

**A STUDY OF THE MACRO-ECONOMIC FACTORS AFFECTING STOCK
MARKET PERFORMANCE IN ZAMBIA. A CASE OF THE LUSAKA SECURITIES
EXCHANGE.**

**BY
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**A Dissertation Submitted in Partial Fulfilment of the Requirement for the Award of the
Degree of Master of Science in Accounting and Finance.**

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Muyanga Patson, 2019

DECLARATION

I, Muyanga Patson, do declare that this is my own work and has not been presented to any institution or university other than the University of Zambia for examination. Appropriate references and citations have been made where other people's work has been used.

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DEDICATION

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ABBREVIATIONS

APT	Arbitrage Pricing Theory
BOZ	Bank of Zambia
CAPM	Capital Asset Pricing Model
CSO	Central Statistical Office
EMH	Efficient Markets Hypothesis
EPS	Earnings Per Share
LuSE	Lusaka Securities Exchange
RWT	Random Walk Theory
SPPS	Statistical Package for Social Sciences
USA	United States of America
USD	United States Dollar

ABSTRACT

According to Ali (2014), capital markets, across the globe, channel funds from savers to firms, which use the funds to finance projects. Efficient capital markets, therefore, make it easier for firms to raise capital because the markets determine the prices at which existing and potential security holders are willing to exchange claims on a firm's future cash flows. Many studies have been done to establish whether macro-economic factors do influence stock market performance both in developed and developing financial markets. As such, this study sought to determine the influence of the macro-economic factors on stock market performance in Zambia specifically the Lusaka Stock Exchange. The independent variables were annual Interest rates, exchange rates, money supply, GDP growth rate and Index of Industrial Production measured by the Central Statistical Office and Bank of Zambia, respectively. The dependent variable in this study was the All Lusaka Stock Exchange Annual Share Index. Further, secondary data was collected for a period of twenty (20) years from 1998 to 2017. The study employed a descriptive research design and a multiple linear regression model was used to analyse the data. SPSS version 23 was used for data analysis purposes. The results for the study produced an R-square value of 0.819 which means that 81.9 % of the variations in stock market indices are influenced and caused by the five selected macro-economic factors covered in this study while 18.1% of the variations are influenced and caused by factors not covered in this study. ANOVA results show that the F-Statistic was significant at 5% level with an f-statistic of 12.632. As such, the model was fit to explain stock market index variations at Lusaka Stock Exchange. The results also revealed that, individually, interest rates have a strong negative association with stock market performance and the association is statistically significant. On the other hand, money supply, exchange rates and Index of Industrial Production have a positive association with stock markets and the association is statistically significant. However, GDP growth rates have a positive association with stock market performance although the association is not statistically significant.

Key words: Stock Market, All LuSE Share Index, Performance, Macro-Economic Factors, Interest Rates, Exchange Rates, Money Supply, GDP Growth Rates, Index of Industrial Production, Regression, Correlation and SPSS.

CHAPTER ONE: RESEARCH BACKGROUND

1.1 Introduction

According to Ali (2014), capital markets, across the globe, channel funds from those with surplus funds to those with deficits so as to finance projects. Efficient capital markets, therefore, make it easier for firms to raise capital because the markets determine the prices at which existing and potential security holders are willing to exchange claims on a firm's future cash flows. As such, informational efficiency is necessary if funds allocated through the capital market are to flow to the highest valued projects.

Furthermore, the concept of stock market performance and efficiency is central to finance (Otieno et al. 2017). Primarily, the term efficiency is used to describe a market in which relevant information is impounded into the price of financial assets.

The concept of market efficiency had been anticipated at the beginning of the century in the dissertation submitted by Bachelier (1900) to the Sorbonne for his PhD in mathematics. In his opening paragraph, Bachelier recognises that “past, present and even discounted future events are reflected in market price, but often show no apparent relation to price changes.

This recognition of the informational efficiency of the market leads Bachelier to continue, in his opening paragraphs, that “if the market, in effect, does not predict its fluctuations, it does assess them as being more or less likely, and this likelihood can be evaluated mathematically”. This gives rise to a brilliant analysis that anticipates not only Albert Einstein's subsequent derivation of the Einstein-Wiener process of the Brownian motion, but also many of the analytical results that were rediscovered by finance academics in the second half of the century. Sadly, Bachelier's contribution was overlooked until it was circulated to economists by Paul Samuelson in the late 1950s (Bernstein, 1992) and subsequently published in English by Cootner (1964).

1.2 Background

According to Fackson (2010), Zambia was considered one of the wealthiest nations in Sub-Saharan Africa at independence in 1964, after having inherited very generous foreign reserves from the British Colonial government. The socialist policies adopted and a state controlled, after political independence by the Zambian government were

characterized by nationalization of industries and the country witnessed the mushrooming of state controlled enterprises under Zambia industrial and Mining corporation (ZIMCO), the Industrial Development Corporation (INDECO), the Mining Development Corporation (MINDECO) and Financial Development Corporation (FINDECO).

Moreover, the second republic through the government led by the Chiluba regime privatized most of the state enterprises in 1992 as part of economic reforms under structural adjustment programme. This meant that these state controlled enterprises were no longer funded by the state. As such, this move forced these enterprises to find other alternative sources of funding. Hence, the government with the support of collaborating partners, found it necessary to form a capital market as an intermediation organization through which eligible companies would raise capital funds for investment in order to restore economic stability and growth in Zambia.

The stock market brings together various economic agents in its core function of moving resources from surplus units of the economy to deficit units. Economic agents raise long-term funds for financing new projects, expanding and modernizing industrial or commercial concerns by raising equity capital through issuing shares; and raising debt capital by issuing bonds, Opong et al. (2008). The stock market gives investors the dual advantage of easy liquidity and better information gathering. This makes it easier for financial resources to be mobilized because the investors are willing to commit to long-term projects under these conditions.

1.3 Statement of the Problem

Theoretically, stock markets would register a greater response in the short run since macro-economic factors significantly influence the stability of the financial market as they influence asset prices and returns. Macro-economic variables such interest rates, inflation rates, exchange rates, money supply and GDP have been cited in several studies including that of Masila, (2010). Empirical evidence is, however, largely inconsistent and quite varied on the influence and effects of macro-economic variables on the stock market performance both in the emerging and pre-emerging markets. Admittedly, the pre-emerging and emerging stock markets do exist in under developed regions of the world, which are volatile and therefore, have great growth potentials.

However, it is worth noting that illiquidity, high transaction costs, corruption, political instability, poor corporate governance and currency collapse are some of the significant problems that pre-emerging and emerging markets such as the Lusaka Stock Exchange, are facing today. The stock prices in these capital markets exhibit considerable serial correlation (price trends), non-random walk and evidence of manipulation by certain capital market participants with privileged information fundamental to the determination of stock prices, such that the classical economic role of channelling capital funds to most productive sectors of the economy is not optimally performed by these capital markets. The importance of the Lusaka Stock Exchange being a well performing stock market, therefore, cannot be over emphasized.

Accordingly, the performance and efficiency of any capital market has to be determined empirically even though research is limiting to demonstrate the influence of macro-economic factors on stock market performance in emerging and pre-emerging markets especially in Sub-Sahara Africa and Zambia in particular. Perhaps this study could help establish the influence of macro-economic factors on stock market performance at the Lusaka Stock Exchange, and consequently, to empirically and explain the nature of the relationship between the variables and the direction in which they drive stock prices.

1.4 Research Questions

- i) What are the effects of money supply on stock market performance in Zambia?
- ii) What is the relationship between exchange rates and stock market indices in Zambia?
- iii) How do interest rates influence stock market performance in Zambia?
- iv) What is the relationship between GDP growth rate and stock market performance in Zambia?
- v) How does the Index of Industrial Production influence stock performance in Zambia?

1.5 Research Objectives

- i) To establish the effects of money supply on stock market performance in Zambia.

ii) To determine the nature of the relationship between exchange rates and stock prices in Zambia.

iii) To determine the influence of interest rates on stock market performance in Zambia.

iv) To describe the relationship between GDP growth rate and stock market performance in Zambia.

v) To explain the influence of Index of Industrial Production on stock performance in Zambia.

1.6 Aim of the Study

The main aim of this study was to establish the influence of macro-economic factors on the performance of the Lusaka Stock Exchange, in Zambia.

1.7 Significance of the Study

There are significant benefits arising from this study and the following are worth noting. If stock prices on the Lusaka Stock Exchange are negatively or positively influenced by the selected macro-economic factors, then this has important implications at both the micro and macro level as follows:

Firstly, at the micro level this implies ability by certain Lusaka Stock Exchange participant individuals with access to privileged fundamental information in stock price determination to earn consistently higher than normal rates of return at the expense of those participants without access to such information.

Secondly, at the macro level, it raises serious doubts about the ability of the Lusaka Stock Exchange to perform its classical economic role of channelling funds to the most productive sectors of the economy.

Consequently, the results of the study will be useful in the following manner:

i) If Lusaka Stock Exchange is found to be negatively or positively influenced by these macro-economic variables, then the key stakeholders such as SEC and other policy authorities will have the task to re-organize the capital market in such a manner as to make Lusaka Stock Exchange perform optimally so as to

address economic issues at both the micro and macro levels of the Zambian economy.

ii) In the wake of dearth and largely inconsistent empirical literature on the influence of macro-economic factors on stock market performance in pre-emerging and emerging markets, researchers and academics may benefit from the findings of this study as may form part of their reference material. If need arises, the findings may trigger further research.

