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***External Cash Inflows and Stock Returns of Firms
Listed at the Nairobi Securities Exchange, Kenya***

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Abstract

Stock prices at Nairobi Securities Exchange (NSE) fell contentiously for the last five years and the external cash inflows, have been fluctuating concurrently. A decrease in stock returns has an extremely negative influence on consumers and the economy. It is therefore crucial to assess the relationship between external cash inflows and the

performance of stock returns. The objective of this research was to examine the effect of foreign remittances on the stock returns of firms listed at the NSE, Kenya. The study was anchored on the free cash flow theory, prospect theory, and FDI theory with an explanatory research design. The study employed secondary time series data covering a period of 13 years (2008-2020) incorporating 64 companies quoted at NSE. A data extraction checklist was employed to collect secondary data from NSE, CBK, and KNBS annual reports. Stata software was deployed for descriptive and inferential analysis. The study also carried out diagnostic tests which comprised of unit root test, lag order selection test, normality test, cointegration test, and Granger Causality Test. The findings revealed that foreign remittance and external debts have a significant positive effect on the stock returns of firms listed at NSE and that foreign grants and FDI have a significant negative effect on the stock returns of firms listed at NSE, Kenya. The study, therefore, recommends that the policymakers in the Kenyan government ought to develop monetary and fiscal policies to regulate foreign direct investment inflows.

Key Words: External Cash Inflows, External Debts, Foreign Direct Investment, Foreign Grants, Foreign Remittances, Gross Domestic Product, and Stock Returns

Introduction

Billions of dollars are exchanged in the stock market across the world on daily basis. Globally, Stock markets are used by a wide variety of people as their major source of income whereas others after their retirement end up investing in these markets (Zhang & Gong, 2018). Therefore, when stock markets perform poorly, it results in a negative impact on the lives of numerous people and this too affects the national economy. Furthermore, the national economy is significantly influenced by the stock market since it has an influence on daily activities which include consumption and investments. The most effective measure employed by Central banks across the world to influence real businesses and the economy is the monetary policy (Borges, Copper & Antonio, 2018).

During financial crises and recessions, the stock markets tend to perform poorly and debt levels also tend to increase. Economists foresee that industrialized countries now are moving into an epoch that is characterized by higher debt levels by the government as well as lower stock market returns. When debt owed to the government is issued for investment purposes, it is anticipated to have an optimistic outcome on the prices of the stock since it should yield future returns. Contrary, when governments issue debt in order to finance present debt it could have a pessimistic outcome on the stock market because it indicates the fiscal budget does not generate enough funds to pay off previously assumed debt (Meme & Muturi, 2016). Stock returns are a symbol of the stock market as a specific or whole stock. It offers signals concerning future

moves by investors. The movement is the index and stock price which provides a hint of the close forth-coming tendency of the stock, economy, or entire sector. The most significant of an economy is the financial domain, therefore the performance of a stock market acts as a sign of total economy health (Currim, Lim & Zhang, 2018).

External cash inflows mostly explain financial resources ‘movement into a country but are not restricted to business production, investment, or trade. External financial inflows which are well-tapped can indeed speed up economic growth without raising the public debt level, hence hastening the total economic growth of a country (Omodero & Ekwe, 2017). The supporters of external cash inflows claim that foreign capital adds to domestic savings as well as raises total investment and development rates in the host country. Kumar (2018) argues that if capital is permitted to move unlimitedly throughout the countries, everybody will benefit. It is anticipated that capital inflow from wealthy countries would be invested in the inferior countries and economic development, as well as job opportunities in advancing countries, would be supported by international capital mobility. Nevertheless, after independence, the greatest number of developing countries never allocated key functions for foreign capital in their economic growth. The policymakers then extensively believed

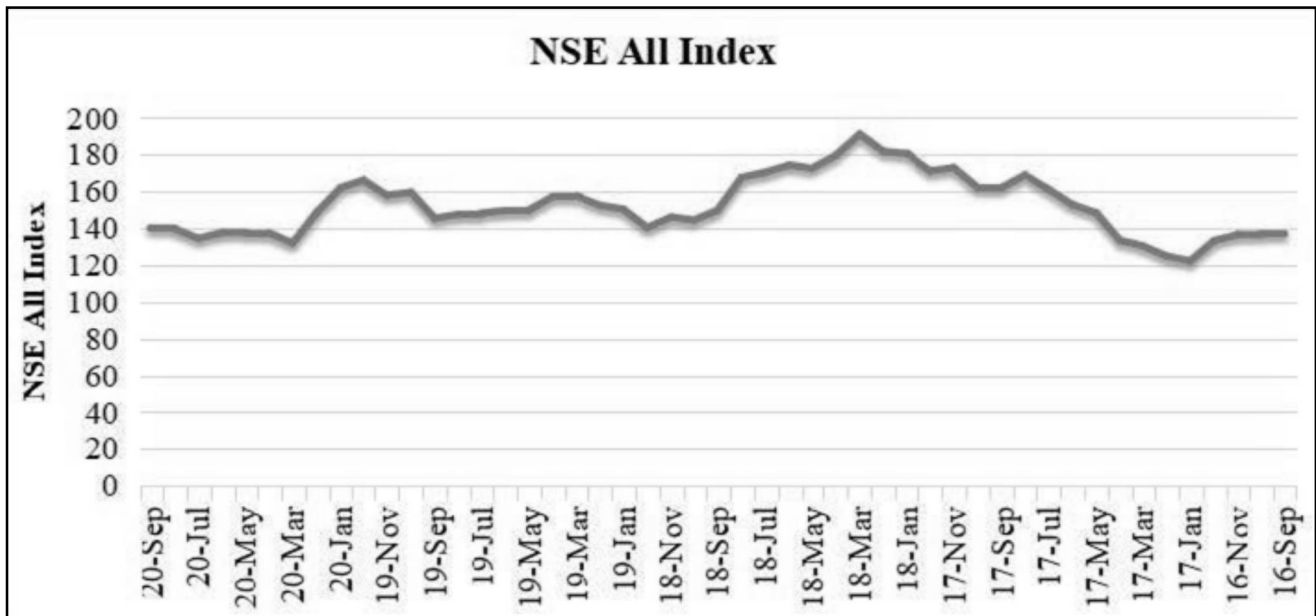
that a superior foreign capital inflow would weaken the industrialization which they independently wanted to carry out (Kumar, 2018).

