EFFECT OF INTEREST RATES ON SECURITY MARKET PRICES IN THE NAIROBI SECURITIES EXCHANGE

BY

AKOTH TERESA SIMBA

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DECLARATION

This research project is my own original work and has not been presented for Academic Credit or award to any other university.

Signed:…….. Date:…….

Name: Akoth Teresa Simba

Reg No. D61/73616/2014

This research project is submitted for examination with my approval as the designated university supervisor.

Signed:…….. Date:…….

Mr. Barasa, Joseph L.

Lecturer

School of Business, University of Nairobi

DEDICATION

This project is dedicated

To

My dear husband

Joseph Odhiambo Omollo

(Your support was invaluable; you stood with me during this journey)

And

To my lovely children

Jakes Grant Otieno

Ken' Hillary Omollo

Daisy Akinyi Odhiambo

(That you may excel beyond this)

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ABSTRACT

Literature documents contradictory and inconclusive findings on the relationships between stock market prices and various macro-economic variables including interest rates. This time series study sought to establish the effect of interest rates on stock market prices at the Nairobi Stock exchange. Secondary data for this study especially on interest rates and stock market indices were collected for a period of 5 years from June 2009 up to June 2015. The study applied correlation and regression analysis and found that variations in the four variables namely lending rates, deposit rates, interest rate spreads and Treasury bill rates contribute to 32.6% of variations in the NSE 20 shares and 44.9% of variations in the NASI respectively. The study established that there was a significant relationship between lending rates, interest rate spreads, Treasury bill rates and term deposit rates with NSE 20 share index and NASI respectively. The study also, established that there is a positive relationship between NASI and lending rates as well as term deposit rates and a negative relationship between NASI and Treasury bill rates as well as interest rate spreads. Further, it was noted that NSE 20 had a positive relationship with term deposit rates as well as lending rates and negative relationship with interest rate spreads and Treasury bill rates. It is therefore recommended that government policy should focus on interest rates attributes to stimulate stock market activities and performance.

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LIST OF ACRONYMS

ANOVA	Analysis of Variance
ASI	All Share Index
BSV	Barberis, Shleifer and Vishny Model
CBK	Central Bank of Kenya
DHS	Daniel, Hirshleifer, and Subrahmanyam Model
GNP	Gross National Product
NSE	Nairobi Securities Exchange
SPSS	Statistical Package for Social Sciences
USA	United States of America

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In any given economy, the growth and prosperity of the financial markets is key to attaining economic growth. Financial markets offer avenues for financial intermediation between investors and firms that need capital. Stock markets are a form of financial markets that provide opportunities for investment savings to individuals and corporate organizations. Stock markets catalyze growth in the economy through promoting diversification, enhancing savings mobilization and pooling of resources from different investors (Olweny & Kimani, 2011). Stock markets offer sources of finance and capital to organization and firms seeking resources to expand or finance their operations. On the other hand, stock markets offer opportunities for returns to investors, avenues for savings as well as enhancing diversification for investors (King & Levine, 1993).

All around the world, stock markets are a critical component of financial growth and development. Theoretical and empirical evidence available shows that stock markets are an integral part of economic growth and development. Scholars such as King and Levine (1993), Shaw (1973), Bagehot (1873) have all found evidence of the critical importance of stock markets in economic growth. Summarized, stock markets enhance economic growth through: new investment channels, promoting liquidity in the market and providing avenues for securities valuation and management.

Despite the importance of stock markets, there a variety of factors that influences the performance of stock markets and essentially its contribution to economic growth and development. Interest rates are one of the major factors that influence the performance of stock markets. Changes in the interest rates lead to fluctuations in the value of listed stocks and therefore the value of the firm. Changes in interest rates affect the expected future cash flows, the discount rates and the total valuation of the company using the fundamental analysis approach (Hahm, 2004). In addition, interest rates changes lead to interest rates risk the second most important risk factor that influences stock valuation (Graham & Harvey, 2001).

1.1.1 Interest Rates

Keynes (1936), one of the earliest scholars on interest rates defined it as the cost associated with borrowing capital for a specified period of time. Devereux and Yetman (2002), defined interest rates as the price a borrower pays for using money or capital they do not own. Interest rates are normally determined by the supply and demand function of capital. In addition, interest rates in any given economy are determined by the monetary policy of the country. When there is a high demand for capital the interest rates go up. On the other hand, low demand for capital will lead to lower levels of interest rates. However, the government in its monetary policy can seek to increase or reduce the interest rates with the aim of achieving set macro-economic targets. For example in times of high inflation, the government may raise the interest rate to reduce money supply.

Interest rates are key to stock market performance. Any movements in interest rates will have an effect on the stock market prices due to the substitutability of deposit rates and stock market returns. In cases where the interest rates on risk free government securities or deposits rises, then the demand for equity securities is lower while decrease in interest rates on government securities and deposits will lead to increase in stock market activity (Zafar, Urooj & Durrani, 2008).

1.1.2 Stock Market Prices

Stock market prices refer to the total value of shares listed in a stock exchange (Masila, 2010). According to Kitati, Evusa and Maithya (2015) the stock price is reflective of the present value of the future cash flows of the company. The share price denotes the price of one unit of ownership of stock in a company. The summation of the total value of stocks of a company denotes the value of the company. The total value of all companies listed in the stock exchange is referred to as total market capitalization (Mun, Siong & Thing, 2008).

Developed stock exchanges have over 200 companies listed in the exchange. This implies that monitoring of individual stock prices for research and decision making is very challenging. Consequently, researchers and policy makers use a variety of tools known as market indexes that reflect movements of stock market prices and value (Kitati, Evusa & Maithya, 2015). Stock market indices provide crucial information on the performance of stock exchanges and movements in stock prices in an accurate, rapid and flexible manner (Zingales, 2001). Chakrapani *et al.,* (2011) note that modern economists and decision makers rely on the use of stock market indices to conduct research, monitor and evaluate

the movement of stock prices as well as evaluate the returns on stock markets. Humpe & Macmillan (2009) noted that to stock market prices are important tools to track movements and fluctuations in stock market prices.

There are various types of stock market indices that are used to track stock market prices. There are the price weighted indices which contains all the stocks listed in an exchange appropriately weighted such as the All Share Index and Dow Jones Industrial Average, the value weighted index which is calculated by taking into consideration the total weight of the index compared to the total value e.g. the S & P 500 index, the NSE 20 Share Index and the equally weighted index which utilizes the change in stock price to an equal weight. This is also referred to as the unweighted market index (Hsing, 2004).

Stock market indices despite their differences in computation are important tools in tracking and monitoring stock market prices. This is because stock market indices are easy to understand, easy to compute and easy to interpret (Hsing, 2004).

1.1.3 Effect of Interest Rates and Stock Market Prices

Interest rates denote the cost of borrowing or cost of utilizing resources that are not owned by the firm (Bleaney*et al.,* 2001). Interest rates are important macroeconomic indicators that are closely monitored by policy makers and governments all around the world. Any movements in the levels of interest rates have an effect on overall economic performance as well as macro-economic stability (Barsky& DeLong, 1991).