1.8 Scope and Justification of the Study

In Zambia, the main stock market is the Lusaka Stock exchange which was established in 1994. As such, the study was limited only to the Lusaka Stock Exchange which is based in Lusaka, Zambia. Also, the study only covered a period of twenty (20) from 1998 to 2017. As such, the study used twenty (20) data points in the data analysis using SPSS. This was because, annual data obtained was the most consistent and reliable. Other studies that used a similar number of data points in their regression models include a study by the IMF (2008) on the determinants of stock market development in South Africa. The study used annual data from 1990 to 2004, hence had 14 data points.

1.9 Dissertation Outline

The dissertation is organised as follows; chapter one provides the research background to the study, chapter two gives the literature review, chapter three gives the theoretical and conceptual framework of the study, chapter four outlines the research methodology, chapter five gives the data analysis, findings and interpretation and also the discussions and lastly, chapter six gives the conclusion and recommendations of the study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The 2013 Nobel Prize winner in economics, and father of the Efficient Markets Hypothesis (EMH), popularly known as the Random Walk Theory (RWT), Eugene Francis Fama of the University of Chicago, asserts that stock prices are influenced by both fundamental and non-fundamental information. A liquid stock market is considered by Fama as efficient when it absorbs very quickly and accurately all important unexpected information.

2.2 Overview of Stock Markets

From the 1930s until the early 1960s, there was a widespread folklore about how to make money on the stock market. The dominant theory, going back to Adam Smith in the 1700s, was that markets are essentially fickle, and that prices tend to oscillate around some true or fundamental value. By the 1960s, it became clear that these supposedly fool proof methods of investment were not working. Strategies based on detailed analysis did not seem to perform any better than simple buy-and-hold strategies. Attempts to explain this phenomenon gave rise to the Efficient Markets Hypothesis by Fama (1965), which claims that market prices already incorporate the relevant information. The market price mechanism is such that the trading pattern of a small number of informed analysts can have a large influence on the market price.

2.3 Overview of Stock Market Efficiency

The efficient market hypothesis looks, at first glance, very logically, conclusively, and can explain the behaviour of the stock prices in elegant manner. Fama's concept of the efficient markets does not anticipate that investors are able to identify the future market price faultlessly. It only claims that the current market price is the objective price, because it includes all available ratemaking information. The stock market prices then behave randomly because investors constantly analyse the stock market, reflecting new information in their investment decisions, trying to achieve maximum yield in view of the risk and the liquidity. Investors do therefore behave rationally, which then also means that even the stock market shows signs of rational behaviour.

Stock markets can have different degrees of efficiency. The weak form efficiency means that current stock price contains all the information that can be obtained from historical data. Therefore the investor cannot predict the future using data from past

translations and a movement and change of the stock price is random. If the past trend cannot be used for the prediction of the future development, then neither the Charles Dow's theory (constituting the theoretical basis of technical analysis) can clarify the nature of the behaviour of stock prices.

2.4 Overview of the Lusaka Stock Exchange

According to Fackson (2010), the formation of the Exchange was a response to part of the government's economic reform program aimed at developing the financial and capital market to support and enhance private sector initiative. This gave birth to the formation of the Lusaka Stock Exchange which opened its doors to the public on 21st February, 1994. The exchange has operated a unified market (both debt and equity) for over twenty years now. It has facilitated the raising relatively cheaper long term capital and this eventually led to complimenting the financial sector product offering of short term capital that is common place in the money market.

The operations of the Lusaka Stock Exchange are governed by the Securities Act (No 38) of 1993 Cap 354 of the Laws of Zambia and all subsequent statutory instruments that have been passed to assist in the implementation of the Securities Act. The implementations of the Securities Act are in the hands of Securities and Exchange Commission (SEC) Zambia which regulates the activities of Lusaka Stock Exchange.

2.5 Determinants of Stock Market Performance

To start with, stock market returns and performance have increasingly become a key concern and pertinent issue for investors and market participants in the sense that it does affect directly, the wealth which they hold. As such, key factors are believed to play a paramount role in the overall performance of stock markets in any economy, as follows;

2.5.1 Interest Rates

Monetary policy is used to stimulate or stabilise the economy. As a result, borrowing money to finance the operations of a business is highly likely to drive up the cost of debt. This will in turn adversely affect company profits, reported earnings and the dividends available for shareholders. Also, because of borrowing, the share price of a company is likely to drop. Further, higher interest rates are likely to reduce the present value of future dividends income, and eventually cause a sharp decline in stock prices.

As such, from the point of view of the investor, high-yielding fixed income securities may be preferred over equities (Barnor, 2014).

2.5.2 Exchange Rates

Market participants and investors are likely to choose to buy one currency because they believe that it is going to appreciate in value against other currencies. Therefore, an expected retraction in the economy may lead to the depreciation of its currency. For example, in the 2010 European crisis, many EU nations defaulted in debt payments which significantly influenced the European economic growth. This gradually resulted in a sharp decline of the Euro and hence many investors sorted to acquire other currencies (Johnson, 2010). In addition to this, Dwivedi (2002) blamed the foreign exchange volatility on high technological levels among the industrialised countries due to excess production. Consequently, more exports had increased the foreign currency supply in most home countries thereby leading to the depreciation of the currency.

2.5.3 Industry Performance

The profitability and success of the industry or sector in which the company operates has a significant role to play in influencing the company's stock price. Primarily, stock prices for firms in the same sector will fluctuate in tandem. Investors usually evaluate a firm owing to its earnings per share (EPS), future earnings prospect and revenues. The reason attributed to this is that conditions of the market will mainly affect companies in the same industry in a similar manner. However, the company's stock price may at times gain from bad news in its rivals if the two firms are targeting the same market (Madura, 2010).

2.5.4 Money Supply

Money supply comprises of the legal tender of a country and all other liquid financial instruments flowing in the economy at a particular point in time. It may also consist of the money in form of short term investments, the coins and notes currency, safe assets, cash and bank balance held in savings and current accounts. The economy of a country is, therefore, affected by the money in circulation and the monetary authority has to regulate the amount in circulation through monetary policy (Osamwonyi, 2003).

Furthermore, Tobin (1969) found an unambiguous relationship between the stock market and money supply. His study laid an emphasis on the importance of stock returns as a connection amongst the economic results. The study established a clear

link in the economy and the stock market returns. He also demonstrated that growth in money supply led to deficits in budgets that in turn affected stock returns.

2.5.5 Gross Domestic Product (GDP) Growth Rate

Mirchandani (2013) in his research found out that interest rates, inflation, FDI, and GDP growth had an effect on exchange rates. The current account balance however, did not have any effect on the exchange rates. In Stancik (2007), the empirical results showed that economic openness, news and the kind of exchange rate regime have an effect on the exchange rates. In the research done by Islam et al., (2014), the empirical result confirmed that there is a strong relationship between foreign exchange reserves, exchange rates, remittances, home interest rate, money supply and per capital GDP.

2.6 Review of Similar Studies

This section reviews the various literature on the macro-economic factors influencing stock market performance in both developed and emerging markets across the globe. A critic of existing literature is then provided at the end of the section.

2.6.1 U.S Studies

The ‘efficient market hypothesis (EMH) asserts that financial markets are “informationally efficient,’ or that prices of traded assets already reflect all known information and therefore are unbiased in the sense that they reflect the collective beliefs of all investors about future prospects. Thus it is not possible to consistently outperform the market by using any information that the market already knows, except through luck. Information or news is defined as anything that may affect prices that appears randomly in the future, Fama (1970).

Slattery (2016) examined the historical influence of rising interest rates on stock prices and found that despite conventional wisdom to the contrary, historically stocks have not necessarily performed poorly when interest rates rise. Therefore, portfolio decisions would not be based on conventional wisdom because it inadequate statistical support. Instead, it is more paramount to rely on fundamental analysis of companies and the risk-reward profile of the overall portfolio, especially reflecting intrinsic value analysis.

Shamshir & Mustafa (2014) conducted a study on EMH and their study aimed at revisiting and divulging the existing empirical evidence regarding the informational efficiency and random walk in stock markets of developed and emergent markets. The

critical analysis of statistical tools used was out of the purview of their study. Most of the empirical literature on the topic after the seminal work of Fama (1965a) was based on the developed markets. However, emergent markets received greater attention of the researchers after the huge inflow of capital in these markets after financial liberalization.

2.6.2 African Studies

Akpan & Chukwudum (2014) conducted a study on the influence of interest rates on stock prices on the Nigeria Stock exchange. The problem identified indicated that the All Share Index responded differently to interest rate hikes and cuts. The objective, therefore, was to study the relationship which exists between the All Share Index and the changes in interest rates. Data obtained was analysed based on a six-month and twelve-month percentage change basis with their respective averages taken using bivariate and multivariate regression analysis models for periods of interest rate hikes and cuts. The study found that the influence of interest rate is not significant when other variables affecting stock prices are controlled.

Otieno et al. (2017) in their study on the effects of Interest Rate on Stock Market Returns in Kenya explained that the debate on the stochastic behaviour of stock market returns, 3-month Treasury Bills rate, lending rate and their co-integrating residuals remain unsettled. Their study examined the stochastic properties of the macroeconomic variables, stock market returns and their co-integrating residuals using an Autoregressive Fractionally Integrated Moving Average (ARFIMA) model. The results indicated that the 3-month Treasury Bills rate and lending rate negatively Granger cause stock market returns in the long run. This suggests that stocks and Treasury Bills are competing investment assets. On the other hand, ARFIMA-based Granger causality revealed that stock market returns lead the 3-month Treasury Bills rate and lending rate with a negative sign in the short run. This implies that a prosperous stock market results into a favourable macroeconomic environment. A key contribution of their study was that it was the first to empirically examine fractional co-integration and ARFIMA-based Granger Causality between interest rate and stock market returns in Kenya.