Various studies highlight different forms of external cash inflows in different countries. In India, Kumar (2018) indicated that foreign inflows include FDI, Foreign Portfolio Investments (FPI), Commercial loans as well as Official flows and influence the behavior of the stock market. In South Korea, Singapore, and Taiwan, Siddiqui (2018) found that external capital inflows such as foreign direct investments, private portfolio inflows, direct investments, private financial flows, and foreign direct investments considerably influence economic development, which plays a major role in stock market returns. In Nigeria, Ewubare and Udoh (2018) established that external cash inflows such as FDI, external debt, migrants' remittances, and Official growth assistance have an influence on the stock returns of telecommunication companies quoted in the stock market. Wafula (2018) investigated whether external financial inflows influence Kenyan economic growth positively or negatively. The study discovered that external financial inflows in Kenya comprise FDI, remittances, portfolio equity, borrowing by the private sector, donors, philanthropy as well as government external borrowing, and have a considerable impact on economic development.

External cash inflows comprise direct foreign investment, external debts, foreign remittances, and external grants. Apart from domestic savings supplementation, foreign direct investment is anticipated to promote technology transfer, so as to introduce recent marketing and management skills and to extend foreign trade and market of the host country (Tan, Galagedera & Maharaj, 2017). It is expected that foreign remittances, external debts foreign grants lead to advancement in the stock market functioning, which leads to improved market capitalization and trading volume as investors of foreign portfolios aim to invest on

well - researched methods basis and stock valuation which is realistic (Chen, Chou & Lin, 2019).

NSE is among the top African stock Exchange firms located in Kenya. In addition, it was formed in the year 1954 and hence it has been listing debt and equity securities for the last six decades. NSE was demutualized as well as listed in the year 2014 (NSE, 2018). It performs a major role in the economic development of Kenya by supporting investments as well as savings and helping international besides local companies' cost-effective capital access. The operations of NSE are within the Capital Markets Authority of Kenya's jurisdiction (Capital Markets Authority, 2018). Besides being a founder associate of the African Security Exchanges association as well as EASEA, NSE is a member of WFE. The mandate of the NSE is to offer a trading podium for listing and trading securities. Currently, there are 64 companies recorded in NSE as of 31st December 2020 (NSE, 2020). The NSE all Index (NASI) trends at NSE are shown in Figure 1.



**Figure 1: Trends of NSE All Index Source: Nairobi Securities
Exchange (2020)**

Figure 1 shows that in the year 2016 to 2020, NSE all Index has been fluctuating ranging from 122.23 and 191.23. As depicted in Figure 1, NSE all Index increased from 133.34 in December 2016 to 171.2 in December 2017. This then decreased to 140.43 in December 2018, but increased to 166.41 in December 2019, before decreasing to 140.09 in September 2020.

Statement of the Problem

The stock market plays an important role in the national economy by providing a pillar of decent economic infrastructure to a nation. The stock market development rate is directly related to the development of an economy (Tarasi *et al.*, 2019). Additionally, the stock market assists registered companies in raising money to finance development. Nonetheless, the stock returns are determined by external cash inflows in a nation (Hamza, 2017). However, the stock returns of firms listed at NSE, Kenya have been fluctuating. For instance, in 2018 the stock prices in NSE reduced by 8.5 % and in January 2019 they reduced by 6.9% (Changole, 2017). A decrease in stock returns influences the economy as well as individual consumers negatively. Further, a collapse in stock prices has the potential of causing widespread economic disruptions and a decrease in stock prices must always be prevented. In addition, FDIs in Kenya have been fluctuating over the years. At the end of 2018, Kenya attracted only 12.9 percent of FDI in the East Africa Community (EAC) region while Tanzania and Uganda attracted 30.1 percent and 56.9 percent respectively. In the year 2019, Uganda's FDI increased by 92.51 percent from \$894 million to \$1.721 billion in 2018, whereas

Tanzania obtained \$1.706 billion in 2019, a rise of 38.81 % from \$1.229 billion. In the meantime, FDIs in Kenya decreased by 27.04 percent to \$259 million from \$355 million (UNCTAD, 2019). However, foreign remittances in Kenya have been increasing over the years, reaching Ksh. 1.971 billion in 2019 (UNCTAD, 2019).

Several studies have been performed on various forms of external cash inflows as well as stock performance. For instance, Oroud, Islam, and Tunku (2017) determined the impact of external cash flow on the share price of ASE in Jordan (1991 to 2010). However, diverse countries are characterized by dissimilar business environments, legal frameworks as well as economic environments, and therefore results from one country cannot be made common to the other. Moreover, both of these used multiple linear regression analysis. Further, Oroud, Islam and Tunku's (2017) study used variables like financing cash flows, performance cash flows, and investment of cash flows. In Kenya, Nyang'oro (2017) researched on the influence of foreign portfolio flows on stock market performance at NSE (1996 to 2011). He cited other works back to 2014 when Nyang'oro used the multifactor pricing model a more general view of his subsequent publication in 2016 for a study that focused on 1996 and 2011. Further, Njoroge (2015) limited his study to diaspora Remittance, and Meme and Muturi (2016) limited it to government debt as an external inflow. While the three studies focused on Nairobi Securities Exchange, Meme and Muturi's (2016) study was conducted between 2009 and 2015. The current study examined the effect of external cash inflows on the stock returns of firms listed at NSE, Kenya. This study made use of external cash inflows like direct foreign

investment, foreign remittances, external debts as well as foreign grants. In addition, this study will make use of the vector error correction model and covered 12 years beginning from January 2009 up to December 2020.

Objectives of the study

This research paper's aim was to examine the effect of external cash inflows on the stock returns of firms listed at NSE, Kenya. Specifically, it gave focus on: the effect of FDI on stock returns of firms listed at NSE; the effect of foreign remittances on stock returns of firms listed at NSE, Kenya; the effect of external debts on stock returns of firms listed at NSE, Kenya, and the effect of foreign grants on stock returns of firms listed at NSE, Kenya.