Interest rates can be aptly defined as the price of securities and assets. It can be denoted as the expected rate of return or cost of acquiring finances from an investor (Aggarwal,

2010). Explained using the law of demand and supply and from an investor's point of view changes in the interest rates (returns) causes an increase in the demand for that specific asset while decline in the interest rates reduces the demand of that specific asset. In a stock market where prices of shares or stocks and the interest rates on bonds are substitutes, a movement in the bond prices or interest rates will have an effect on the levels of demand for stock leading to a decline in the stock prices.

Aggrawal (2010) clearly pointed out this in the examination of effect of interest rates on the performance of stock markets. In the study, Aggrawal (2010) noted that there was a significant effect on securities prices as a result of changes in the interest rates. Prices of individual stocks changed while overall stock market performance measured using a market index changed with a change in the interest rates. High interest rates in the market lead to a decline in the prices of stocks and overall returns of the stocks.

Tiwari (2012), Hamrita and Trifi (2011), Kim and In (2007) utilized a multi scaling approach in analyzing the effect of interest rates on stock market prices. In their respective studies conducted in different geographical regions, they all concluded that interest rates have an influence on stock market prices and total stock market value. Nevertheless, this effect is dependent on scale.

In an increasingly globalized economy, financial integration and increased in international trade, the debate and investigation of effect of interest rates on stock prices is very key (Chirchir, 2012). The financial economy has today become well integrated and connected. Consequently, firms have cross listed in various stock exchanges within and outside geographical boundaries. Furthermore, an increase in foreign investment and

foreign traders in stock markets imply that changes in interest rates within and outside any geographical boundary has an effect on the stock prices of listed securities. For example when interest rates in countries such as United Kingdom and United States of America rise and where Kenya sources most of its foreign investors, the increase in the foreign interest rates is bound to have an effect on the stock prices in the Nairobi Securities Exchange.

Amarasinghe (2015) investigated the dynamic relationship existing between interest rates and stock prices in the Colombo Stock Exchange. Amarasinghe (2015) found that interest rates had a significant effect on the stock prices and stock returns. Further, the study found that an negative relationship exists between the interest rates and the stock market prices measured using a stock market index the ASPI. Consequently, Amarasinghe (2015) argued that increases in interest rates results to decline in the prices of stock and asset prices listed in the stock exchange. On the other hand, reduction in the interest rates lead to an increase in the stock prices for securities and shares listed in the stock exchange.

1.1.4 Nairobi Securities Exchange

The Nairobi Securities Exchange was established in the 1920's an informal market for the trading and exchange of stocks and securities (NSE, 2015). It evolved into a voluntary members organization in the 1950's where trading was dominated and restricted to elite Africans, Asians and the Europeans. The NSE has consequently evolved over the years, overcoming market confidence challenges in the 1970's and transformation in the 1990's to one of the best performing stock exchanges in Africa. The exchange has been lauded

for innovation, automation of trading, electronic clearance and implementation of information management systems which has enhanced trading at the bourse (NSE, 2015).

The NSE has two major markets: the equities and the bonds market. The equities market deals with the trading of shares and equities of companies. Common stock and ordinary shares are traded in the equities markets of the NSE. Equities are listed in the NSE based on 11 counters or segments namely: Agricultural, construction and allied, automobiles and accessories, commercial and services, banking, energy and petroleum, investment services, insurance, manufacturing and allied, telecommunication and technology and growth enterprise market. In total there are 64 companies listed at the NSE. In the bonds market, the trading of bonds and bills is undertaken. Corporate bonds, treasury bonds and treasury bills are traded in this market segment. In addition, commercial papers are also traded. Nevertheless, treasury bills and bonds dominate this market segment (NSE, 2015). There are three major stock market indices that monitor and track the movement of prices in the NSE: the NSE All Share Index, the NSE 20 Share Index and the Financial Times Stock Exchange (FTSE) NSE index Series.

There have been intense studies on the NSE. Studies on the effect of interest on stock prices in the NSE are also available locally. Stock prices listed at the Nairobi Securities Exchange have often reacted to changes in the interest rates as a result of the Central Bank of Kenya (CBK) monetary policy. Olweny and Kimani (2011) noted that in the short run, changes in the Central Bank Rate, a key monetary policy tool did not have any short term effects on the stock market Prices.

1.2 Research Problem

Interest rates are a statistical measure of the cost of acquiring funds, using resources or borrowing funds from someone else or a different entity (Bleaney *et al.*, 2001). They are a commonly and very useful macroeconomic tool using by Central Banks and governments to achieve macroeconomic stability and goals.

Stock prices refer to the cost of acquiring ownership in a company listed in a public securities or stock exchange. It refers to the cost of acquiring a unit share of ownership in a company. Kitati, Evusa and Maithya (2015) noted that stock prices are reflection of the present value of the future cashflows of any company.

The relationship between interest rates and the movement of stock market prices has been rigorous tested around the world. Kasman, Vardar &Tunc (2011) found that there exists a negative relationship between the levels of interest rates, stock market prices and returns. Increases in interest rates have a negative effect on the stock market prices. On the other hand, reduction in interest rates often stimulates the prices of stock markets and shares as demand increases.

Chirchir (2012) on the other hand, concluded that no significant relationship exists between the interest rates and share prices in the Nairobi Securities Exchange. Chirchir noted that interest rates did not have any significant effect on the share prices listed and trading in the Nairobi Securities Exchange. However, Chirchir utilized a causality analysis approach in data analysis using monthly average stock prices and interest rates. Muriuki (2014) contradicts the findings of Chirchir (2012) in his study on the effect of interest rates on stock market prices. Muriuki (2014) utilized an OLS regression analysis

and found a positive significant relationship between interest rates and stock market prices using nominal interest rates. Contradictory findings on the actual effect of interest rates on stock market prices using the same data set but different methodologies raise generalization challenges.

Amarasignhe (2015) utilized a granger causality test in Sri Lanka and found that there exists a negative relationship between the interest rates and stock prices of listed companies. Humpe and Macmillian (2007) investigated the relationship between interest rates and stock prices using stocks listed in the USA and found that there exists a negative relationship between interest rates and stock market prices. This is similar to the findings of Howe and Hamzah (2004) in Singapore, Ratanapakorn and Sharma (2007) in the United States and Alam and Uddin (2009) who utilized a sample of 15 countries located in developed and developing economies but still identified a negative relationship between stock prices and interest rates.

Consequently, the literature above points to contradictions and lack of conclusive evidence on the actual impact of interest rates on stock market prices. In the international and strong form efficient markets, contradictions exists (Bleaney *et al.,* 2001; Ratanapakorn & Sharma, 2007; Kasman, Vardar &Tunc, 2011). In semi strong and weak form efficient markets contradictions still exists (Amarasignhe, 2015; Alam & Uddin, 2009; Hamzah, 2004). Even in Kenya contradictions still exists (Chirchir, 2012; Muriuki, 2014). While some of the contradictions could be based on the choice of interest rates used, very few scholars have utilized a multi-interest rates framework to analyze the impact of various rates on stock market prices. This leaves scholars, readers and the

general public at a loss on the actual effect of interest rates on stock market prices. What is the actual effect of movements in interest rates on securities prices in the NSE? This is the question that the study sought to answer.

1.3 Research Objectives

1.3.1 General Research Objective

To investigate the effect of interest rates on stock market prices at the Nairobi Securities Exchange.