A similar study on the relationship between share prices and Interest rates in Kenya was done by Chirchir (2014). He found that the changes in interest rates do have a

diverse effect across the economic spectrum in any country. The effects of interest rates may be reflected in the stock prices. Policy makers, scholars, and the general Kenyan public were therefore interested in understanding relationship of stock prices and interest rates. He examined how changes in interest rates (represented by the weighted average lending rate by commercial banks in Kenya) and stock prices (proxied by the NSE 20 share index) are related to each other for Kenya over the period October 2002- September 2012. The research used Toda Yamamoto method to determine the relationship between stock prices and interest rates. This method is applicable “whether the Vector Auto Regression (VAR) may be stationary (around a deterministic trend), integrated of an arbitrary order, or co-integrated of an arbitrary order”. The results indicated that there is no significant causal relationship between interest rate and share price. As regards the sign of causality, negative causality exists in both directions.

Opong et al. (2008) in their study, ‘Can Emerging African Stock Markets Improve their Informational Efficiency by Formally Harmonising and Integrating their Operations?’ explain that despite experiencing rapid growth in their number and size, African stock markets remain highly segmented, small, illiquid and technologically bankrupt, severely affecting their informational efficiency. On this basis, with specific focus on the weak-form of the efficient markets hypothesis, they attempted to empirically ascertain whether African stock markets can improve their informational efficiency by formally harmonising and integrating their operations using a new robust non-parametric variance-ratios test in addition to its parametric alternative. On average, they found that irrespective of the diagnostic used, all the 24 African continent-wide indices applied returns’ display better normal distribution properties than those of the 8 individual national stock price indices examined. They recorded evidence of statistically significant improvements in the informational efficiency of the African continent-wide stock price indices over the individual national stock price indices used irrespective of the test statistic applied. The potential improvement in efficiency to be gained was much higher in economic sectors indices than in size and regional indices. Finally, consistent with prior evidence, (eg., Wright, 2000; Belaire-Franch & Opong, (2005), Ntim, et al., 2007), the results of the Lo and MacKinlay (1988) parametric variance-ratios test are ambiguous. By contrast, the ranks and signs alternative offer consistent results throughout.

Peyavali & Sheefeni (2015) tested the Strong-Form Efficiency of the Namibian Stock Market. Their study analysed the strong form efficiency of the capital market in Namibia using the autoregressive conditional heteroscedasticity and general autoregressive conditional heteroscedasticity modelling techniques. These tests were applied on the monthly data for the period covering the year 1997 to 2012. The results from the study showed that there is no evidence of strong form efficiency in Namibia's stock market. However, there is evidence of weak form efficiency.

Therefore, investors in Namibia Stock Exchange cannot predict stock prices or returns in the short term or from historical prices or returns or from volume traded. With regard to the firms, it suggest that the securities of firms cannot outperform the market and the present market price was to a certain extent a true reflection of the present situation of their security.

Finally, Khetis & Mongale (2015) conducted a study on the influence of capital markets on the economic growth in South Africa from 1971-2013. The study found capital markets are institutions that actively play a role in the development of an economy. The results indicated that there is a positive relationship between economic growth and capital markets in South Africa. Furthermore, the country should focus on factors that contribute to the development of capital markets, such as the development of financial institutions. The study contributed to the existing body of empirical literature with regards to economic growth and capital markets, especially with reference to stock markets as South Africa has one of the largest stock markets (JSE) in the world.

2.6.3 Asian Studies

According to Shuangqun (2017) in his study on the relationship between Interest Rate and Stock Price in China, More and more people are interested in the relationship between interest rates and stock market research. Most people think that the stock price will be affected by inflation, interest rates, policies, macroeconomic environment and other factors, particularly affected by interest rate factors. This paper will adopt time series analysis and regression analysis method, based on China's 2003 rate to Chinese data released in 2014 the We now have a lot of scholars are studying whether banks adjust interest rates to influence the stock market.

The study found that in the short run, the change of interest rate will not have a very significant influence on the Shanghai Stock Exchange's closing index. In the short term, there is no significant relationship between the two. In the long run, changes in interest rates, while affecting the Shanghai stock market index, have a linear effect on the relationship. Because of the regression of long-term data, the results show that there is no significant difference between them. This shows again that interest rates do not have a significant influence on the stock index in the short run or long term.

Murugesan et al (2007) discussed the dynamic behaviour of stock index returns of sample markets of Asia Pacific Countries (Japan, Hong Kong, India, Korea, China, Taiwan, Singapore, Malaysia, Thailand and Indonesia) during the period of one year from January 2006 to December 2006. This study found evidence of time varying volatility, clustering, high persistence and predictability for almost all the Asian market indices. They also examined the emerging markets except India and China, which exhibited low returns.

Ali (2014) undertook a study and endeavoured to make a model, and also to find out the connection involving stock market and interest rate (Pakistani market) and to run certain tests related to statistical analysis. These tests run with the help of month end closing stock prices of Karachi Stock Exchange and interest rates of previous ten years i.e. Jan 2004 to Dec 2013. Correlation, Regression analysis and descriptive analysis were run to find out the blow of interest rate on stock market of Pakistan. Performance of Pakistani Stock market is highly dependent on political situation.

Lingaraja et al. (2014) conducted a study on market efficiency in the emerging stock markets like China, India, Indonesia, Korea, Malaysia, Philippines, Taiwan and Thailand. The Unit root tests, Auto Correlation, GARCH Model and Runs test were used to test the efficiency of eight emerging stock markets in Asia. The study focused emerging market indices namely, SSE Composite Index (SSE) - China, S&P CNX Nifty – India, Jakarta Composite Index (JKSE) - Indonesia, Korea Stock Exchange Index (KOPSI) - Korea, FTSE Bursa Malaysia (KLSE) - Malaysia, Philippine Stock Index – Philippines, Taiwan Stock Exchange (TWII) – Taiwan and Stock Exchange of Thailand Index - Thailand. The daily closing returns of all sample indices varied from 56.563 to 207.485 percent during the study period. But, the average daily return of Indonesia was higher than other emerging Asian stock markets, with 207.485 percent,

followed by Philippine Stock Index with 163.5705 percent. Taiwan recorded the least return value of 56.563 percent.

The results of this study, particularly those of the econometric tests, like ADF, GARCH Model, Autocorrelation and Runs Test provided important information for the retail investors and Governments and Policy regulators of the above eight sample countries. The relationships among the sample indices may be used by national as well as global investors to forecast the efficiency of emerging markets in order to invest in profitable stock markets in Asia. Investors are advised to invest in four markets, namely, the emerging markets of India, Indonesia, Malaysia and Philippines that were highly efficient during the study period. They also concluded that government, policy makers and other stake holders could take appropriate steps to improve the corporate disclosure practices in an appropriate manner so that the stock market index prices instantly reflect all available information.

Muthukumaran & Somasundaram (2014) undertook an analytical study of interest rates and stock returns in India. Their study tried to estimate causality relationship between interest rate and stock returns. As such the influence of interest rate and stock returns in India was studied, by using monthly data from April 1997 to March 2014. They considered macro variables for the study of 91-Treasury Bill (91TB), and BSE SENSEX. The study revealed that there exists short term relationship among the interest rate and stock returns through Granger causality technique. In the short run results show that there is no causality between interest rate and stock returns. The study implies that the interest rate neither affects stock returns nor stock returns affect the interest rate. Consequently, their study empirically proved that, stock market has no relation with the growth of interest rate in India and vice versa.

According to Kumar & Jawa (2017), the Efficient Market Hypothesis is a cornerstone of modern investment theory that essentially advocates the futility of information in generation of abnormal returns in capital markets over a period of time. However, the existence of anomalies challenge the notion of efficiency in stock markets. Calendar effects, in particular, violate the weak form of efficiency, highlighting the role of past patterns and seasonality in estimating future prices. Their research aimed to study the efficiency in Indian stock markets. Using daily and monthly returns of NIFTY 50 data from its inception in January 1995 to December 2015, they employed dummy variable

multiple linear regression technique to assess the existence of calendar effects in India stock markets. To correct for volatility clustering and ARCH effect present in the daily returns, the results were modelled using the EGARCH estimation methodology. The study revealed the existence of calendar effects in India in form of a significant Wednesday Effect as well as a significant 'December effect', thereby suggesting that the Indian stock markets do not show informational efficiency even in the weak form, a trait observable in emerging markets.

2.6.4 European Studies

Michlian (2014) investigated the influence of short term interest rate in stock prices in Czech Republic. His study therefore focused only on the relationship between short-term interest rate and stock prices. His main idea is that if interest-rate increases, it makes holding stocks less attractive relative to fixed income securities. Therefore, investors change the structure of their portfolios and switch capital from stocks to banks, which results in stock prices decrease. A GJR-GARCH-t-M model was applied to study the influence of Czech interest rate (14-day PRIBOR) on the Prague Stock Exchange (the PX index). In contrast to the majority of research on this area, he have found that there is no influence of the PRIBOR rate on the PX index - neither on its mean nor on its volatility. Further, he attributed the absence of a significant relationship to exceptional composition of the PX index and found that the recent crisis had significantly changed the behaviour of the Czech stock market.