Research Hypothesis

This study tested the listed null hypotheses; H01: FDI has no statistically significant effect on stock returns of firms listed at NSE, Kenya; H02: Foreign remittances have a statistically significant effect on stock returns of firms listed at NSE, Kenya; H03: External debts have no

statistically significant effect on stock returns of firms listed at NSE, Kenya, and H04: Foreign grants have no statistically significant effect on stock returns of firms listed at NSE, Kenya.

Theoretical Review

This subsection comprises of theoretical review of the effect of external cash inflows (FDI, foreign remittances, external debts as well as foreign grants) on stock returns. The theories adopted in the research

include the Free cash flow theory, prospect theory, and foreign direct investment theory.

Free Cash Flow Theory

Jensen (1986) developed the above theory with the purpose of describing the correlation between free cash and the role of debt among organizations, factors influencing takeovers as well as the effect of diversification programs. Moreover, Jensen (1986) argues that disagreements of personal interest between managers as well as shareholders on payout rules are more so harsh when substantial free cash flow is created by an organization as cooperate management is for the growth of the firm and against dividend payout since they reduce resources that are under their control (Smith & Pennathur, 2019). Kangarlouei, Hasanzadeh, and Motavassel (2014) noted that sales increase was the most useful to firms that lack low cash flows. In this study, free cash flow theory was employed to describe the effect of foreign remittances on stock returns at NSE. Leverage-increasing transactions comprise stock repurchases as well as the exchange of preferred stock or debt for similar stock, debt for preferred stock, and income links for preferred stock results sign a African optimistic rise in stock prices which is common.

Prospect Theory

Prospect theory was established by Tversky and Kahneman (1992). This theory indicates that people are involved in decision-making based on the capability value of gains and losses instead of final results and people assess these losses and gains by use of some heuristics (Barberis,

Mukherjee & Wang, 2016). The theory describes decision-making in the following phases. During the first phase which is known as editing, decision results are in order according to some heuristics. Specifically, people choose which result they think is equivalent, set a point of reference, and finally consider greater results as gains and lesser ones as losses. Editing phase purposes to ease any framing effect. In addition, it aims to solve isolation effects which is stemming the propensity of an individual to frequently separate consecutive likelihood instead of handling them together (Wang et al., 2018). In line with this study, prospect theory was used to establish stock returns in Nairobi Securities

Exchange. If at least some market participants value a stock based on its historical return distribution, they will drive up the prices of stocks with high PT values and drive down the prices of stocks with low PT values, resulting in a negative relationship between historical PT values and future returns. Some stakeholders employ a process of two-step when determining the amount of capital to assign to a stock.

FDI Dependency Theory

The above theory was introduced in 1950 by Prebisch. This theory outlines that FDI lacks a positive contribution to the host country's economy but also has a pessimistic influence on that particular economy. This symbolized that between developing countries and grown economies there is the presence of a dependency relationship (Srivastava & Talwar, 2019). The reason for this was that the raw materials of developing countries are exported to developed countries which manufacture raw materials into finished products and eventually sell

them to diverse developing nations (Bahri, Nor & Nor, 2018). In this research, FDI dependency theory was employed to describe the effect of FDI on stock returns at NSE. The implication of this theory to the correlation between the advancement of the stock market as well as FDI is that there exists a negative link between the two. The reason behind this is that a greater technological level initiated in advancing the country result in labor savings and this affects domestic labor demand which then extends poverty levels thereby reducing savings hence in terms of size and liquidity it becomes difficult to develop a stock market.

Empirical Review

Banga and Sahu (2017) determined the impact of foreign remittances on stock returns in developing nations. The aim of carrying out this study was to evaluate the impact analysis of remittances of poverty remittances in advancing countries at two levels. The independent variable was foreign remittances while the dependent variable was stock returns in developing countries. The researcher adopted a descriptive survey design. To start with, it estimates the effect of poverty remittances among 77 advancing countries; Secondly, different analyses are conducted for 29 advancing countries as well as 21 developing counties in Asia, which have remittances of 5% or more share in GDP. The outcome of the study continuously indicates that remittances significantly decrease poverty among recipient countries. However, the outcome is more reliable to those countries which have remittances higher than 5% of GDP thus leading to improvement in stock returns. Nevertheless, this study was limited to Asian countries and not Kenya. Different countries have different levels of economic development hence findings from one

country cannot be generalized to another country. The current study therefore will evaluate the influence of foreign remittances on stock returns in NSE, Kenya. Misati and Kamau (2018) analyzed the correlation between foreign remittances and financial growth through the use of an autoregressive distributed technique centered on periodical data collected in Kenya between 2006 and 2016. The main study objective was to assess the correlation between foreign remittances and financial growth. The Independent variable was foreign remittances while the dependent variable was financial growth in Kenya. Results portray a superior positive association between foreign remittances and all indicators of financial growth which are five in number in long-run equations. The study further established that greater levels of foreign remittances create chances for bank accounts opening, retrieving financial systems, and increasing savings for receivers as well as revealing the unbanked to present as well as recent financial results. Further, this study found that utilization of international remittance interchange by use of phone technology decreases the charges by eradicating the necessity for visible branches as well as staff to go for walk-in clients that overshadow traditional remittance business models apart from proving safety and convenience to the remittance actors. As a result of the difference in institutional structures between the banking sector and the Nairobi Securities Exchange, the results in the study are not applicable to Kenya. Therefore, the current research will assess the influence of foreign remittance on stock returns in the Nairobi Securities Exchange, Kenya.

Abubakar and Yunusa (2018) studied on impact of FDI on SMD within Nigeria. Moreover, the study examined the impact of FDI development on SMD. In this research, the independent study variable was FDI while the dependent variable was stock market development. The study adopted a descriptive survey design. Panel data from 1981 to 2016 was used during the study. Findings revealed that FDI has an optimistic as well as an insignificant statistical effect on SMD. Gross domestic savings and exchange rate exert statistically significant and optimistic effects SMD on whereas the rate of inflation has an insignificant inverse effect on stock market development. The dependent variable for this study was SMD which differs from stock returns therefore findings are not applicable. Therefore, the present study will evaluate whether FDI influences stock returns in NSE, Kenya.