1.3.2 Specific Research Objectives

The objectives of the study are to:

1 Examine the effect of Treasury bills rates on stock market prices in the NSE

2 Analyze the effect of lending rates on the relationship between treasury bill rates and stock market prices in the NSE

3 Investigate the effect of deposit rates on the relationship between treasury bill rates and stock market prices in the NSE

4 Examine the effect of spread on the relationship between treasury bill rates and stock market prices in the NSE

1.4 Value of the Study

This study contributes to existing empirical evidence and literature for use by different stakeholders. Financial Analysis: This study addresses the question of effect of interest rates on stock market prices. Findings of this study aid financial analysis in making investment decisions as well as informing the investment decisions given the existing

macro-economic and monetary policy. Given expectations on interest rates in the country, financial analysts will inform their investment decisions and alter their portfolios to maximize returns. In addition, financial analysis utilizes knowledge from this study to inform advisory notes to their clients and investors.

Academicians: This study contributes to the existing body of knowledge on interest rates and stock market prices. Consequently, this study builds upon existing literature with the aim of filling the existing research gap. It is a source of knowledge. In addition, this acts as a building block upon which further analysis and studies will be premised upon.

Investors: Investors find this study very informative in making their portfolio decisions. Given the findings and knowledge of this study, investors would realign their investment portfolios to maximize returns given the existing monetary policy on interest rates.

Policy Makers: This study informs policy makers on the effect of monetary policy on stock market prices. Policy makers therefore inform their decisions and objectives on the knowledge contributed by this study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Chapter two reviews the existing literature on interest rates and stock market prices. The chapter highlights the theoretical review, the empirical review and theoretical studies on interest rates and stock market prices. The chapter sums up this with a summary of literature reviewed identifying existing gaps.

2.2 Theoretical Review

Theoretical review presents the relevant theories that seek to explain the relationship between interest rates and stock market prices.

2.2.1 Efficient Market Theory

The efficient markets theory popularly referred to as the efficient markets theory hypothesizes that, stock prices reflect available information to the participants in a market (Fama, 1970). Consequently, based on the efficient market theory it is impossible to make abnormal profits and returns based on available information. Jensen (1978) contributes to the efficient markets theory and notes that in efficient markets, it is impossible to make above normal profits because the asset prices reflect all the available information about the stock. Nevertheless, new information in the market causes reaction by the investors which leads to a change in the prices of securities.

Fama (1970) postulates that there are three types of market efficiency. Weak form efficiency where stock prices reflect all the historical information of the stock in question. Consequently, historical information cannot be used to estimate or value current stock prices since it is already reflective in current prices. Furthermore, past information cannot be used to forecast future securities prices. Semi strong form efficiency imply that stock prices reflect all the historical and past information about the stock as well as the publicly accessible and available information (Fama, 1970). In semi strong form efficiency, there exists no arbitrage opportunities for abnormal profits as a result of using historical and publicly available information. In strong form efficiencies, stock prices reflect all publicly and privately available information and historical information (Fama, 1970). Consequently, in strong form efficiencies, there exists no opportunities for arbitrage using private, public or historical data of a company or stock (Sharpe, 1963).

Efficient market theory has been utilized to analyze macro-economic variables and asset prices around the world. Fama and Schwert (1977) using the efficient market hypothesis note that investor's competition to acquire information would lead to reflection of macroeconomic variables to be fully incorporated in the stock prices. Consequently, opportunities for arbitrage do not exist in the market.

Das (2005) argued that using the efficient market hypothesis, stock markets should reflect available macro-economic information. In addition, stock market prices should reflect expectations in the market and thus policy makers should not be worried about national macroeconomic policies since it is captured in the stock prices. Furthermore, since stock prices reflect macroeconomic indicators it would suffice to say that stock prices could be

utilized as indicators of future economic prospects rather than interest rates. Nevertheless this is not the case. It is therefore important to analyze the relationship between macroeconomic variables such as interest rates in the development of macro-economic policies (Das, 2005).

However, the market efficiency theory has been strongly critiqued by Leroly (1989) who noted that it did not provide a framework of how information can be used to evaluate the stock price or value. This Leroly (1989) termed it as the emptiness and tautological nature of the efficient markets hypothesis. Further, Grossman (1976) critiqued the efficient market hypothesis as irrelevant since it would make no sense for an investor to seek information about a stock if the prices reflected the information. Furthermore, the existed speculative opportunities for arbitrage in efficient markets based on the speed of acquisition and interpretation of new information (Grossman and Stilglitz, 1980).

2.2.2 The Q Theory of Investment

The Tobi Q theory of investment examines the proportion of capital and replacement cost of capital. According to Tobin, the market value of installed capital is calculated by multiplying the price of the stock by the total outstanding shares. On the other hand the replacement cost of capital is dependent on the prevailing market conditions.

$$q = \frac{market\ value\ of\ installed\ capital}{Replacement\ cost\ of\ installed\ capital}$$

In an efficient market therefore, the share price or total market value of installed capital must reflect all the available information about management, expectations, dividends and performance of the company. The stock price or market value also reflects the

discounted value of all future cash flows. Consequently, when the interest rates rise then the stock price or value of the company falls due to a decline in the expected present value of future cash flows. Consequently a rise in the interest rates will have an effect on the market value of installed capital and thus the share price of the company (Stevens, 2005).

2.2.3 Behavioral Finance Theory

The behavioral finance theory was developed in the 1990's (Oslen, 1998). The behavioral finance theory postulates that investors are irrational and motivated by emotions in making investment decisions (Masila, 2010). Under behavioral finance, there are the Barberis, Shleifer and Vishny Model (BSV Model) and Daniel, Hirshleifer, and Subrahmanyam Model (DHS Model). The BSV model developed by Barberis *et al.*, (1998) postulates that investors are classified into Regime A and B investors. Regime A investors base their decisions on expectations of returns to mean revert. When this does not happen the stock prices will have a lagged response to the earnings. Consequently, when regime A investors expect interest rates to mean revert and the same does not happen, then stock prices will rise. Regime B investors on the other hand base their investment decisions on security prices. They expect security prices to continue in a given trend. Consequently, regime B investors will not expect a decrease in stock prices even after interest rates changes. Similarly, the DHS model assumed investors are informed and uninformed. Informed investors use judgmental biases while uninformed investors do not.

The use of emotions in stock prices cannot be overruled in the stock markets. De Bondt and Thaler (1985) noted that investors do not have the requisite skills to beat the market whether informed or uninformed. This could be the reason for increase in stock prices for companies such as East African Cables and Kengen despite high interest economic conditions in the year 2005 in Kenya.

2.2.4 Arbitrage Pricing Theory

The arbitrage asset pricing theory developed by Ross (1976) postulates that the relationship between an asset and independent macro-economic indicators plus a risk factor contribute to the total value of the asset (Ross, 1976). It postulates that a linear relationship exists between the price of a single asset and independent macro-economic variables.

Some of the macro-economic indicators that influence stock market prices include: the gross national product (GNP), the inflationary rates, the investor confidence levels, changes in the interest yield curve and expected returns on securities (Amarasignhe, 2015). Based on this linear relationship between the macro-economic variables and equity prices, it can be deduced that interest rates as a macroeconomic variable has an influence on the value of securities. Consequently, the value of the asset or security can be described as the total of the expected return and any unexpected returns on the asset (Cuthbertson, 2004).

2.3 Determinants of Stock Market Prices

There are various factors that influence the stock market prices. Macro-economic as well as other factors influence stock market prices.