Upadhyay (2016) conducted a study to try to explore the causality relationship between interest rate and stock returns using monthly Daily data from January 2015 to December2015, and considered Weighted Lending rates as a proxy for the Interest Rate and BSE SENSEX for the study. The Series made stationary in order to apply the Granger Causality Test. The study revealed that there exists no causal relationship among the interest rate and stock returns through Granger causality technique. The study implied that the interest rate neither affects stock returns nor stock returns affect the interest rate. As such, the study empirically proved that stock market has no relation with the growth of interest rate in India and vice-versa for selected period of time.

Benigno (2016) investigated the relationships between interest rate changes and stock returns. He investigated the linkage between changes in 10-year government bond

yields and stock returns for fourteen developed countries over the period 1999-2015 using the quantile-on-quantile (QQ) approach. This methodology introduced by

The empirical results showed a notable heterogeneity across countries in terms of the stock market-interest rate link. In particular, the weakest relationship between 10-year sovereign bond yield changes and equity returns was found for Australia, Germany, Netherlands, the UK and the US. In contrast, the most pronounced interest rate-stock market link is observed for the euro area peripheral countries most severely affected by the European sovereign debt crisis, i.e. Greece, Ireland, Italy, Portugal and Spain. Likewise, negative interest rate shocks exerted a larger influence on stock markets than the positive ones, suggesting that the relationship between interest rates and equity markets is asymmetric.

Derrabi & Leseure (2002) conducted a study on Global Asset Allocation: Risk and Return on Emerging Stock Markets. Their research focused on international capital allocation, and the risk-return trade off when investing in both emerging stock markets and developed stock markets. Thus, many questions were raised in this study: what are the advantages to investors when they consider assets from emerging stock market in their global portfolio, what are the risks international investors bear in these markets, to what extent emerging stock markets are integrated in the global financial market, and what are the major barriers to the investment in these markets. Their results showed also that the return on investment in emerging markets is much higher than the returns on investment in developed markets, however by the same token, emerging stock markets are riskier than the developed stock markets.

GiĠan (2015) did a study on the ‘Efficient Market Hypothesis: review of specialized literature and empirical research’. His findings were that testing for market efficiency is extremely difficult and there is a high possibility that, because of changes in market or economic conditions, new theoretical model should be developed to take into consideration all changes. As a result, it is important to continue the empirical studies to decide if capital markets are or are not informational efficient.

2.7 Critique of the Existing Literature

According to modern financial theory, systematic factors affect the long run return on financial asset. It implies that security market must have a significant relationship with

real and financial sectors of the economy. This relationship is generally viewed in two ways.

- (i) The macro economic variables influence the stock market operations especially equity returns.
- (ii) Similarly, the stock market is influenced by the macroeconomic variables. Although, there is much research about short run and long run relationship between macroeconomic variables and stock markets especially in developed countries, but there is a gap in literature in this area of developing and fast developing economies especially that empirically contrasting. As such, this study was necessitated to fill up the gap. Therefore, the research paper attempted to investigate the macro-economic factors influencing stock market performance and also establish the nature of the relationships between stock prices and interest rates and other macro-economic factors.

2.8 Lessons Learnt

There is vast literature regarding the macro-economic factors affecting stock market performance and the informational efficiency of these markets in both the developed and the developing economies. It is clear from the literature reviewed that capital markets in developed markets are more efficient and adjust quickly to new information and also that capital markets in developing markets are illiquid, volatile and hence inefficient. Most of the studies have used different econometric models to understand the relationship between stock prices and other macro-economic variables although the most common one has been the Granger causality test, developed by Granger in 1969.

2.9 Chapter Summary

This chapter reviewed literature regarding the macro-economic factors influencing stock prices in emerging and pre-emerging markets. Such factors include macro-economic variables such as money supply, inflation rates, interest rates, exchange rates, among others. Empirical evidence is largely unclear and inconsistent on the influence of macro-economic factors on stock market performance.

CHAPTER THREE: THEORETICAL AND CONCEPTUAL FRAMEWORK

3.1 Introduction

According to Asika (2008), the theoretical and conceptual frameworks explain the path of a research and grounds it firmly in theoretical constructs. The overall aim of the two frameworks is to make research findings more meaningful, acceptable to the theoretical constructs in the research field and ensures generalizability. They assist in stimulating research while ensuring the extension of knowledge by providing both direction and impetus to the research inquiry. They also enhance the empiricism and rigor of a research. Thus, it is no exaggeration for Akintoye (2015) to say that both the theoretical and conceptual frameworks give life to a research.

3.2 Theoretical Framework

Quite simply, a theoretical framework is the ‘blueprint’ or guide for a research Asika, (2008). It is a framework based on an existing theory in a field of inquiry that is related and/or reflects the hypothesis of a study. It is a blueprint that is often ‘borrowed’ by the researcher to build his/her own house or research inquiry. It serves as the foundation upon which a research is constructed. Sinclair (2007) as well as Adam, Kamil & Agyem, (2018) compare the role of the theoretical framework to that of a map or travel plan. Thus, when travelling to a particular location, the map guides your path.

3.2.1 Efficient Markets Hypothesis (EMH)

Furthermore, one of the relevant theories in this study is that of American Economist and Nobel Prize winner, Eugene Francis Fama; the Random Walk Theory popularly known as the Efficient Markets Hypothesis (EMH) which suggests that at any given time, stock prices of an efficient market reflect all the available information (Fama, 1965). The implication of this hypothesis is that no investors can out-perform the market and gain abnormal profits given that stocks are traded at their intrinsic value. As such, investors and market participants wanting higher returns can only do so by making riskier investment decisions as opposed to market timing and stock selection.

This hypothesis therefore assumes that traders are rational and that stock prices adjust quickly to assimilate any new information. In addition to this, Fama later in 1965 affirmed the Random Walk Hypothesis (RWH) which is very consistent with the

EMH. The RWH holds that stock prices are independent of each other and follow a random pattern, and cannot therefore be foretold using previous information.

However, the EMH has a fair share of critics despite it being the backbone of many studies on financial markets. The main idea is that the EMH assumes that investors are rational in their dealings, and that they have access to all available information and their market expectations are homogeneous and yet these assumptions beat the idea of trading after all given that trade signals existence of heterogeneous expectations. Many behavioural economists do not agree with the notion of rational investors as it purports irrational exuberance (1997).

3.2.2 Arbitrage Pricing Theory (APT)

APT was introduced by Ross (1976). The theory presumes that stock market returns are influenced by some macroeconomic variables through their effect on the discount rates and future dividends (Shresha & Subedi, 2015). Further, APT correlates with market portfolio concept, according to arbitrage theory, individuals have different portfolio of investments with their specific systematic risk. Most scholars have argued that the APT proposes better results compared to CAPM because it used multiple factors for explaining shared systematic risk (Sheefeni, 2015).

Additionally, some of the macroeconomic variables that influence stock market prices include GDP, inflation, money supply, exchange rates, among others. As such, based on this linear correlation between stock market returns and macroeconomic variables, it can be deduced that interest rates as a macroeconomic variable have an influence on the value of stock market securities and assets. As a result, the value of a security or asset can be described as the total of the expected return and any unexpected returns on the asset (Cuthbertson, 2004).

3.2.3 Neoclassical Theory

Neoclassical theory of investment was developed by Cockcroft and Riddell in 1991. Quite simply, the theory states that the inflow of investment into a country is guided by the factors such as macroeconomic policies, taxation and how they affect a firm's expected rate of return. Furthermore, the theory argues that foreign direct investment increases the capital income per person and that influences the growth of income. Accordingly, FDI increases growth through research and development, technology transfers and introduction of new forms of human capital. Therefore, when a country

has in place suitable policies such as tax incentives, ease of obtaining licenses and starting businesses and improved infrastructure, investors will be drawn to these countries leading to increased investment, capital market growth and employment in the host country.

According to Yartey (2008), when employment rates of a country increase, the income per capita of the host country increases which means that more people will invest in the real estate sector as well as capital markets.

3.3 Conceptual Framework

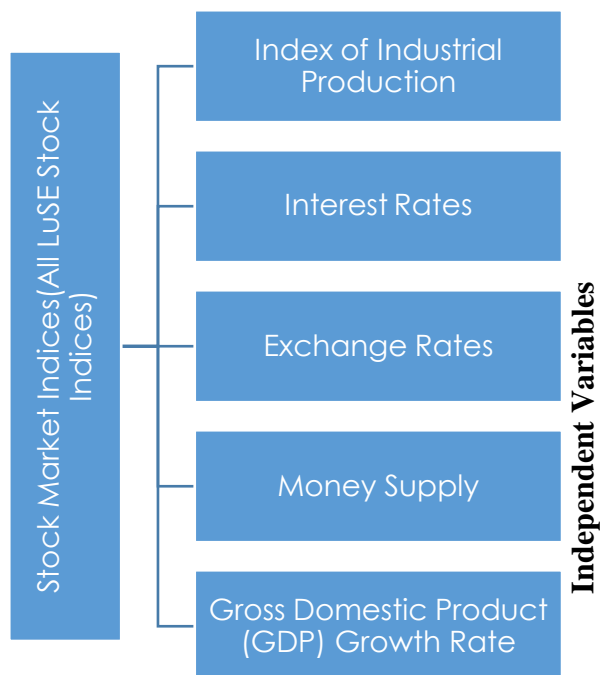
A conceptual framework is a structure which the researcher believes can best explain the natural progression of the phenomenon to be studied (Camp, 2001). It is linked with the concepts, empirical research and important theories used in promoting and systemizing the knowledge espoused by the researcher (Asika, 2008). It is the researcher's explanation of how the research problem would be explored. In a statistical perspective, the conceptual framework describes the relationship between the main concepts of a study.