Njane (2017) examined the effect of FDI on SMD within Kenya. The main study objective was to assess the effect of FDI on SMD. Additionally, the independent study variable was FDI whereas the dependent variable was stock market growth in Kenya. Moreover, secondary data was gathered annually for 30 years between 1987 and 2016. A descriptive research approach is utilized in this research. The research found that FDI inflows, interest rates, economic growth inflation as well as exchange rates were statistically insignificant contributing factors to Kenyan stock market growth.

This study used a descriptive research approach whereas this study will employ an explanatory research design. Each study design has its own limitations therefore results are not generalizable to this research

because of differences in study designs. The current research, therefore, aims to assess the effect of FDI on stock returns in NSE, Kenya.

In Chad, Kouladoum (2018) researched on the impact of foreign debt on stock returns. The main study objective was to evaluate whether foreign debt influences stock returns. The Independent variable was foreign debt while the dependent variable was SR in Chad. This study adopted the qualitative analysis method. The survey used panel data from 1975-2014. The generalized technique of moment was adopted during the study. The results revealed that foreign debt significantly and positively influences the real rate of exchange with a 5% significant level. Furthermore, the study found that servicing of external debt influences significantly the negative real rate of exchange thus leading to a decline in stock returns. The study was limited to stock returns in Chad, therefore, its outcome cannot be generalized to the current study because of differences in the level of economic advancement.

Ndemange (2018) examined the effect of foreign debt on Kenyan GDP from 1980-2014. The main study objective was to evaluate the influence of foreign debt on GDP in Kenya. Moreover, foreign debt was the independent variable while the dependent variable was GDP growth. Findings obtained from regression analysis discovered that external public debt has a pessimistic impact on GDP hence offering provision that a rise in ED establishes a tension on economic development. Increased debt servicing results from increased external borrowing, resulting in the nation's resources being used to service external loans. This study used the gross domestic product as its dependent variable. Hence, its outcome cannot be generalized to the

current research as a result of differences in indicators of stock returns. The current study, therefore, focuses on the influence of external debt on stock returns in Nairobi stock exchange.

Ouattara (2019) study analyzed the impacts of foreign aid on major fiscal aggregates within Senegal. The purpose of carrying out this investigation was to determine the influence of foreign aid on major fiscal aggregates within Senegal. The independent variable was foreign aid while the dependent variable was major fiscal aggregates within Senegal. The study used data from 1980- 2014. The researcher determined three major results of this research. First, greater support flows close to 41 percent, are deployed to FD, and 20 percent of resources that government owns are meant for debt servicing. Additionally, the effect of support flows on domestic spending is not significant, and eventually, debt servicing has a positive impact on domestic spending. The study proposes that debt. The decrease could develop a policy tool that is more successful than acquiring extra loans. Since the study was conducted in Senegal, it is, therefore, imprudent to generalize results to the presented study because of variation in a unit of observation as well as analysis.

Karras (2019) examined the association between growth in per capita GDP and foreign aid. Moreover, the study sought to assess the impact of foreign aid on GDP growth. The Independent variable was foreign aid while the dependent variable was GDP growth. The study used yearly data over a period from 1960-2017 for a sample of 71 developing countries that receive aid. The study established that foreign aid has a permanent, positive as well as and statistically significant impact on economic growth. Moreover, a permanent rise in foreign aid by \$20 per

person causes permanent improvement in the increase rate of real GDP per capita by 0.16 %. The study used GDP as the dependent variable which differs from stock returns hence results are not generalized to this study.

Conceptual Framework

Conceptual framework is the diagrammatic presentation of the correlation between dependent and independent study variables. In the ongoing research, independent variables are FDI, foreign remittances, external debts, and foreign grants. The dependent variable is stock returns at NSE. Hypothesized correlations between independent and dependent variables are indicated in Figure 2.

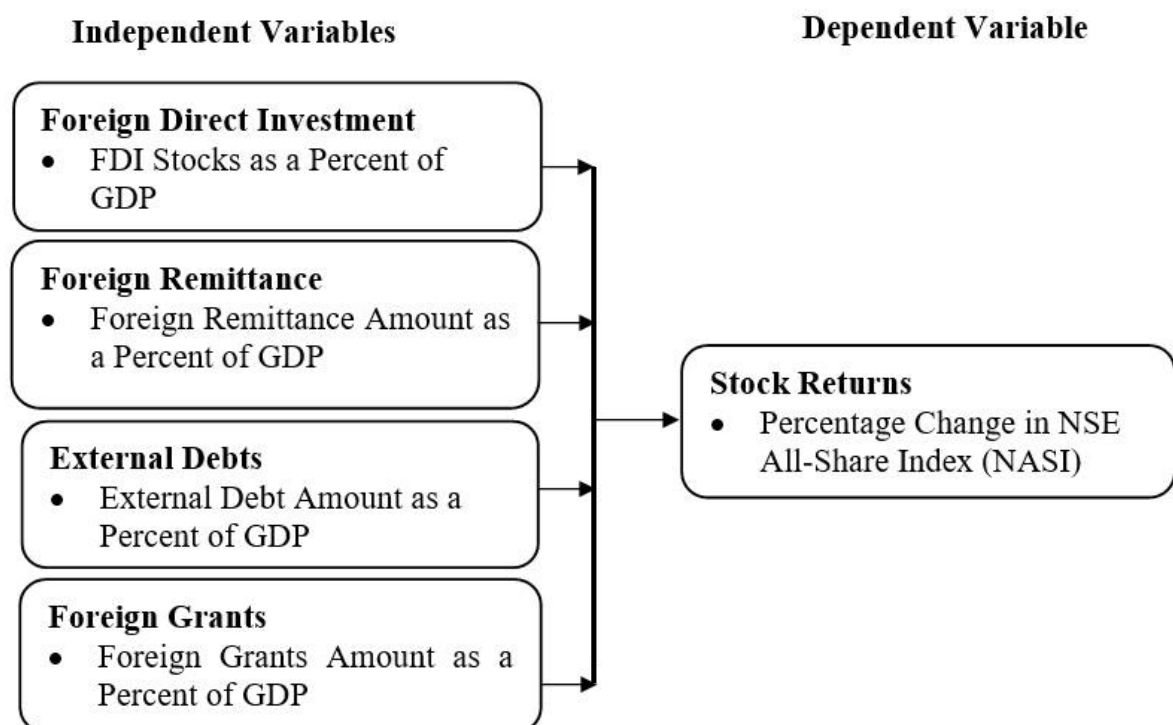


Figure 2: Conceptual Framework Source: Authors, (2022)