2.3.1 Inflation Rates

Inflation rates have an influence on the prices of stocks and returns. According to Udegbunam and Eriki (2001) inflation had a strong and significant effect on the security prices of assets and stocks listed in the Nigerian Stock Market. In a similar study conducted in the Kuwait Stock Exchange, Liw and Wearing (2002) found that inflation rates had a negative influence on the stock prices of companies listed in the Kuwait Stock Exchange. As the levels of inflation rates rose in Kuwait, the stock prices reduced.

Nishat and Shaheen (2004) found that inflation rates had a very strong negative correlation to the stock prices for companies listed in India. High inflation rates in India led to a decline in the stock prices and stock market capitalization in Indian Stock Exchanges.

2.3.2 Exchange Rates

The effect of exchange rates on stock prices Naik and Padhi (2012) found that exchange rates had an insignificant effect on the levels of stock prices for listed companies in India in the short run. However, in the long run exchange rates had a negative effect on the share prices. Asaolu and Ognumuyiwa (2011) as well as Rahman*et al.,* (2009) found an

inverse relationship between exchange rates and the share prices for companies listed in the Nigerian Stock Market and Malaysia Securities exchange respectively.

2.3.3 Gross Domestic Product

Gross Domestic Product is defined as the sum total of all outputs in an economy. It is the total production in the economy (Naik and Padhi, 2012). The total output of any economy has a direct positive relationship to the price of shares listed in the stock exchange (Wongbampo and Sharma, 2002). As the total output of an economy increased in Malaysia, Philippines, Thailand, Indonesia and Singapore, the share prices and stock returns increased (Wongbampo and Sharma, 2002).

Gan*et al.,* (2006) found that there existed a positive significant relationship between share prices and gross domestic product in New Zealand's stock markets. In the study conducted over the period 1990 to 2003, the levels of gross domestic product had a positive relationship to the levels of share prices.

2.3.4 Money Supply

In a study utilizing Singapore Stock Exchange prices and returns, Mookerjee and Yu (1997) found that there existed a relationship between the levels of money supply in the economy and the prices of shares in the stock exchange using data from October 1984 up to April of 1993.

Gan *et al.*, (2006) investigated the effect of macro-economic variables including money supply on the stock prices. They found that the stock prices and returns were influenced

by the levels of money supply in the economy. This was similar to the findings of Abugri (2008) using data from Argentine, Mexico, Chile and Brazil.

2.4 Empirical Literature Review

Abugri (2008) in a cross sectional study spanning 4 countries in South America i.e. Brazil, Argentina, Mexico and Chile utilized monthly data collected for the period 1986 to 2001. Using Granger Causality Tests and Co integration to establish if interest rates movements could be used to predict stock market price movements. In the analysis of the effect of interest on stock prices, Abugri (2008) found that a negative relationship existed between interest rates and stock prices in Brazil, Argentina. In Mexico however, the relationship between interest rates and stock prices was positive while in Chile there was no significant effect of interest rates on stock prices. Consequently, Abugri conclude that the relationship between interest rates and stock prices could not be determined a priori but differs from one economic boundary to another.

In Ghana Adam and Tweneboah (2008) utilize data for listed companies for the period 2003 – 2010 and utilize Johansen Co integration tests to investigate for integration between interest rates on stock market prices. The study found that interest rates had a negative effect on the stock market prices for listed companies in the Ghana Stock Exchange and thus could be used to predict movements in future stock market prices. Adam and Tweneboah (2008) utilized the risk free interest rates on corporate bonds. The findings are validated by Kyereboah-Coleman and Agyire-Tettey (2008) who utilized the same sample but utilized lending rates rather than treasury bills rates. The study had similar findings that interest rates had a negative effect on stock market prices.

Thang (2009) investigated the impact of interest rates on stock market indices using the Malaysian stock exchange as a case. Using Johansen Co Integration tests, Granger Causality Tests and Vector Error Correction Models to test for linear time series relationships, integration in the data and the prediction of future stock market prices using movements in interest rates. Thang (2009) found a negative relationship between interest rates and stock market prices as measured by stock market indices in the long run and short run. This confirmed the researcher's priori expectations.

Rahman *et al.,* (2009) analyzed the effect of a number of macro-economic indicators on the stock prices and stock market returns for shares listed in the Malaysian Stock Exchange. Using data collected for the period 1986 to 2008 and analyzed using Vector Error Correction Mechanism and Co Integration analysis to test for integration and linear relationship in stock market returns and stock market prices. They found that interest rates had a positive relationship with the stock prices and stock returns for the Malaysian Stock Exchange. In an effort to validate their findings, Rahman *et al.,* (2009) conducted causality tests on the data and found a bi directional relationship between interest rates and the stock prices. Consequently, Rahman *et al.,* (2009) noted that a positive relationship existed between stock prices and interest rates.

Akbar *et al.,* (2012) conducted his study using data from Karachi Stock Exchange for a data set collected from 1999 and 2008. Johansen Co Integration analysis and Vector Error Correction Analysis to investigate integration and relationship between short term interest rates and share prices were conducted on the data. The results of the analysis found that a positive relationship existed between short term interest rates and the share prices for

listed companies in Karachi Stock Exchange. This therefore showed that as the interest rates in Pakistan increased the stock prices for listed companies in the Karachi Stock Exchange increased.

Muriuki (2014) in the analysis of macro-economic variables of inflation and interest rates on stock market returns in the Nairobi Securities Exchange utilized monthly data on interest rates for 91 day treasury bills and stock market prices. Using ordinary Least squared regression analysis to establish relationship between treasury bills rates and stock market prices, Muriuki (2014) found that interest rates and inflation rates combined contributed to a 66.9% change in the stock market prices. In addition, the study found that there was a positive relationship between interest rates and stock market prices for companies listed in the NSE.

Amarasinghe (2015) in the study, *Dynamic Relationship between Interest Rates and Stock Price: Empirical Evidence from Colombo Stock Exchange,* utilize monthly data for a seven year period spanning 2007 – 2013 using all share price index data and interest rates. Granger Causality tests and regression analysis were conducted on the data after stationary tests using Augmented Dickey Fuller Tests. The study found that a significant relationship exists between interest rates and stock exchange prices. A negative relationship existed between the two variables in Colombo stock exchange. As the interest rates rose, the stock prices and returns declined.

Kitati, Evusa and Maithya (2015) analyzed *The effect of Macro Economic Variables on Stock Market Prices for the Companies Quoted on the Nairobi Securities Exchange in Kenya,* using the weighted average interest rates data for the months January 2008 and

December 2012. Applying simple and multivariate regression analysis, Kitati *et al.*, (2015) found that interest rates had a negative effect on the stock market prices. Interest rates influenced individual company shares as well as the all share index and the 20 share index in the Nairobi Securities Exchange.

2.5 Summary of Literature Review

The relationship between interest rates and stock market prices has received wide scholarly and practical attention. All around the world, there has been immense attention to the effect of interest rates on stock exchange prices. Based on the law of demand and theory, increases in the interest rates will lead to a decline in the demand for stocks in the exchange and an increase in the demand for bonds and bills in the money markets. This decrease in the demand should spur the prices of stocks and prices to attract more investors. Nevertheless, this is not always the case. Available literature reviewed, present contradicting results on the actual effect of interest rates and stock prices.