The conceptual framework offers many benefits to a research. For instance, it assists the researcher in identifying and constructing his/her worldview on the phenomenon to be investigated (Akintoye, 2015). Akintoye (2015) posits that the conceptual framework is mostly used by researchers when existing theories are not applicable or sufficient in creating a firm structure for the study.

Accordingly, I have narrated, in this study, variables as dependent and independent variables which will assist me as a foundation for the entire research. And as such, I am assuming that dependent variables are the All LuSE Stock market indices and independent variables are interest rates, exchange rates, money supply, Index of Industrial Production and GDP Growth rates as shown in figure 3.1 below.

Figure 3.1. Conceptual Model

Dependent Variable



Source: Researcher (2018)

3.4 Research Hypothesis

I further developed the hypothesizes as follows;

a) Interest rates

Null Hypothesis (H₀): Interest rates have no negative influence on the stock market performance in Zambia.

Alternative Hypothesis (H₁): Interest rates have a negative influence on the stock market performance in Zambia.

b) Exchange rates

Null Hypothesis (H₀): Exchange rates have no negative influence on the stock market performance in Zambia.

Alternative Hypothesis (H₁): Exchange rates have a negative influence on the stock market performance in Zambia.

c) Money Supply

Null Hypothesis (H₀): Money supply has no negative influence on the stock market performance in Zambia.

Alternative Hypothesis (H₁): Money supply has a negative influence on the stock market performance in Zambia.

d) GDP Growth Rate

Null Hypothesis (H₀): GDP growth rate has no negative influence on the stock market performance in Zambia.

Alternative Hypothesis (H₁): GDP growth rate has a negative influence on the stock market performance in Zambia.

e) Index of Industrial Production (IIP)

Null Hypothesis (H₀): Index of Industrial Production has no negative influence on the stock market performance in Zambia.

Alternative Hypothesis (H₁): Index of Industrial Production has a negative influence on the stock market performance in Zambia

3.5 Chapter Summary

This chapter discussed the importance of theoretical and conceptual frameworks in a research. It has given enough justifications on why their inclusion in a research is indispensable because they heighten the quality of a research. Also, it has thoroughly explained the meanings of the two frameworks, their distinctive roles that they play in the research process, their differences, how they are constructed and where they must be presented in a dissertation or thesis research write-up.

Researchers and students must tactfully incorporate theoretical and/or conceptual framework in their research inquires to increase their robustness in all its aspects. This chapter, therefore, assisted the researcher in trying to understand the macro-economic factors influencing the performance of stock markets in emerging and pre-emerging markets of Africa with special focus on the Lusaka Stock Exchange, in Zambia.

CHAPTER FOUR: RESEARCH METHODOLOGY

4.1 Introduction

This chapter describes the methods of research to be applied to objectively establish the influence of macro-economic factors on stock market performance. The, research design, data collection, data analysis, model specification and tests of significance are presented below.

According to Asika (2008), research methodology is the particular method or means by which a particular research work is carried out. It comprises of the procedures and activities involved in drawing logical conclusions on the research study. This section deals with research design, characteristics of the study population, sample and sampling techniques, data collection schedule and statistical tools used in this study.

4.2 Research Design

A research design is a blue print of those procedures which are utilised by a researcher to test the correlation between independent and dependent variable (Akintoye, 2015). This research adopted a descriptive study so as to describe all elements of the population and also allows estimates of a part of a population that has these attributes.

4.3 Data Collection

In this study, all data was exclusively collected from secondary sources and annually data for twenty years (1998 to 2017) was collected and analysed. The study focused on the Lusaka Stock Exchange Share index for the dependent variable. Data for the independent variables was obtained from Bank of Zambia (interest rate, money supply and exchange rate) and (GDP growth rate and Index of Industrial Production from the Central Statistical Office).

4.4 Data Analysis

Data was sorted, classified, corded and then tabulated for easy analysis. Collected secondary data was analysed using both descriptive and inferential statistics. The SPSS Version 23 Computer software was used to analyse because it is more user friendly than other econometric packages such as E-views. The data was entered in the SPSS and examined using correlation and regression analysis, and also descriptive analysis. In descriptive statistics, the study used the mean and standard deviation. In the inferential statistics, the study used multivariate regression analysis to determine the relationship between the dependent and independent variables.

4.5 Model Specification

Using the collected data, the researcher conducted a regression analysis so as to establish the extent of the relationship between interest rates and stock market returns. The study applied the following regression model;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where,

β_0 = y intercept of the regression equation

$\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 = are the slopes of the equation

Y = All Lusaka Stock Exchange Stock market Indices as measured by the Lusaka Stock Exchange.

X_1 = Average interest rates as measure by the Bank of Zambia lending rate.

X_2 = Money supply as measured by BOZ

X_3 = Average exchange rates measured against the U.S dollar as measured by BOZ

X_4 = GDP growth rate as measured by Central Statistical Office.

X_5 = Index of Industrial Production as measured by Central Statistical Office

ε = error term.

4.6 Tests of Significance

In order to test the statistical significance, the F-test were used at 95% confidence level. The F statistic was utilised to establish a statistical significance of regression equation while the t statistic was used to test the statistical significance of study coefficients.

4.7 Chapter Summary

This chapter looked at the research methodology for this study including the research design, data collection, data analysis and the model specification. The variables were also clearly described in the model and a multiple linear regression method with help of SPSS was used to analyse the data.

CHAPTER FIVE: DATA ANALYSIS, FINDINGS AND INTERPRETATION

5.1 Introduction

This chapter focused on the analysis of the collected data from Bank of Zambia, Lusaka Securities Exchanges and Central statistical office to help determine the influence of macro-economic factors on stock market performance in pre-emerging markets of Africa with evidence from the Lusaka Stock Exchange Market in Zambia. Using descriptive statistics, regression analysis and correlation analysis, the results of the study are presented in table forms as shown in the next sections.

5.2 Diagnostics Tests

The study looked for the data that would suit and meet the objective of the study. Secondary annual data was collected from the Lusaka Stock Exchange (for the All LuSE Share Index), Bank of Zambia (for the annual interest rates, exchange rates and money supply) and Central Statistical Office (for GDP growth rates and Index of Industrial Production), respectively. Then it was cross checked for errors to test the validity of the data sources. The researcher assumed a 95% confidence interval or 5% percent significant levels. These values helped to verify the truth or falsity of the data. This was close to 100% confidence interval (and thus, the closer to 0 percent the significance level), the higher the accuracy of data used and analysed is assumed to be.

The researcher carried out normality test on the data collected. The null hypothesis for the test was that secondary data was not normal. If the p-value recorded was more than 0.05, the researcher would reject it. The result of test is as shown in Table 5.1 below.

Table 5.1 Normality Test

Stock market Returns	Kolmogorov-Smirnov Statistics			Shapiro-Wilk Statistics			Df
	Statistics	Df	Sig.	Statistics	Sig.	Df	
Interest rates (%)	.173	20	.795	.981		20	.176
Exchange rates	.176	20	.795	.881		20	.015
GDP Growth Rate	.178	20	.795	.893		20	.795
Index of Industrial Production	.181	20	.795	.886		20	.691

Money supply	.172	20	.795	.862		20	.009
a.Lilliefors Significance Correction							

Source: Research Findings (2018)

Both Kolmogorov-Smirnova and Shapiro-Wilk test record o-value greater than 0.05 which implies that the research data was normally distributed and therefore the null hypothesis was rejected. The data was appropriate for the use of conducting parametric tests such as Pearson’s correlation, regression analysis of variance.

5.3 Descriptive Analysis

Table 5.2 Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Stock market indices	20	158.85	4710.24	1909.5550	1368.36340
Exchange Rates against US dollar	20	2.26	10.84	5.3140	2.32094
Interest Rates (%)	20	15.8	48.7	28.330	9.0418
GDP Growth Rates (%)	20	2.6	10.3	5.490	2.3797
Index of Industrial Production	20	66.5	223.9	157.195	52.7165
Money Supply (K’Million)	20	197.0	7315.0	2574.050	2381.0166
Valid N (listwise)	20				

Source: Research Findings (2018)

Descriptive statistics gives a presentation of the minimum, maximum and mean values of variables applied together with their standard deviations in this study. Table 5.3 above shows the descriptive statistics for the variable applied in the study. An analysis of all the variables was obtained by the use of SPSS software for the period of 20 years (1998-2017) on an annual basis. Stock market indices had a mean of 1909.5550 with the standard deviation of 1368.36340. Exchange rate against US dollar mean was at 5.3140 with standard deviation at 2.32094. Interest rates recorded a mean of 28.330 with standard deviation of 9.0418. GDP Growth Rate had a mean of 5.490 and standard

deviation 2.3797. Index of industrial production had a mean of 157.195 and standard deviation of 52.7165 while Money Supply resulted to a mean of 2574.050 and standard deviation of 2381.0166.

Accordingly, from the table 5.2 above, the minimum values for each of the six (06) selected variables represent the smallest or the least value in the data set given in this study. Similarly, the maximum represents the largest values for each of the six (06) selected variables. In statistics, the mean or average refers to the mean that is used to calculate the central tendency of the data set given. It is calculated by adding all the twenty (20) data points in the population and then dividing the total by the number of data points.

In finance, standard deviation is fundamentally used to measure volatility of investments and variables as is the case here were the study wishes to understand how each of the variables individually and jointly cause variability on stock market performance at the Lusaka Stock Exchange in Zambia.