Research Methodology

This research paper employed an explanatory research design. This study design was the most suitable as the study sort examines the effect of external cash flows on the stock returns of firms listed at NSE, Kenya. In this research, the target population was companies listed in NSE. The NSE (2020) suggests that 64 companies are registered in Nairobi Securities Exchange. Since the number was small, a census was conducted. The study collected time series data for a period of thirteen (13) years from 2008 to 2020. Secondary data on stock returns which is measured in terms of the Nairobi All Share Index (NASI) was obtained from the NSE. In addition, data on foreign direct investment, foreign remittances, external debts, and foreign grants were acquired from the Kenya National Bureau of Statistics (KNBS) and the Central Bank of Kenya (CBK). The analysis of quantitative data was centered on inferential as well as descriptive statistics. Moreover, descriptive statistics emphasized on the computation of percentages, frequencies, mean and standard deviation. The study used VAR in testing for the relationship between variables. The VAR integrated model includes multiple time series and is fairly a useful forecasting tool. The VAR model entails multiple independent variables and therefore has more than one equation. Additionally, each equation deploys as its explanatory variables lags of variables and likely deterministic trend (Bryman, 2018).

Time series models for VAR are typically centered on deploying VAR to stationary series with earlier disparity to original series therefore due to that reason there is regularly a likelihood of information getting lost concerning association among integrated series. Therefore, one

solution is differentiating series so as to make them static but at the cost of disregarding essential (“long run”) association between levels. To test the trustworthiness of regressions levels is a better solution (“cointegration”). The normal approach is to deploy Johansen’s approach for testing the existence of cointegration, if it does then a VECM, which combines differences and levels, can be estimated rather than VAR in levels. Time series analysis tests that were performed on the model comprise of normality test, Heteroscedasticity Test, Unit Root Test, Granger Causality Test, and Cointegration Test. The study used the Johansen test to test co-integration. Data stationarity was tested using Augmented Dickey–Fuller test. Heteroscedasticity was tested using the Cook-Weisberg test. In addition, the study used Akaike’s information criterion in the lag length selection. The normality of the data was tested using the Shapiro-Wilk Test.

Empirical Model

This research involves multivariate time series which is an economic methodology where the time series y_{1t} depends on the lags of itself and the lags of another series y_{2t} . In this case, the main methods of analysis were either Vector Autoregression (VAR) or Vector Error Correction Model (VECM) Depending on whether the series has co-integration or not. Both VAR and VECM are used in time series data and have been used by other studies focusing on stock returns. For instance, Serem, Saina, and Serem (2020) used VAR and VECM to assess the association between macroeconomic factors and stock market prices in NSE. If variables have co-integration which implies that the variables co-move towards a long-run equilibrium, then VECM was applied otherwise VAR

would be used. VAR is considered to be a forecasting algorithm that is utilized when at least two-time series variables influence each other. In addition, the association between the variables is bi-directional. In this study, there may be a bi-directional association between external cash inflows and stock market performance.

The standard VAR model where $k = 1$ applied

$$y_t = A_0 + A_1 y_{t-1} + U_t \dots\dots\dots (1)$$

Where: y_t is vector of Independent variable

A_0 is vector of constant

A_1 is matrix of coefficients of the variables at lags

U_t is vector of white noise

y_{t-1} is vector of the variables at lags

In this case there are five variables, that is;

Stock Returns (denoted SR) Foreign Direct Investment (denoted by FDI), Foreign Remittances (denoted by FR), External Debts denoted as ED, and Foreign Grants denoted as FG. In this case therefore the above equation looked like;

$$\begin{pmatrix} y_{1t} \\ y_{2t} \\ y_{3t} \\ y_{4t} \end{pmatrix} = \begin{pmatrix} \beta_{10} \\ \beta_{20} \\ \beta_{30} \\ \beta_{40} \end{pmatrix} + \begin{pmatrix} \beta_{11} \alpha_{11} \theta_{11} \pi_{11} \\ \alpha_{21} \beta_{21} \theta_{21} \pi_{21} \\ \theta_{81} \beta_{81} \alpha_{81} \pi_{81} \\ \pi_{41} \beta_{41} \alpha_{41} \theta_{41} \end{pmatrix} \begin{pmatrix} y_{1t-1} \\ y_{2t-1} \\ y_{3t-1} \\ y_{4t-1} \end{pmatrix} + \begin{pmatrix} u_{1t} \\ u_{2t} \\ u_{3t} \\ u_{4t} \end{pmatrix} \dots\dots\dots (2) \text{The first system}$$

$$y_{1t} \text{ (FDI)} = \beta_{10} + \beta_{11} y_{1t-1} \text{ (FDI)} + \alpha_{11} y_{2t-1} \text{ (FR)} + \theta_{21} y_{3t-1} \text{ (ED)} + \theta_{11} y_{3t} \text{ (FG)} + u_{1t} \dots\dots\dots (3) \text{The Second System}$$

$$y_{2t} \text{ (FR)} = \beta_{20} + \alpha_{11} y_{2t-1} \text{ (FR)} + \beta_{21} y_{1t-1} \text{ (FDI)} + \theta_{21} y_{3t-1} \text{ (ED)} + \theta_{11} y_{3t} \text{ (FG)} + u_{2t} \dots\dots\dots (4) \text{The third system}$$

$$y_{3t} (ED) = \beta_{30} + \theta_{31}y_{3t-1}(ED) + \beta_{31} y_{1t-1}(FDI) + \alpha_{31} y_{2t-1}(FR) + \theta_{11}y_{3t-1} (FG) + u_{3t} \dots \dots \dots (5) \text{ The fourth system}$$

$$y_{4t} (FG) = \beta_{40} + \theta_{41}y_{4t-1}(FG) + \beta_{41} y_{1t-1}(ED) + \alpha_{41} y_{2t-1}(FDI) + \theta_{11}y_{4t-1} (FR) + u_{4t} \dots \dots \dots (6)$$