While some studies find a positive relationship others find a negative relationship. Consequently, no consensus has yet to be achieved. Even in view of the conclusions of Abugri (2008) that the effect of interest rates of stock prices differs from one country to another, studies undertaken in the same country using the same stock exchange has resulted into differing findings for example Muriuki (2014) and Kitati, Evusa and Maithya (2015) in the Nairobi Securities Exchange.

2.6 Conceptual Framework

This study is premised on the hypothesis that there exists a relationship between the Treasury bill rate and the stock market prices. The Treasury bill rates is the independent variable while the stock market prices is the dependent variable. In the study it is proposed that the Treasury bill rate which is a risk free asset is a substitute for stock market prices a risky asset. Consequently, declines and increases in the returns of one the two assets will cause a decline in the demand for the other and thus a change in the prices i.e. returns on the assets. In addition, to this relationship it is hypothesized that the lending rates, the term deposit rate and the spread are intervening variables.

Given investors preferences on liquidity of their investments, interest rates on term deposits represent a low risk investment substitute for the investors. Due to their very low risk, low treasury bills would lead to investors preferring higher term deposit rates which intervene on the relationship between risk free investment returns and risky investment returns.The lending rate represents the total cost of borrowing for investment. If the cost is very high, then there will be low borrowing and thus low borrowing which impacts on the direct relationship between risk free investment and risky investments. In addition, the difference between the savings rates and the lending rates represents a spread which is a premium charge by banks for undertaking risky lending to borrowers. If the spread is large, then this would communicate to investors that markets are inefficient and thus opportunities for making arbitrage profits exists. Consequently, investors will demand more from securities markets leading to a rise in the prices of securities in the NSE.

It is hypothesized that increases and decreases in the intervening variables will cause increases and declines in the returns of the Treasury bill rates and the stock market prices. This relationship is as shown in Figure 2.1 below

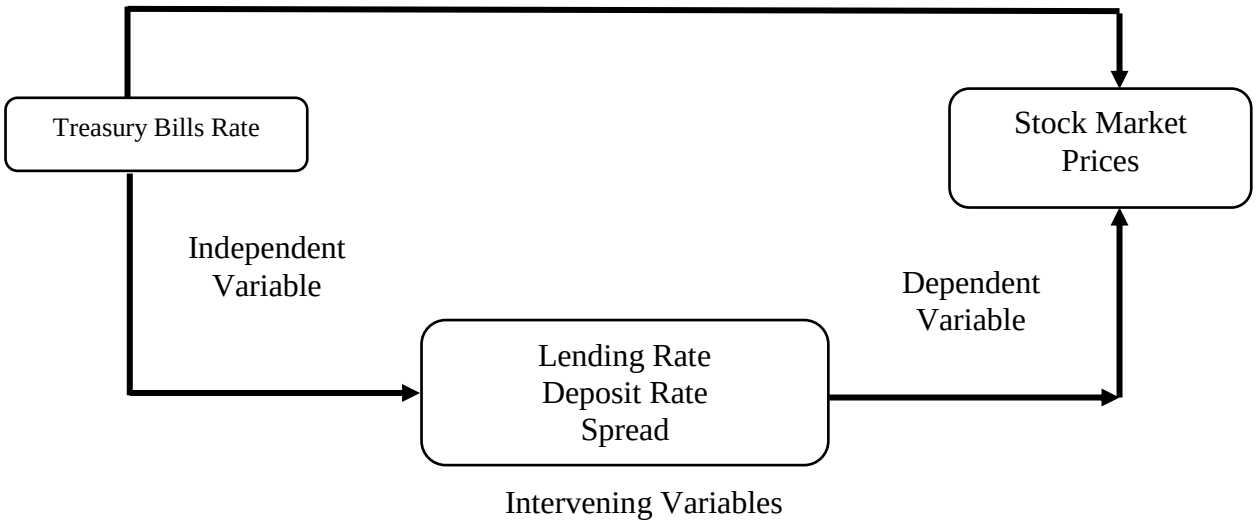

Figure 2.1 Conceptual Framework

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

Chapter three presents the research methodology of the study. It presents a detailed structure of the research design, the population and sample of the study, data collection, data sources and data analysis techniques.

3.2 Research Design

A research design denotes the overall blueprint for a study (Bryman & Bell, 2011). It guides and controls the actions of the researcher and informs the research procedures and techniques to be used. It is an overall guide (Mugenda & Mugenda, 2003). This study utilizes a descriptive research design. A descriptive research design gathers data to analyze and describe a problem or phenomena. In this study data was collected to describe the relationship between interest rates and stock market prices. Since data was collected for a period of time, a time series study was conducted. According to Webb, Campbell, Schwartx and Sechrest (1966) time series analysis are often descriptive in nature.

3.3 Population

The population of this study was drawn from monthly stock market All Share Index data for the period June 2009 – June 2015. This duration was justified for use because it is long enough and excludes major events which influence stock prices such as political instability. The study was a census survey. All the elements within the population were

included in the study. Consequently, the data set for the seventy two months was included in the study.

3.4 Data Sources

Data for this study was collected for a period of 5 years from June 2009 – June 2015. Monthly data on average deposit rates in banks, 1yr treasury bills, monthly lending rates and stock market prices was analyzed. Monthly deposit rates in commercial banks were collected from the Central Bank of Kenya Website. Data on the monthly performance and stock prices was collected from the Nairobi Securities Exchange. Stock prices were measured using the all share Price Index.

3.5 Data Analysis

3.5.1 Analytical Model

Data collected in this study was regressed using monthly security prices, and monthly 1 year Treasury bill rates, monthly average lending rates, spread and monthly term deposit rates. To establish the relationship between interest rates and stock prices this study hypothesized that:

$H_0: \beta_1 = 0$

$H_1: \beta_1 \neq 0$

Where β_1 are the coefficients in the regression model.

Different scholars have used different econometric model to establish the relationship between interest rates and stock prices. Nevertheless, the testing for stationarity in the data is key and has been adopted by scholars such as Akbar *et al.,* (2012) and Amarasinghe (2015).

To test for stationarity in the data set, unit root testing using the Augmented Dickey Fuller test was conducted. The Augmented Dickey Fuller test is a negative test for stationarity. The stronger the test at a given level of confidence, the higher the levels of stationarity in the data set.