The analysis in the table above, therefore, assisted the research to further understand how the five (05) selected macro-economic variables influence and cause volatility or variability on the Lusaka Stock Exchange in Zambia. This way, the researcher concluded that money supply causes the highest variability in stock market performance followed by the Index of Industrial Production, Interest Rates, GDP growth rates and then exchange rates each with standard deviations of 2,381.02, 52.72, 9.04, 2,38 and 2.32, respectively.

5.4 Correlation Analysis

Table 5.3 Correlation Analysis

Correlations

			Stock market indices	Exchange Rates against US dollar	Interest Rates (%)	GDP Growth Rates (%)	Index of Industrial Production	Money Supply (K'Million)
Stock market indices	Pearson Correlation	1	.549*	-.569**	.404	.876**	.767**	
	Sig. (2-tailed)		.012	.009	.077	.000	.000	
	N	20	20	20	20	20	20	20
Exchange Rates against US dollar	Pearson Correlation	.549*	1	-.309	-.193	.746**	.896**	
	Sig. (2-tailed)	.012		.184	.414	.000	.000	
	N	20	20	20	20	20	20	20
Interest Rates (%)	Pearson Correlation	-.569**	-.309	1	-.402	-.621**	-.449*	
	Sig. (2-tailed)	.009	.184		.079	.003	.047	
	N	20	20	20	20	20	20	20
GDP Growth Rates (%)	Pearson Correlation	.404	-.193	-.402	1	.307	-.047	
	Sig. (2-tailed)	.077	.414	.079		.188	.843	
	N	20	20	20	20	20	20	20
Index of Industrial Production	Pearson Correlation	.876**	.746**	-.621**	.307	1	.910**	
	Sig. (2-tailed)	.000	.000	.003	.188		.000	
	N	20	20	20	20	20	20	20
Money Supply (K'Million)	Pearson Correlation	.767**	.896**	-.449*	-.047	.910**	1	
	Sig. (2-tailed)	.000	.000	.047	.843	.000		
	N	20	20	20	20	20	20	20

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Research Findings (2018).

Correlation analysis is used to establish if there exists relationship between two variables which lies between (-) strong negative correlation and (+) perfect positive correlation. In this study, Pearson correlation was used to analyse the level of association between stock market indices and the independent variables for the study (interest rates, exchange rates, GDP Growth rate, Index of industrial production and Money supply).

From the correlation analysis, the study shows the existence of a strong positive correlation between exchange rate and stock market ($p < .549$, $p = .012$) this goes to show that the prevailing of exchange rates in a country have a positive association with stock market returns and the association is significant. Relationship between interest rate and stock market was found to be strong but negative ($p = -.569$, $p > .009$). This implies that movements in interest rate are negatively correlated to stock market and in a significant manner respectively.

Study also shows that there exists a weak but positive correlation between GDP growth rate and stock market ($p = .404$, $p < .077$). This shows that GDP growth rate has a weak positive association with stock market although the association is not significant. The study shows also that there exists a strong correlation between index of industrial production and stock market ($p = .876$, $p > .000$) this shows that index of industrial production has a positive association with stock market and the association is very significant. As for money supply, the study shows that there is a strong correlation with stock market indices ($p > 0.000$ and $p = 0.767$) as shown in table 5.3 above.

5.4.1 Comment on Multicollinearity

Multicollinearity occurs in a situation where two or more explanatory variables in a multiple regression model are highly linearly related. For example, we may have perfect multicollinearity if and only if in the model used by the researcher above, the correlations between two independent variables is equal to 1 or -1. Although the independent variable had some association with each other, the association was, however, neither too strong nor too significant to cause multicollinearity as most of the R-values for the selected independent variables were less than 1. This, therefore, goes to show that there was no multicollinearity among the independent variables. As such, the variables could be used as determinants of stock market performance at the Lusaka Stock Exchange in regression analysis.

5.5 Regression Analysis

Stock market indices were regressed against five predictors variable; money supply, GDP Growth Rate, interest rate, Exchange rate against US dollar and index of industrial production. The regression analysis was undertaken at 5% significant levels. The critical value obtained from F-value table was compared with one of the table obtained from regression analysis. The results are shown in the model summary in table 5.4 below.

5.5.1 Regression Analysis for Interest Rates

Table 5.4 Model Summary for Interest Rates

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.569 ^a	.324	.287	1155.77508
a. Predictors: (Constant), Interest Rates (%)				

Stock market indices were regressed against interest rates at 5% significance levels or 95% confidence levels. The results revealed an R Square of 0.324, which quite simply shows that, interest rates individually influence stock market performance or variation at the Lusaka Stock Exchange in Zambia by up to 32.40%.

5.5.2 Regression Analysis for Exchange Rates

Table 5.5 Model Summary for Exchange Rates

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.549 ^a	.301	.263	1175.10300
a. Predictors: (Constant), Exchange Rates against US dollar				

Stock market indices were regressed against exchange rates at 5% significance levels or 95% confidence levels. The results revealed an R Square of 0.301, which quite simply shows that, exchange rates individually influence stock market performance or variation at the Lusaka Stock Exchange in Zambia by up to 30.10% as shown in table 5.5 above.

5.5.3 Regression Analysis for GDP Growth Rates

Table 5.6 Model Summary for GDP Growth Rates

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.404 ^a	.163	.117	1286.03365
a. Predictors: (Constant), GDP Growth Rates (%)				

Stock market indices were regressed against GDP Growth rates at 5% significance levels or 95% confidence levels. The results revealed an R Square of 0.163, which quite simply shows that, GDP Growth rates individually influence stock market performance or variation at the Lusaka Stock Exchange in Zambia by up to 16.30% as shown in table 5.6 above.

5.5.4 Regression Analysis for Index of Industrial Production

Table 5.7 Model Summary for Index of Industrial Production

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.876 ^a	.768	.755	677.37541
a. Predictors: (Constant), Index of Industrial Production				

Stock market indices were regressed against Index of Industrial Production at 5% significance levels or 95% confidence levels. The results revealed an R Square of 0.768, which quite simply shows that, Index of Industrial Production individually influences stock market performance or variation at the Lusaka Stock Exchange in Zambia by up to 76.80% as shown in table 5.7 above.

5.5.5 Regression Analysis for Money Supply

Table 5.8 Model Summary for Money Supply

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.767 ^a	.589	.566	901.75387
a. Predictors: (Constant), Money Supply (K'Million)				

Stock market indices were regressed against money supply at 5% significance levels or 95% confidence levels. The results revealed an R Square of 0.589, which quite simply shows that, money supply influences stock market performance or variation at the Lusaka Stock Exchange in Zambia by up to 58.90% as shown in table 5.8 above.

5.5.6 Regression Analysis for the Joint Selected Independent Variables

Table 5.9 Joint Model Summary for All the five (5) Selected Independent Variables

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.905 ^a	.819	.754	679.02390	1.616

a. Predictors: (Constant), Money Supply (K'Million), GDP Growth Rates (%), Interest Rates (%), Exchange Rates against US dollar, Index of Industrial Production

b. Dependent Variable: Stock market indices

Source: Research Findings (2018)

Stock market indices were regressed against five predictor variables namely; money supply, GDP Growth Rate, interest rate, Exchange rate against US dollar and index of industrial production. The regression analysis was undertaken at 5% significant levels. The critical value obtained from F-value table was compared with one of the table obtained from regression analysis.

The results are shown in the joint model summary below. R squared, being our major coefficient of the determinant indicates the deviations in the response variable that is the result of changes in the predictor's variables. From the above table 5.9, the value of R square was 0.819, this shows that **81.9 percent** of the deviations in stock market indices at Lusaka Stock Exchange are jointly and collectively influenced and caused by changes interest rate, exchange rates, GDP Growth rate, money supply and index of industrial production while **18.1 per cent** are explained by other variables not included in this study.

The results show that there exist a strong relationship among the selected independent variables and the stock market as shown by the correlation coefficient (R) equals to

0.905. A Durbin-Watson statistic of 1.616 indicates that the variable residuals show that there were not serially correlated since there was more than 1.6 as shown in table 5.9 above.

5.5.7 Analysis of Variance

Table 5.10 Analysis of Variance

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	29120921.114	5	5824184.223	12.632	.000 ^b
	Residual	6455028.314	14	461073.451		
	Total	35575949.428	19			

a. Dependent Variable: Stock market indices

b. Predictors: (Constant), Money Supply (K'Million), GDP Growth Rates (%), Interest Rates (%), Exchange Rates against US dollar, Index of Industrial Production

The significant value is 0.000 which is less than $P=0.01$. This implies that the model was statistically significant in predicting how interest rate, GDP growth rate, Exchange rates, money supply and index of industrial production affect stock market indices at Lusaka Stock Exchange. Given 0.00% level of significant, critical value from the table is 2.91, table 5.10 above shows computed F-value as 12.632. This confirms that overall multiple regression models is statistically significant, it is suitable prediction model for explaining how the selected independent variables influence stock market performance at Lusaka Stock Exchange as shown in table 5.10 above.

5.5.8 Model Coefficients

Table 5.11 Model Coefficients
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-279.832	1775.568		-.158	.877
	Exchange Rates against US dollar	-224.004	163.594	-.380	1.369	.192
	Interest Rates (%)	-1.202	23.550	-.008	-.051	.960
	GDP Growth Rates (%)	149.085	123.133	.259	1.211	.246
	Index of Industrial Production	8.963	14.588	.345	.614	.549
	Money Supply (K'Million)	.461	.347	.802	1.328	.205

a. Dependent Variable: Stock market indices

Source: Research Findings (2018).