The first step is to find out if the variables are constant, if they are not, make them constant then choose the number of lags using information criteria and check for co-integration. If the variables co-integrate use VECM otherwise VAR model was employed

Research Findings and Discussions

Descriptive Analysis

This part comprised of computation of the standard deviation, mean, maximum, and minimum of the variables. In this study, descriptive statistics included percentage, standard deviation, frequencies and mean. This covered the dependent variable (stock returns of firms listed at NSE), and the independent variables (FDI, foreign remittances, external debts, and foreign grants).

Table 1: Descriptive Statistics

Variable	Observation	Mean	Std. Dev.	Min	Max
NASI	52	0.3426923	3.66606	-8.76	7.56
FR	52	0.5408462	0.182943	0.093	0.892
ED	52	6.354212	2.312314	0.123	9.238
FG	52	2.417923	0.8483719	0.191	4.102
FDI	52	0.3414423	0.2345498	0.039	0.892

The results, as shown in Table 1, show that the average percentage change in NSE All-Share Index was 0.3426923 percent and the standard deviation was 3.66606 percent for the period between 2008 and 2020. The maximum percentage change in NSE All-Share Index was -8.76 percent and the maximum was 7.56 percent. The results also indicated that the average foreign remittance as a percent of the GDP was 0.5408462 percent and the standard deviation was 0.182943 percent for the period between 2008 and 2020. The minimum foreign remittance was 0.093 percent and the maximum foreign remittance was 0.892 percent. In addition, the average external debt as a percent of the GDP was 6.354212 percent and the standard deviation was 2.312314 percent for the period between 2008 and 2020. The minimum external debt was 0.123 percent and maximum was 9.238 percent. Further, the average foreign grant as a percent of the GDP was 2.417923 and the standard deviation was 0.8483719 percent for the period between 2008 and 2020. The minimum foreign grant, as a percent of the GDP, was 0.191 percent and the maximum was 4.102 percent. The results also show that the average FDI as a percent of the GDP was 0.3414423 percent and the standard deviation was 0.2345498 percent for the period between 2008 and 2020. The maximum FDI as a percent of the GDP was 0.039 and the minimum was 0.892 percent.

Diagnostic Tests

Diagnostic tests are important in ensuring that the data meets the requirements for running the co-integration analysis and VAR models in order to avoid spurious results. The results of the diagnostic tests are presented in the subsequent sections.

Normality Test

The current study focused on the Shapiro-Wilk W normality test. The null hypothesis assumes that data is obtained from the normal population. The results of the normality test are presented in Table 2.

Table 2: Shapiro-Wild Test for Normality of Data

Variable	Obs	w	v	z	Prob>z
NASI	52	0.97854	1.041	0.086	0.46562
FR	52	0.98166	0.890	-0.250	0.59859
ED	52	0.96006	1.129	1.089	0.13672
FG	52	0.96620	1.640	1.057	0.14529
FDI	52	0.95895	1.102	1.098	0.09322

The results in Table 2 show that the p-values of all the variables were above significance level of 0.05. NSE All-Share Index had a p-value of 0.46562, foreign direct investment had p-value of 0.59859, foreign remittances had a p-value of 0.13672, external debts had a p-value of 0.14529 while foreign grants had a p-value of 0.09322. This implies that data was normally distributed.

Autocorrelation Test

The study adopted the Breusch–Godfrey test to determine the presence of serial correlation that is excluded from the suggested model structure and its presence would lead to wrong conclusions. The null hypothesis in this study was that serial correlation is lacking therefore if P-value is not less than significance level of 0.05, it would imply lack

of serial correlation. The results of autocorrelation test are given in Table 3.

Table 3: Breusch-Godfrey Lagrange Multiplier Test

Lags(p)	chi2	Df	Prob>chi2
1	1.422	1	0.2331

Table 3 shows that the p-value (0.2331) is greater than the significance level (0.05) and therefore the null hypothesis is not rejected. Therefore, there is a lack of serial correlation among the study variables.

Heteroscedasticity Test

Homoscedasticity indicates a situation whereby all the values in independent variables have a common error term. The error variance of the null hypothesis is tested by Breusch-Pagan/Cook- Weisberg. The results of the analysis are depicted in Table 4.

Table 4: Breusch-Pagan/Cook-Weisberg Test

Ho: Constant variance		
Variables: fitted values of NASA		
Chi2(1)	=	1.97
Prob>chi2	=	0.1608

The findings in Table 4 indicate that the p-value (0.1608) was not less than 0.05. This means that the null hypothesis of constant variance is not rejected. This shows there was constant variance and hence the data was homoscedastic.

Unit Root Test

The research adopted ADF for testing the stationarity of the data. The null hypothesis is that the variables are not stationary. The results of the analysis are shown in Table 5.

Table 5: Augmented Dickey Fuller Unit Root Test

Variable	No of obs	Test Statistic	p-value for z(t)	Interpooled Dickey-Fuller		
				1 percent critical value	5 percent critical value	10 percent critical value
NASI	52	-7.000	0.000	-3.579	-2.929	-2.600
FR	52	-5.514	0.000	-3.579	-2.929	-2.600
ED	52	-3.086	0.027	-3.579	-2.929	-2.600
FG	52	-4.383	0.003	-3.579	-2.929	-2.600
FDI	52	-3.605	0.006	-3.579	-2.929	-2.600

The results in Table 5 show that the p-values for the variables external debt, foreign grants, FDI, and NASI were less than the significance level of 0.05. Hence the null hypothesis that the variables are not stationary was rejected which implies that the variables external debt, foreign grants, foreign direct investment, and NASI had no unit root.

