 1984 | 386.55 | 0.174 | 4,557.30 | 20.667 | 12.535 |
| 1985 | 420.28 | 0.470 | 4,955.03 | 11.398 | 18.108 |
| 1986 | 505.30 | 0.452 | 5,573.12 | 10.284 | 16.226 |
| 1987 | 729.49 | 0.494 | 5,992.15 | 13.007 | 14.125 |
| 1988 | 856.59 | 0.005 | 6,517.13 | 4.804 | 14.311 |
| 1989 | 814.95 | 0.751 | 7,307.09 | 7.617 | 10.922 |
| 1990 | 915.34 | 0.666 | 8,035.57 | 11.200 | 13.304 |
| 1991 | 958.29 | 0.231 | 8,848.55 | 19.104 | 13.106 |
| 1992 | 1,176 | 0.078 | 10,136.67 | 27.332 | 9.560 |
| 1993 | 2,523 | 2.532 | 12,142.55 | 45.979 | 12.621 |
| 1994 | 4,559 | 0.104 | 14,326.59 | 28.814 | 12.157 |
| 1995 | 3,469 | 0.467 | 16,411.09 | 1.554 | 10.336 |
| 1996 | 3,114 | 0.902 | 23,984.02 | 8.862 | 11.690 |
| 1997 | 3,115 | 0.473 | 26,255.33 | 11.924 | 10.207 |
| 1998 | 2,962 | 0.188 | 28,316.15 | 6.716 | 11.199 |
| 1999 | 2,456 | 0.403 | 29,240.50 | 5.753 | 11.913 |

| | | | | | |
|------|-------|-------|------------|--------|--------|
| 2000 | 1,913 | 0.873 | 30,459.02 | 9.955 | 14.011 |
| 2001 | 1,355 | 0.041 | 31,206.27 | 5.824 | 14.794 |
| 2002 | 1,363 | 0.210 | 30,884.50 | 2.156 | 15.953 |
| 2003 | 2,738 | 0.548 | 32,790.60 | 5.983 | 15.489 |
| 2004 | 2,946 | 0.286 | 36,012.02 | 8.381 | 14.255 |
| 2005 | 3,973 | 0.113 | 39,260.03 | 7.823 | 16.757 |
| 2006 | 5,646 | 0.196 | 50,118.36 | 6.041 | 16.132 |
| 2007 | 5,445 | 2.281 | 56,231.90 | 4.265 | 14.513 |
| 2008 | 3,521 | 0.266 | 63,370.84 | 15.101 | 12.161 |
| 2009 | 3,247 | 0.314 | 71,084.31 | 10.552 | 13.036 |
| 2010 | 4,433 | 0.445 | 76,363.40 | 4.309 | 11.739 |
| 2011 | 3,205 | 3.457 | 87,713.54 | 14.022 | 9.429 |
| 2012 | 4,133 | 2.742 | 97,196.88 | 9.378 | 10.690 |
| 2013 | 4,927 | 2.031 | 104,701.06 | 5.717 | 9.556 |
| 2014 | 5,113 | 1.336 | 115,728.34 | 7.292 | 11.578 |
| 2015 | 4,040 | 0.968 | 131,615.50 | 6.010 | 12.578 |
| 2016 | 3,186 | 0.555 | 147,018.18 | 5.075 | 13.564 |
| 2017 | 3,712 | 0.896 | 154,217.64 | 5.014 | 14.719 |