Coefficients of determinant were used as indicators of the direction of the relationship between money supply, exchange rates, interest rate, GDP growth rate and Index of production at the Lusaka Stock Exchange. The p-value under sign. Column was used as an indicator of the significance of the relationship between the dependent and the independent variables. At 95% confidence level, a p-value was less than 0.05 was interpreted as a measure of statistical significance. Such that the p-value was above 0.05 indicates a statistical significant relationship between the independent variables and dependent variables. The results are shown in the table above 5.11.

From the above results, it's evident that interest rate is insignificant determinant of stock market as indicated by a p-values that is greater than 0.05. Exchange rates, money supply, GDP growth rate and index of industrial production indicates that p-value i=was significant at 0.05 respectively.

The following regression equation was used to estimate:

$$Y = -279.832 - 224 X_1 - 1.202 X_2 + 149.085 X_3 + 8.963 X_4 + 0.461 X_5$$

Y= Annual All Lusaka Stock Exchange Stock market Indices as measured by the Lusaka Stock Exchange.

X₁ = Annual average interest rates as measure by the Bank of Zambia lending rate.

X₂ = Annual money supply as measured by BOZ

X₃ = Annual average exchange rates measured against the U.S dollar as measured by BOZ

X₄= Annual Gross Domestic Product (GDP) growth rate as measured by Central Statistical Office.

X₅ = Annual Index of Industrial Production as measured by Central Statistical Office

ϵ = error term.

The estimated regression model above shows that the constant=-279.832 this show that if the selected dependent variable (Interest rate, exchange rate, GDP Growth rate, money supply and index of industrial production) were related to zero, stock market would be -279.832. A unit decrease in interest rate would lead to an decrease in stock market by -1.202 while a unit increase in exchange rate, GDP Growth rate, index of industrial production and money supply would lead to an increase in stock market by 149.085, 8.963 and 0.461 respectively.

5.6 Discussion of Research Findings

The study sought to determine the factors affecting stock market performance in Zambia particularly Lusaka Stock Exchange. The independent variables were interest rate, exchange rates, money supply, GDP growth rate and index of industrial production as measured by BOZ and CSO annually. Stock market index was the dependent variable and it was measured by Lusaka Stock Exchange annually (All Lusaka Stock Exchange Share Index). The effect of the independent variables on the dependent variable was analysed in terms of strength and directions.

Pearson correlation coefficient between the variables revealed the existence of a weak negative correlation between interest rate s and stock market index ($p=0.01$, $p<0.569$). This goes to show that prevailing interest rate in Zambia have a negative association with stock market index and that association is significant. The relationship between Exchange rate and stock market performance was found to be strong and positive ($p=0.549$, $P>0.012$). This implies that movement in exchange rate is positively correlated to stock market and in significant manner. Study also shows that there exists a weak positive correlation between GDP growth rate and stock market

performance ($p=.404$, $p<.077$). This shows that GDP growth rate has weak positive association with stock market performance but the association is not significant. The study shows also that there exists a strong correlation between index of industrial production and stock market ($p=.876$, $p>.000$) this shows that index of industrial production has a positive association with stock market performance and the association is significant. The study further shows that Money supply has a positive association with stock market index of 0.767 and that the association is significant.

5.6.1 Hypothesis Statements Tests and Findings

Our research study had a number of hypothesized which were done at 95 and 99 percent confidence levels. The hypothesis tests were done using the p-value. At 95 percent confidence, if p-value is less than 0.05, we reject the null hypothesis and accept the alternative hypothesis, that is if $P < 0.05$ reject H_0 and accept H_a . At 99 percent confidence, if p-value is less than 0.01, we accept the null hypothesis and reject the alternative hypothesis, that is if $P < 0.01$ accept H_0 and accept H_a .

The hypothesis for stock market indices are as follows;

a) Interest rates

Null Hypothesis (H_0): Interest rates have no negative influence on the stock market performance in Zambia.

Alternative Hypothesis (H_1): Interest rates have a negative influence on the stock market performance in Zambia.

The Pearson correlation between stock market indices and interest rates is -0.569. This goes to show that interest rates have a strong negative association with stock market performance and the association is statistically significant. As such, we reject the H_0 and accept H_1 .

b) Exchange rates

Null Hypothesis (H_0): Exchange rates have no negative influence on the stock market performance in Zambia.

Alternative Hypothesis (H_1): Exchange rates have a negative influence on the stock market performance in Zambia.

The pearson correlation between stock market indices and exchange rates is 0.549. This goes to show that exchange rates have a strong positive association with stock market performance and the association is statistically significant. As such, we accept the H_0 and reject the H_1 .

c) Money Supply

Null Hypothesis (H_0): Money supply has no negative influence on the stock market performance in Zambia.

Alternative Hypothesis (H_1): Money supply has a negative influence on the stock market performance in Zambia.

The pearson correlation between stock market indices and money supply is 0.767. This goes to show that money supply has a strong positive association with stock market performance and the association is statistically significant. As such, we accept the H_0 and reject the H_1 .

d) GDP Growth Rate

Null Hypothesis (H_0): GDP growth rate has no negative influence on the stock market performance in Zambia.

Alternative Hypothesis (H_1): GDP growth rate has a negative influence on the stock market performance in Zambia.

The pearson correlation between stock market indices and GDP growth rates is 0.404. This goes to show that GDP growth rates have a weak positive association with stock market performance and the association is not statistically significant. As such, we accept the H_0 and reject the H_1 .

e) Index of Industrial Production (IIP)

Null Hypothesis (H_0): Index of Industrial Production has no negative influence on the stock market performance in Zambia.

Alternative Hypothesis (H₁): Index of Industrial Production has a negative influence on the stock market performance in Zambia.

The Pearson correlation between stock market indices and Index of Industrial Production is 0.876. This goes to show that Index of Industrial Production has a strong positive association with stock market performance and the association is statistically significant. As such, we accept the H₀ and reject the H₁.

5.7 Addressing the Research Questions and Objectives of the Study

In chapter one of this study, the researcher developed three research questions with three corresponding research objectives. Accordingly, the researcher did the following work in order to achieve the objectives;

Firstly, in order to establish the effects of money supply on stock market performance in Zambia, the researcher performed correlation analysis in SPSS which produced a Pearson correlation of 0.767. Further to this, the researcher regressed stock market indices against money supply. This produced an R square of 0.589 which represents that money supply, individually, influences stock market performance in Zambia by 58.90%. This goes to show that money supply is significantly positively correlated to stock market performance and a unit increase in money supply will cause an increase in stock market performance by 0.461.

Secondly, in order to determine the nature of the relationship between exchange rates and stock market performance in Zambia, the researcher performed correlation analysis in SPSS which produced a Pearson correlation of 0.549. Further to this, the researcher regressed stock market indices against money supply. This produced an R square of 0.301 which represents that exchange rates, individually, influence stock market performance in Zambia by 30.10%. This goes to show that exchange rates are significantly positively correlated to stock market performance. However, a unit decrease in exchange rates will cause a decrease in stock market performance by -224.004 as shown by the model coefficients.

Thirdly, in order to determine the influence of interest rates on stock market performance in Zambia, the researcher performed correlation analysis in SPSS which produced a Pearson correlation of -0.569. Further to this, the researcher regressed stock market indices against money supply. This produced an R square of 0.324 which

represents that interest rates, individually, influences stock market performance in Zambia by 32.40%. This goes to show that interest rates are significantly negatively correlated with stock market performance and a unit decrease in interest rates will cause a decrease in stock market performance by -1.202.

Fourthly, in order to determine the influence of the Index of Industrial Production on stock market performance in Zambia, the researcher performed correlation analysis in SPSS which produced a pearson correlation of 0.876. Further to this, the researcher regressed stock market indices against the Index of Industrial Production. This produced an R square of 0.768 which represents that index of Industrial production, individually, influence stock market performance in Zambia by 76.80%. This goes to show that exchange rates are significantly positively correlated to stock market performance. A unit increase in Index of Industrial Production will cause an increase in stock market performance by 8.963 as shown by the model coefficients.

Lastly, in order to determine the impact of GDP growth rates and stock market performance in Zambia, the researcher performed correlation analysis in SPSS which produced a pearson correlation of 0.404. Further to this, the researcher regressed stock market indices against money supply. This produced an R square of 0.163 which represents that GDP growth rates, individually, influence stock market performance in Zambia by 16.30%. This goes to show that exchange rates are positively correlated to stock market performance although the correlation is not statistically significant. Accordingly, a unit increase in GDP growth rates will cause an increase in stock market performance by 149.09 as shown by the model coefficients.

5.8 Theoretical, Empirical and Practical Implications of the Findings of the Study

The over-arching finding here was that interest rates have a strong and negative influence on stock market performance in Zambia. This finding is theoretically supported by Ross (1976) who developed the Arbitrage Pricing Theory and stated that stock markets would register a greater response in the short run since interest rates significantly influence the stability of financial markets as they have the ability to affect the asset prices and also the returns.

Further to this, Shresha & Subedi, (2015) state that interest rates influence the discount rates and future dividends of asset prices and this eventually affects the value of

investments that investors are able to make on stock markets because different individuals have different portfolio of investments with their specific systematic risk.

Accordingly, the Austrian or Agio Theory also termed as psychological theory of interest, advocated by John Rae and Bohm Bawerk argue that interest came into existence because present goods are preferred over future goods because they have a premium in them in form of interest and hence provide a greater satisfaction than future goods.

According to Barnor (2014), from the point of view of the firm, borrowing money to finance working capital or other capital expenditure is likely to drive up the cost of debt. This may hurt company profits, earnings and dividends for owners of the business. Consequently, it would be expected that the share price may gradually drop. Higher rates of interest reduce the present value of future dividends income, which should bring the stock prices down. As such, high-yielding fixed income securities may tend to be more attractive and relatively safer to investors than equities.