Cointegration Test

The study used the Johansen test to test co-integration to determine whether to run a VAR or VECM model. The results of the analysis are presented in Table 6.

Table 6: Johansen Test for Cointegration

Trend Constant			Number of obs = 50		
Sample: 2008q3 – 2020q4			Lags= 2		
Maximum rank	parms	LL	eigenvalue	Trace statistic	50% critical value
0	30	-210.83974	0	77.8298	68.52
1	39	-193.18179	0.50654	42.5139*	47.21
2	46	-185.17635	0.27401	26.5030	29.68
3	51	-178.86889	0.22299	13.8881	15.41
4	54	-173.94308	0.17884	1.0365	3.76
5	55	-171.92484	0.07756		

$y_{3t} (ED) = \beta_{30} + \theta_{31}y_{3t-1}(ED) + \beta_{31} y_{1t-1}(FDI) + \alpha_{31} y_{2t-1}(FR) + \theta_{11}y_{3t-1} (FG) + u_{3t} \dots (5)$ The fourth system.

From the results presented in Table 6, the trace statistic in the first rank which is 0 (42.5139) was greater than the critical value of 47.21, and hence the null hypothesis that there is no cointegration in the data set was rejected which implied there is co-integration. The results further show there is one co-integration as the trace statistic for Rank 1 (34.4670) was greater than the critical value (29.68). This implies that the vector error correction model should be used instead of the Vector auto-

regression model. According to Wilson (2010), the vector error correction model is preferred when there is co-integration.

Granger Causality Test

Since some of the data was found to have a unit root, the Engel Granger test was used to test for co-integration. A variable X is causal to variable Y if X is the cause of Y or Y is the cause of X. The results of the analysis are depicted in Table 17.

Table 7: Granger Causality Test

Equation	Excluded	Chi2	df	Prob>chi2
NSE All Share Index (NASI)	FR	0.37651	2	0.828
NSE All Share Index (NASI)	ED	0.074	2	0.964
NSE All Share Index (NASI)	FG	9.9529	2	0.007
NSE All Share Index (NASI)	FDI	.09678	2	0.953
NSE All Share Index (NASI)	ALL	11.715	2	0.164
Foreign Remittances (FR)	NASI	6.62464	2	0.044
Foreign Remittances (FR)	ED	0.50623	2	0.776
Foreign Remittances (FR)	FG	4.4054	2	0.111
Foreign Remittances (FR)	FDI	2.2265	2	0.328
Foreign Remittances (FR)	ALL	26.889	2	0.001
External Debts (ED)	NASI	5.4262	2	0.066
External Debts (ED)	FR	1.59898	2	0.452
External Debts (ED)	FG	4.2973	2	0.117
External Debts (ED)	FDI	0.65134	2	0.722
External Debts (ED)	ALL	14.305	2	0.074
Foreign Grants (FG)	NASI	8.2717	2	0.016

Equation	Excluded	Chi2	df	Prob>chi2
Foreign Grants (FG)	FR	1.163	2	0.559
Foreign Grants (FG)	ED	1.3182	2	0.517
Foreign Grants (FG)	FDI	0.38181	2	0.826
Foreign Grants (FG)	ALL	21.846	2	0.005
Foreign Direct Investment (FDI)	NASI	5.4566	2	0.065
Foreign Direct Investment (FDI)	FR	3.2903	2	0.193
Foreign Direct Investment (FDI)	ED	0.18556	2	0.911
Foreign Direct Investment (FDI)	FG	0.40315	2	0.817

The results as shown in Table 7, show that foreign remittance does not granger cause stock returns (NASI) (p-value=0.828). The results also show that stock returns (NASI) granger cause foreign remittance (p-value=0.044). The findings further show that external debts do not granger cause stock returns (NASI) (p-value=0.964). Moreover, stock returns (NASI) do not granger cause external debts (p-value=0.066). The findings imply that external debts are not causal to stock returns and stock return is not causal to external debts. The results also show that foreign grants granger causes stock returns (NASI) (p-value=0.007). In addition, stock returns (NASI) do not granger cause foreign grants (p-value=0.559). This implies that foreign grants are causal to stock returns, but stock returns are not causal to foreign grants. Further, the results show that FDI does not granger cause stock returns (NASI) in Kenya (p-value=0.953). Also, stock returns (NASI) do not granger cause FDI (p-value=0.065). This shows that FDI is not causal to stock returns and stock return is not causal to foreign direct investment.

Lag Selection Test

As indicated by Liew (2014) Akaike's information criterion (AIC) is a powerful criterion to put into consideration in a study as compared to other standard criteria because of its significance in the sample size of not more than 60. Since the number of observations in this study is less than 60,

the study used AIC in the lag length selection. The results are shown in Table 8.

Table 8: Lag Selection Test

Sample: 2008q4-2020q4					Number of Obs = 49			
Lag	LL	LR	df	P	FPE	AIC	HQIC	SBIC
0	-238.067		25		0.014006	9.9211	9.99434	10.1141
1	-184.474	107.19	25	0.000	0.004387*	8.75403*	9.19347*	9.91228*
2	-161.747	45.452	25	0.007	0.004973	8.84684	9.65248	10.9703
3	-137.216	49.063*	25	0.003	0.00552	8.86595	10.0378	11.9546

The results in Table 8 show that the study utilized two lags because Akaike's information criterion (AIC) chose two lags, as indicated by "*" in the output.

Vector Error Correction Model

The occurrence of cointegration between study variables shows that variables under examination have long-term relationships. Hence, the VECM model was used and the results were as presented in Table 9.