The Augmented Dickey fuller test will be conducted using the regression model:

$$\Delta Y_t = \beta_1 + \beta_2 t + \vartheta Y_{t-1} + \alpha i \sum_{i=1}^{m} \Delta Y_{t-1} + \varepsilon t \text{..} \text{...1}$$

Where:

Δ = Change in the variable

$Y_t = Time\ series\ data$

B, δ, α = Coefficients

E = error term

The study applied the Granger causality test to establish any causal relationship between interest rates and securities prices in the NSE. The Granger causality Test first proposed in 1969 establish the predictive causality between variables i.e. can one time series be used to forecast or predict another time series. Since this study has multiple variables, a

Vector Auto regressive model was applied. This study proposes that interest rates can be used to forecast stock market prices. A similar methodology was applied by Akbar *et al.*, (2012), Rahman *et al.*, (2009), Thang (2009) and Amarasinghe (2015). The Granger Casuality test was conducted using the equation:

$$X_t = \sum_{r=1}^{L} A_r X(t-r) + \epsilon(t) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \quad \textbf{\textit{0}}$$

Where:

$\epsilon(\mathrm{t}) = \text{Gaussian Random Vector}$

A = Time series

Xi = Granger Cause of time series

After causality testing, data collected was analyzed using linear regression analysis. The study hypothesizes that:

$$Y_1 = \int (Xi, Ki, Wi, Pi) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \quad \textbf{2}$$

Where

Yi = Securities Prices measured through the all share index

Xi = Treasury bills rate

Ki = Lending rates

Wi = Spread

Pi = Term deposit rates

The regression model will be:

$$Y_1 = \propto + \beta_1 x + \beta_2 K + \beta_3 w + \beta_4 P + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \quad \textbf{4}$$

Where:

$\propto = \text{Constant}$

$\beta_{1,2,3,4} = Coefficients$

$\varepsilon_t = error\ term$

3.5.2 Test of Significance

To test for significance, T-Tests and ANOVA was utilized to analyze the relationship between stock prices and interest rates. Analysis of Variance was utilized to test the differences in group means for statistical significance. Testing was undertaken at 95% confidence intervals.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATIONS

4.1 Introduction

This chapter discusses the interpretation and presentation of the findings. Descriptive statistics, stationarity tests, granger causality tests, correlational test and regression test have been applied in discussing and interpreting the study findings.

4.2 Descriptive Statistics and Test for Normality of Variable

The study sought to establish the general description of the study variables characteristics including the minimum (Min), maximum (Max), Mean, standard deviation (Std. Dev), Skewness and Kurtosis. The results from the analysis of findings are illustrated in the table below as shown.

Table 4.1 Descriptive Statistics

	LN NSE 20	LN NASI	LN Lending rates	LN Spread	LN T bill rates	LN Term deposit rates
Minimum	8.01	4.18	2.63	2.16	.47	1.23
Maximum	8.59	5.15	3.01	2.57	3.08	2.20
Mean	8.33	4.69	2.77	2.3	2.05	1.77
Std. Deviation	.16	.30	.12	.093	.55	.27
Skewness	-.32	-.081	.24	.33	-1.08	-.76
	.26	.260	.26	.26	.26	.26
Kurtosis	-1.01	-1.43	-.96	-.19	1.24	-.56
	.514	.514	.51	.51	.51	.51
N	86	86	86	86	86	86

Source: Author (2016)

The results in Table 4.1 above showed that lending rates had a mean score of 2.79, interest rate spread had a mean score of 2.34 and Treasury bill rates had a mean score of 2.05 while term deposit rate had a mean score of 1.77. Analysis of skewness indicated that lending rates and spread are asymmetrical to the right around their mean while Treasury bill rates and term deposit rates are skewed to the left. The study noted contrary findings from kurtosis analysis, lending rates, spread and term deposit rates had negative kurtosis of -0.96,-0.19 and -0.56 respectively while treasury bill rates had a positive kurtosis of 1.24. These finding were sustained by a low standard deviation.

4.3 Stationarity Tests

The data was subjected to Unit root tests to check for stationarity. As indicated in Table 4.2 below, the augmented Dickey Fuller (ADF) test and Philips Perron Fisher (PP) test show that the variables are not stationary and are not integrated at level one and thus the need to convert the variables to their natural log for standardization and meaningful analysis. Similar results are evidenced by Levin, Lin and Chu and Im, Pesaran and Shin W tests.

Table4. 2 : Stationarity Tests

Method	**Statistic**	**Probability**
Levin, Lin & Chu t*	-0.95773	0.1691
Im, Pesaran and Shin W-stat	-1.06638	0.1431
ADF - Fisher Chi-square	12.1100	0.2778
PP - Fisher Chi-square	11.9369	0.2893

4.4 Granger Causality Tests

The study variables were subjected to Granger Causality tests with a lag of two months. The results of the data are presented in Table 4.3 below. At 95% levels of confidence, the study finds that NSE 20 share index causes interest rate spreads, Interest rate spreads

causes term deposit rates, Treasury bill rates causes term deposit rates, Term deposit rates causes interest rate spreads, term deposit rates causes NASI and NSE 20 share indices. The findings thus confirm dual causality between Interest rate spreads and term deposit rates. The causality of Interest rate on term deposit rates confirms the arguments by Uddin and Saima (2015) who established unidirectional causality running from the lending rate to deposit rates. The findings of the Causality relationships are consistent with the findings of Kwon and Shin (1999) and Ochieng' and Adhiambo (2012) which show that stock markets are influenced by Macro economic variables.

Table 4. 3 Granger Causality Tests

2 Lag Granger Causality Hypothesis	F- Statistic	Probability	Interpretation
NSE 20 Share Index to NASI	0.15200	0.8592	No Causality
NSE 20 to interest rate Spreads	3.17957	0.0470	Causality
NSE 20 to Term deposit rates	2.41733	0.0957	No Causality
NSE 20 to Treasury bill rates	1.09204	0.3405	No Causality
NASI to NSE 20	0.74023	0.4803	No Causality
NASI to Term Deposit rates	3.09399	0.0509	No Causality
NASI to Treasury bill rates	1.50996	0.2272	No Causality
NASI to Interest rate Spreads	1.88992	0.1579	No Causality
Interest rate Spreads to NSE 20	0.40655	0.6673	No Causality
Interest rate Spreads to term deposit rates	8.98360	0.0003	Causality
Interest rate Spreads to Treasury bill rates	3.06698	0.0521	No Causality
Interest rate Spreads to NASI	0.61626	0.5425	No Causality
Treasury bill rates to NASI	2.24093	0.1131	No Causality
Treasury bill rates to Term deposit rates	21.8773	0.0003	Causality
Treasury bill rates to Spread	1.19721	0.3075	No Causality
Treasury bill rates to NSE 20	2.74496	0.0704	No Causality
Term deposit rates to NASI	8.33961	0.0005	Causality
Term Deposit rates to NSE 20	5.14005	0.0080	Causality
Term deposit rates to Interest rate Spread	3.71243	0.0288	Causality
Term deposit rates to Treasury bill rates	0.25435	0.7760	No Causality

Source: Author (2016)

From the table above, it is evident that NSE 20 share index has no causality effects on NASI, term deposit rates and Treasury bill rates at 95% levels of confidence. There is also no evidence of NASI having any causal effects on NSE 20 share index, lending interest rates, term deposit rates and Treasury bill rates. Further, the study establishes that Interest rate spreads have no causality on NSE 20 share index, Treasury bill rates and NASI. Treasury bill rates have no causality effects on NASI, NSE 20 share index and Interest rate spreads. The term deposit rates have no causality effects on Treasury bill rates. The findings contradict contributions by Ouma and Muriu (2014), Kirui and Wawire (2014) and Khodaparasti (2014) which suggested that the macro economic variables influence the stock market variables including prices.

4.5 Correlation Analysis

Pearson's correlation analysis was carried out and findings presented in tables. The tables below indicate the correlation matrix between NSE 20 share, NASI and variables (lending rates, spread, Treasury bill rates and term deposits rate). The results from the analysis of findings are illustrated in the table below as shown.