It can therefore be deduced from that interest rates as a macro-economic factor has a significant negative influence on stock market securities and assets. As such, the value of a security or asset can be described as a total of the expected return and any unexpected returns on the asset (Cuthbertson, 2004).

The findings of this study agree with a study undertaken by Otieno et al. (2017) in their study on the effects of Interest Rate on Stock Market Returns in Kenya explained that the debate on the stochastic behaviour of stock market returns, 3-month Treasury Bills rate, lending rate and their co-integrating residuals remain unsettled. The results indicated that the 3-month Treasury Bills rate negatively Granger cause stock market returns in the long run. This suggests that stocks and Treasury Bills are competing investment assets. On the other hand, ARFIMA-based Granger causality revealed that stock market returns lead the 3-month Treasury Bills rate and lending rate with a negative sign in the short run. This implies that a prosperous stock market results into a favourable macroeconomic environment. A key contribution of their study was that it was the first to empirically examine fractional co-integration and ARFIMA-based Granger Causality between interest rate and stock market returns in Kenya.

However, this study is not in agreement with (Oloo, 2017), who found out in her study that interest rates have positive association with stock market returns at the Nairobi

Stock Exchange and that interest rates are not a significant determiner of stock market returns while inflation rate and exchange rates are statistically significant determiners of stock market returns. The three variables explained 11.3 % of the variations in stock market returns at the Nairobi Stock Exchange while 88.7% was caused by other factors not covered in her study.

5.9 Chapter Summary

The model summary revealed that the independent variable; Exchange rates interest rate, GDP Growth rate, money supply and index of industrial production explains 81.9% of changes in dependent variable as indicated by the value of R square. That is to say, 81.9% of the deviations and variations on Lusaka Stock Exchange in Zambia are influenced and caused by the five (05) selected independent variables.

The model summaries also show that individually, interest rates, exchange rates, GDP growth rates, Index of Industrial Production and money supply, influence stock market performance by 32.40%, 30.10%, 16.30%, 76.80% and 58.90%, respectively. Additionally, the study reveals that interest rates (-0.569) are significantly negatively correlated with stock market performance while money supply (0.767), exchange rates (0.549) and index of industrial production (0.876) are significantly positively correlated with stock market performance. However, GDP growth rates revealed a weak positive correlation of 0.404 with stock performance.

The model was, therefore, found to be fit at 95% levels of confidence interval since the F-values of 12.632 is higher than the critical values. This implies that the overall multiple regression models are statistically significant, in the sense that it suits the prediction model for explaining the stock market performance at Lusaka Stock Exchange.

CHAPTER SIX: SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter summarises the findings of the previous chapter, conclusion, limitations encountered during the study. This chapter also elucidate some policy recommendations that policy makes can implement to achieve the expected stock market return at the Lusaka Stock Exchange. Lastly the chapter will present suggestion for further research which can be useful for future researchers.

6.2 Summary of Findings

The study sought to investigate the factors affecting stock market performance in Zambia. The independent variables for the study were interest rates, exchange rates, money supply, GDP Growth rate and index of industrial production. The study adopted a descriptive research design. Secondary data was obtained from BOZ, Lusaka Stock Exchange and CSO and was analysed using SPSS software version 23. The study used annually data covering a period of 20 years from 1998 to 2017.

The coefficient of the determinant R-square value was **0.819** which means that about **81.9% percent** of the variation by stock market are jointly influenced and caused by the selected independent variables while 18.1% of the variations in stock market performance at the Lusaka Stock Exchange are caused by other factors not covered in this study. The study also found out that independent variables had a weak correlation with stock market at Lusaka Stock Exchange ($R=0.905$). ANOVA results show that the F statistic was significant at 5% levels with a $P=12.632$. Therefore the model was fit to explain the relationship between the selected variables.

6.3 Conclusion

From the study findings, the study concludes that stock market performance at Lusaka Stock Exchange has a statistically strong negative association with interest rates. The study also found that exchange rates have a weak positive association with stock market performance. On the other hand money supply was found to have a positive association with stock market performance although not statistically significant. The study also found that GDP growth rate had a positive correlation with stock market in Zambia therefore concludes that higher GDP growth rate would lead to higher stock market performance. Index of industrial production was also found out to be positively related to stock market and therefore an increase in industrial production would increase stock market performance.

6.4 Recommendations

This study recommends that there is need for the central bank to regulate the interest rates levels prevailing in the Zambia bearing in mind that they significantly and negatively influence stock market performance. Further, in order to encourage investors to invest on Zambian stock markets, the Bank of Zambia ought to come up with deliberate and favourable monetary policies that will see investors and firms participating in the buying and selling of stocks.

This way, we will be able to achieve higher capital market growth, development as well better performance. Admittedly, this will result in economic growth and a more stable financial system in Zambia the study found out that interest rates and exchange rates have negative relationship with stock market at the Lusaka Stock Exchange. Fundamentally, this may also lead to improved financial reporting, improved corporate governance, lower transaction costs, higher liquidity, less dependence on volatile commodities such as copper and less political interference.

The Zambian economy continues to thrive since the liberalization of its economy during the Chiluba regime of the MMD Government in the 1990s. Consequently, with an optimistic economy, stable macro-economic environment, not to mention a stable political environment, Zambia is therefore poised to become an investor's destination of choice. With this in mind, it is imperative that our capital markets keep achieving financial growth and also introduce new products. Such new products could be those that can be listed on the exchange markets such as Exchange Traded Funds (ETFs). Other products may include Mutual Funds, Hedge Funds, investment-linked schemes, paper gold schemes and private equity.

Further, with Zambia being one of the world's leading producers of minerals such as copper and also has consistently produced bumper harvests in maize, cotton and tobacco, it is important that in order to achieve real financial growth, corporation between government and the private sector may be inevitable so as to introduce Commodity Markets and Commodity Derivatives where products such as copper, maize, cotton and tobacco can be traded.

6.5 Limitations of the Study

The scope of this research was based on a 20 years period from 1998-2017. The study sought to determine if the results would hold for a longer study period. Furthermore it is uncertain whether similar findings would result beyond 2017. A longer study period

is more reliable as it will take into account major economic conditions such as booms and recessions.

One of the limitations of the study is the quality of the data. It is difficult to conclude from this research whether the findings present the true fact about the situation. The data that has been used is only assumed to be accurate. The study utilized secondary data, which had already been obtained and was in public domain, unlike the primary data which is first-hand information. The measures used may keep on varying from one year to another subject to prevailing condition. For data analysis purposes, the researcher applied a multiple linear regression model. Due to the shortcoming involved when using regression models such and misleading result when the variable values change, the research cannot be able to generalize the findings with certainty, if more and more data is added to the functional regression model.

6.6 Suggestions for Further Research

The study focused on stock market performance and macro-economic factors of interest rates, GDP growth rate, money supply, exchange rates and Index of Industrial Production. The study was a mainly a desk research and relied on secondary data. A research study where data collection relies on primary data such as in-depth interviews and questionnaires is recommended to compliment this study.

Admittedly, this study was not exhaustive of the independent variable affecting stock market performance at the Lusaka Stock Exchange and this study recommends that further studies be incorporate other variable like Foreign Direct Investment, Inflation, management efficiency, political stability and other macro-economic variables. Establishing the factors affecting each variable on stock market at Lusaka Stock Exchange will enable policy makers to know what tool to be used when controlling returns.

The study concentrated on the last 20 years because it was the most consistent and available data. The study limited itself by focusing on the Lusaka Stock Exchange, BOZ and CSO. Due to shortcoming of regression analysis model, other models such as vector Error Correction Model (VECM) or the Granger causality model can be used to explain the various relationships between variable and robust methods.

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APPENDICES

Appendix i: Research Data

Year	Stock market indices	Exchange Rates against US dollar	Interest Rates (%)	GDP Growth Rates (%)	Index of Industrial Production	Money Supply (K'Million)
1998	158.85	2.26	37.4	2.6	75.9	197
1999	181.43	2.58	42.8	2.9	66.5	251
2000	305.28	4.08	37.5	3.0	100.0	331
2001	303.41	3.79	48.7	3.1	105.1	432
2002	334.75	4.70	36.0	3.3	103.0	481
2003	431.97	4.54	15.8	5.1	113.0	671
2004	765.75	4.62	18.3	5.0	122.9	829
2005	1240.22	4.81	35.0	6.9	133.2	964
2006	1837.61	3.60	29.0	7.9	144.7	1226

2007	3533.52	4.00	25.0	8.4	153.6	1515
2008	2505.88	4.88	26.7	7.8	161.2	1934
2009	2794.89	4.67	29.2	9.2	171.0	2001
2010	2143.95	4.74	26.4	10.3	187.5	2750
2011	2504.99	5.12	24.0	6.0	198.0	3408
2012	2367.97	5.21	16.1	7.6	208.0	3843
2013	3368.71	5.54	16.4	5.1	222.0	4601
2014	4710.24	6.46	20.5	5.0	220.0	5728
2015	3224.82	10.84	25.8	3.2	215.7	6450
2016	2252.04	9.84	29.5	3.4	218.7	6554
2017	3224.82	10.00	26.5	4.0	223.9	7315

Sources:

- 1. Bank of Zambia (Annual Interest Rates, Money Supply and Exchange Rates).**
- 2. Lusaka Stock Exchange (Annual Stock Market Indices).**

3. Central Statistical Office (Annual GDP Growth Rates and Index of Industrial Production).