Table 9: Vector Error Correction Model

Cointegrating equations							
Equation	Parms	Chi2	p>chi2				
_ce1	4	28.01771	0.0000				
Identification: beta is exactly identified							
Johansen normalization restriction imposed							
_ce1	beta	Coef.	Std. Err	z	p>z	[95% conf. Interval]	
	NASI	1					
	FR	26.9342	5.376339	5.01	0.000	16.39676	37.47163
	ED	-1.141663	.394998	-2.89	0.004	-1.915844	-0.367808
	FG	-2.568733	.8674604	-2.96	0.003	-4.268924	-0.8685416
	FDI	-3.017078	3.185067	-0.95	0.344	-9.259695	3.22554
	_cons	-0.5676901					

From the results in Table 9, the VECM model was as stated as follows:

$$\text{NASI} = -0.5676901 + 26.9342\text{FR} - 1.141663\text{ED} - 2.568733\text{FG} - 3.017078\text{FDI}$$

The results in Table 9 show that Foreign Remittance has a significant positive effect on the Stock Returns of firms listed at NSE (β_1 -26.9342;p-0.000). This denotes that a unit increase in Foreign Remittances would lead to an increase in the Stock Returns of firms listed at NSE by 26.9342 units. This finding established that foreign remittances had a significant positive effect on stock returns which also concurs with Malik (2013) argued that foreign remittances had a

significant effect on stock market development in India, Pakistan, and Bangladesh. In addition, the results established that External Debts have a significant negative effect on the Stock Returns of firms listed at NSE ($\beta_2 = -1.141663$; $p = 0.004$). This denotes that a one-unit increase in External Debts will result in a 1.41663-unit decrease in Stock Returns of firms listed at NSE. These findings differ from the findings of the study by Dereje (2013) which revealed that external debts have a positive effect on stock returns in Africa. Further, the findings differ from the findings of Habimana (2015) who discovered that external debts have a significant positive effect on the stock returns of firms quoted at Rwanda Security Exchange. The results further indicate that Foreign Grants have a significant negative effect on the Stock Returns of firms listed at NSE ($\beta_3 = -2.568733$; $p = 0.003$). This implies that a unit increase in foreign grants will lead to a decrease in stock returns of firms listed at NSE by 2.568733 units. These findings differ from those of Dalgaard and Tarp (2014) who found that foreign grants have a significant positive effect on stock returns. The results also differ from those of Mossie (2014) who determined that foreign grants have a positive effect on firms' stock returns among East African countries. Further, the results show that FDI has an insignificant negative effect on the stock returns of firms listed at NSE ($\beta_4 = -3.017078$; $p = 0.344$). Findings disagree with the findings of Malik (2013) who discovered that FDI inflows have a significant positive effect on stock returns in Pakistan. In addition, these findings disagree with those of Muhammad, Hooi, and Rukhsana's (2013) findings that FDI has a significant positive influence on stock market returns.

Conclusion and Recommendations

The study concludes that foreign remittance, as a percent of the GDP, has a positive and significant effect on the stock returns of firms listed at NSE. This implies that increasing foreign remittance would increase stock returns. Remittances, unlike other forms of external financing, are more stable, hence making them a reliable source of finance for developing economies. This is because remittances are person-to-person transfers that are well-targeted to the recipients' needs and do not suffer from governance issues that can plague official aid transfers. They are less vulnerable to bureaucratic bottlenecks as well as corruption because they are sent directly to the recipient. In addition, the research concludes that external debts, as a percent of the GDP have a significant negative impact on the stock returns of firms listed at NSE. This shows that an increase in external debts leads to a significant increase in stock returns of NSE-listed firms. This finding can be justified with the argument that external debts can be utilized to develop infrastructure including roads, railways, and air infrastructure, which is key in ensuring efficiency in the production and transportation of goods. An improvement in infrastructure has an effect on the performance of firms listed at NSE, which in turn affects stock returns. In addition, an improvement in telecommunication infrastructure through external debts leads to an improvement in communication between staff in an organization and between an organization and customers (adverts, promotions), which in turn improves performance and hence an increase in stock returns. However, while external debt can lead to an improvement in the delivery of public services, poor management of money obtained from external debts can be

a burden that can slow economic progress and hence negatively affect stock returns. The study further concludes that foreign grants have a negative and significant effect on the stock returns of firms listed at NSE. This shows that an improvement in foreign grants would lead to a significant effect on the stock returns of firms listed at NSE. This finding can be explained by the argument that foreign aid represents an important source of finance in Kenya, where it supplements narrow export earnings, low savings, and thin tax bases. The donor community has recently become strict about fiscal discipline and sound policies, causing donor funds to freeze for governments that do not meet aid requirements. However, with a high degree of high unemployment, indebtedness, absolute poverty, and also poor economic performance, foreign grants most of the time do not achieve their intended purpose. Also, foreign grants are specific to programs including education programs, which do not have a direct effect on stock market returns.

Finally, the study concludes that FDI, as a percent of the GDP has a negative and significant effect on the stock returns of NSE-listed firms. This implies that an increase in foreign direct investment would lead to a decrease in stock returns at NSE. This finding implies that if foreign investors suffocate domestic producers and monopolize the market, this can have a negative impact on local businesses. Large outflows of investor profits or excessive input imports could potentially harm the host country's payment balance. Domestic savings in a country contribute to the development of that country's stock market because as the saving rate rises, people have idler money to invest, so they invest in the stock

markets, and as a result of this, more capital money flows through the stock markets.

Based on the conclusions of the study, a number of policy recommendations were made. On FDI, the study recommended that the Kenyan government and the policymakers should develop monetary and fiscal policies to regulate foreign direct investment inflows into the country. While the key role of policy recommendation is to attract exportation-oriented FDI in the industrial sector the FDI inflows do not go directly to the firms listed in the NSE and may increase competition in the sectors thus reducing stock returns. On foreign remittance, the study recommends that the Kenyan government should come up with policies geared towards increasing remittance. For instance, the government should develop a policy to reduce delivery time with remittances being obtained instantly or quickly contrary to a lag of numerous days earlier. Further, the Central Bank of Kenya should establish formal links with rising financial institutions abroad to encourage Kenyans to transfer through formal channels. On external debts, the study, therefore, recommends that the Kenyan government should reduce external debts and ensure that they are within the acceptable IMF recommendations. In addition, the government should ensure that appropriate debt management practices are adopted so as to ensure that debts are paid on time and that the debt burden is reduced. Finally, on foreign grants, the study recommends that the Kenya government should seek to reduce dependence on foreign grants and ensure efficient collection of taxes as well as widen the tax base to increase revenue.

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