Table 4.4 Correlation Matrix for NSE 20 Share Index

	LN NSE 20	LN Lending rates	LN Spread	LN T-bill rates	LN Term deposit rates
LN NSE 20	1				
LN Lending rates	-.122	1			
LN Spread	-.383**	.629**	1		
LN T-bill rates	-.207	.681**	.167	1	
LN Term deposit rates	.082	.866**	.162	.770**	1

The study established that NSE 20 had a weak positive relationship with Term deposit rates with magnitude 0.082, a weak negative relationship with Lending rates with a magnitude of -0.122, a weak negative relationship with interest rate spread with a magnitude of -0.383 which is statistically significant and a weak negative relationship with Treasury bill rates having a magnitude of -0.207. The findings confirm earlier associations documented by Ismail, Pervaz, Ahmed, & Iqbal (2016).

The analysis of the findings established that there are weak positive relationships between NASI and lending rates, Treasury bill rates and term deposits rates of magnitude 0.052, 0.066 and 0.343 respectively. The weak positive relationships indicate that there are correlations between the factors and NASI. The findings infer that term deposit rates have the highest effect on NASI, followed by Treasury bill rates while lending rates having the lowest effect on NASI. The study also noted that interest rate spreads had a weak statistically significant negative relationship with NASI with a magnitude of -0.442; this thus implied that the spread had minimal effects on NASI. The findings confirm earlier relationships documented by Ismail, Pervaz, Ahmed, & Iqbal (2016).

Table 4. 5 Correlation Matrix for NASI

	LN NASI	LN Lending rates	LN Spread	LN T-bill rates	LN Term deposit rates
LN NASI	1				
LN Lending rates	.052	1			
LN Spread	-.442**	.629**	1		
LN T-bill rates	.066	.681**	.167	1	
LN Term deposit rates	.343**	.866**	.162	.770**	1

4.6 Regression Analysis (NSE 20 Share)

The study sought to establish the regression model summaries of NSE 20 shares. The results from the analysis of findings are illustrated in the table below as shown.

Table 4.6 Model Summary (NSE 20 Shares)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.571[a]	.326	.293	.135310

The study noted that the four predictor variables explained 29.3% of variations in the NSE 20 share index. This implies that the four predictor variables contribute upto 29.3% of variations of the NSE 20 share index while other dynamics not considered in the current study contributes up to 70.7% of the variations in the NSE 20 share index.

4.6.1 ANOVA (NSE 20 shares)

The study sought to establish fitness of the regression model in predicting the relationship between NSE 20 share index and the predictors (lending rates, interest rate spreads, treasury bill rates and term deposit rates). ANOVA statistics were thus computed. The results from the analysis of findings are illustrated in the table 4.7 below.

Table 4.7 ANOVA (NSE 20 shares)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.719	4	.180	9.813	.000[b]
	Residual	1.483	81	.018		
	Total	2.202	85			

From the ANOVA statistics in table 4.7 above, the research established that the study population parameters were significant ($p < 0.0$) which infers that the data acquired and

analysed is suitable for making conclusions on the population's parameter. The F computed at 5% Levels of significance was estimated at 9.813. Since F computed is found to be greater than F critical (value = 0.719), the overall model was established to be significant. That is, there are inferred significant relationships between the study variables (lending rates, interest rate spreads, Treasury bill rates and term deposit rates with NSE 20 share index).

4.6.2 Coefficients (NSE 20 shares)

The study sought to establish the coefficients of regression of NSE 20 share index. The results from the analysis of findings are illustrated in the table 4.8 below.

Table 4.8 Coefficients (NSE 20 shares)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	9.083	1.482		6.131	.000
	LN Lending rates	.685	1.965	.491	.349	.728
	LN Spread	-1.087	1.238	-.627	-.878	.382
	LN Tbill rates	-.179	.042	-.614	-4.217	.000
	LN Term deposit rates	.140	.686	.232	.204	.838

The coefficient of regression in table 4.8 above was used in estimating the model below:

$$Y = 9.083 + 0.685LR-1.087S - 0.179TR+ 0.140DR$$

From the model, taking all factors (lending rates, spread, Treasury bill rates and term deposit rates) constant at zero, NSE 20 share index was 9.083. The study established that taking all the four variables at zero, a unit increase in lending rates will lead to a 0.685 increase in NSE 20 share index; a unit increase in interest rates spreads lead to a 1.087 decrease in NSE 20 share index; a unit increase in Treasury bill rates will lead to a 0.179

decrease in NSE 20 share index and a unit increase in term deposit rates will lead to a 0.140 increase in NSE 20 share index. According to the model, lending rates, term deposit rates and interest rate spreads were insignificant as their P- value was more than 0.05, thus were negatively related with NSE 20 share index. Treasury bills rates had a negative and significant relationship with NSE 20 share index as their P-value was less than 0.05.

4.7 Regression Analysis (NASI)

The study sought to establish the relationship between the macro economic variables and NASI. The results from the analysis of findings are illustrated in table 4.9 below.

Table 4.9 Model Summary (NASI)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.670[a]	.449	.421	.232886

From the findings of the analysis, variations in the four predictor variables (lending rates, interest rate spreads, treasury bill rates and term deposit rates) explained 42.1% of variations in NASI. This was an indication that the four variables contributes to 42.1% of variations in NASI, while other factors not studied in the study contributes to 57.9% of the variations.

4.7.1 ANOVA (NASI)

The study sought to establish fitness of the regression model in predicting the relationship between NASI and the four predictors (lending rates, interest rate spreads, treasury bill rates and term deposit rates). ANOVA statistics were thus computed. The results from the analysis of findings are illustrated in the table 4.10 below.

Table 4.10 ANOVA(NASI)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.575	4	.894	16.477	.000[b]
	Residual	4.393	81	.054		
	Total	7.968	85			

The findings of the analysis established that the population parameter had a significance level of 0.0. This was an indication that data collected was ideal for making a conclusion on the population's parameters. The F calculated at 5% Level of significance was 16.477. F calculated was greater than the F critical of 3.575, thus indicating that the overall model was significant. That is, there are significant relationships between lending rates, interest rate spreads, Treasury bill rates and term deposit rates with NASI.

4.7.2 Coefficients (NASI)

The study sought to establish the coefficient of regression of NASI. The results from the analysis of the findings are illustrated in the table 4.11 below.

Table 4.11 Coefficients (NASI)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.605	2.550		2.590	.011
	LN Lending rates	1.141	3.382	.429	.337	.737
	LN Spread	-2.336	2.131	-.708	-1.096	.276
	LN T bill rates	-.236	.073	-.427	-3.239	.002
	LN Term deposit rates	.477	1.181	.414	.404	.687

The coefficient of regression in table above was used in coming up with the model below:

$$Y = 6.605 + 1.141LR-2.336 – 0.236TR+ 0.477DR$$

From the model, taking all factors (lending rates, interest rate spreads, Treasury bill rates and term deposit rates) constant at zero, NASI was 6.605. The study noted that a unit increase in lending rates will lead to a 1.141 increase in NASI; a unit increase in interest rate spread leads to a 2.336 decrease in NASI; a unit increase in Treasury bill rates leads to a 0.236 decrease in NASI and a unit increase in term deposit rates leads to a 0.477 increase in NASI. According to the model, lending rates, term deposit rates and interest rate spreads were not significant as their P- value was more than 0.05, thus they were negatively correlated with NASI. Treasury bills rates were very significant as their P-value was less than 0.05.

4.8 Summary and Interpretation of Findings

The study finds that lending rates had a mean score of 2.79, interest rate spread had a mean score of 2.34, Treasury bill rates had a mean score of 2.05 and term deposit rate had

a mean score of 1.77. Lending rates and interest rate spreads are found to be asymmetrical to the right around their mean while Treasury bill rates and term deposit rates are skewed to the left. Stationarity tests showed that the data were not co-integrated at level one and hence the need to have the data analyzed in a standardized form.

Granger Causality tests with a lag of two months at 5% levels of significance show that NSE 20 share index causes interest rate spreads, Interest rate spreads causes term deposit rates, Treasury bill rates causes term deposit rates, Term deposit rates causes interest rate spreads, term deposit rates causes NASI and NSE 20 share indices. The findings also affirm dual causality between Interest rate spreads and term deposit rates. The causality of interest rates on term deposit rates confirms the arguments by Uddin and Saima (2015) who also established unidirectional causality that was running from the lending rate to the deposit rates. The findings of the causality relationships amongst the macro economic variables and stock market indices are consistent with the findings of Kwon and Shin (1999) and Ochieng' and Adhiambo (2012) which showed that stock prices are influenced by various macro-economic variables.

Correlation analysis showed that NSE 20 share index had a weak positive relationship with Term deposit rates with magnitude 0.082, a weak negative relationship with Lending rates with a magnitude of -0.122, a weak negative relationship with interest rate spread with a magnitude of -0.383 which is statistically significant and a weak negative relationship with Treasury bill rates having a magnitude of -0.207. Further, correlation analysis infer weak positive relationships between NASI and lending rates, Treasury bill rates and term deposits rates of magnitude 0.052, 0.066 and 0.343 respectively. Further,

interest rate spreads had a weak statistically significant negative relationship with NASI with a magnitude of -0.442. The findings confirm earlier associations documented by Ismail, Pervaz, Ahmed & Iqbal (2016).

The study noted that variations in the predictor macroeconomic variables explained 29.3% of variations in the NSE 20 share index and 42.1% of variations in NASI. Lending rates positively influence NSE 20 share index (β=0.685, $p>0.05$) and term deposit rates also positively influence NSE 20 share index (β=0.140, $p>0.05$). The relationships are however not statistically significant. The findings confirm earlier findings by Ochieng' and Adhiambo (2012). Interest rate spreads negatively influence NSE 20 share index though the relationship is not statistically significant (β=-1.087, $p>0.05$). Treasury bill rates negatively relate with NSE 20 share index (β=-0.179, $p<0.05$) in a statistically significant relationship. This finding was earlier documented by Owino and Muriu (2014).

The findings show that the NASI is negatively influenced by interest rate spreads (β=-2.336, $p>0.05$) and Treasury bill rates (-0.236, $p<0.05$). The relationship with Treasury bill rates is statistically significant as was attributed to in the writings of Ochieng' and Adhiambo (2012) and Kirui and Wawire (2014). Lending rates (β=1.141, $p>0.05$) and Term deposit rates (β=0.477, $p>0.05$) positively influence the NASI.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary, conclusion and recommendations of the main findings on the effect of interest rates on stock market prices at the Nairobi Stock Exchange.

5.2 Summary of Findings

Despite the importance of stock markets, there a variety of factors that influences the performance of stock markets and essentially its contribution to economic growth and development (Hahm, 2004). The study sought to establish the effect of interest rates on stock market prices at the Nairobi Stock exchange. Aggrawal (2010) noted that there was a significant effect on securities prices as a result of changes in the interest rate. Data for this study was collected for a period of 5 years from June 2009 – June 2015. Since data was collected for a period of time, a time series study was conducted. According to Webb, Campbell, Schwartx and Sechrest (1966) time series analysis are often descriptive in nature.

The study found that lending rates, spread and term deposit rates had negative kurtosis while Treasury bill rates had a positive kurtosis. Lending rates and spread were found to have a positive skewness while Treasury bill rates and term deposit rates had negative skewness. In order to test the relationship between the variables the inferential tests including regression analysis was used. The study found that the four variables contribute to 32.6% of NSE 20 shares and 44.9% of NASI respectively. The study established that

the overall regression model was significant i.e. there was a significant relationship between lending rates, spread, Treasury bill rates and term deposit rates with NSE 20 share index and NASI respectively.

The study also, established that there is a positive relationship between NASI and lending rates, Treasury bill rates and term deposit rates and a negative relationship between NASI and interest rate spread. Further, it was noted that NSE 20 share index had a positive relationship with term deposit rates and negative relationship with lending rates, interest rate spread and Treasury bill rates. A correlation coefficient of 0.571 and a determination coefficient of 0.326 were established in the model summary of NSE 20 share index while 0.670 and 0.449 were established in the model summary of NASI respectively.

5.3 Conclusions

The study concludes that a two month lagged NSE 20 share index causes interest rate spreads, two month lagged Interest rate spreads causes term deposit rates, two month lagged Treasury bill rates causes term deposit rates, two month lagged Term deposit rates causes interest rate spreads, two month lagged term deposit rates causes NASI and NSE 20 share indices. There is also dual causality between Interest rate spreads and term deposit rates.

The macroeconomic variables influence stock prices positively or negatively depending on the nature of the variables. There are weak positive associations between NSE 20 share index and Term deposit rates, weak negative association between Lending rates and NSE 20 share index, weak statistically significant negative association between interest rate spread and NSE 20 share index and weak negative association between Treasury bill

rates and NSE 20 share index. There is a weak positive association between lending rates and NASI, Treasury bill rates and NASI and term deposits rates and NASI. Interest rate spreads has a weak but statistically significant negative relationship with NASI.

The study concludes that Lending rates positively influence NSE 20 share index, term deposit rates positively influence NSE 20 share index, Interest rate spreads negatively influence NSE 20 share index, Treasury bill rates negatively influence NSE 20 share index, interest rate spreads negatively influence NASI, Treasury bill rates negatively influence NASI, Lending rates positively influence NASI and Term deposit rates positively influence the NASI.

5.4 Recommendations

Since the market performance is deemed as the barometer of the economy especially considering the contributions of the stock exchange to the economy, government policy on interest rates should be favourable to support general price movements in the stock exchange. The Government should address the run-away interest rate spreads which may affect share prices negatively especially where decreases in deposit rates accompanied by increases in lending rates lead to decline in share prices.

Government excessive borrowing through Treasury bills should further be moderated so that investors do not give preference to the risk free returns from Government securities as opposed to corporate securities. This requires that government monetary and fiscal policy stances should be reviewed to ensure that the private sector is not crowded out.

Efforts to expand economic performance which is indicated by the movements of the stock market indices can be positively influenced by favourably setting lending interest rates that stimulates money supply and creation in the economy. This is also supported by providing favourable deposit rates that encourages surplus spending units to entrust the financial intermediaries with the savings.

5.5 Limitations of the Study

The study was based on a five year study period from the year June 2009 and June 2015. Within this period, many institutional and technological changes occurred in the stock market that the study did not account for. These unaccounted for issues may have in one way or another affected the outcomes of the study.

The study was based on a five year period secondary data. Since, the period was shorter; the frequency of the data was on a monthly basis. The shorter period coupled with monthly data may omit observations that can possibly be noticed to change over longer periods of time. Further, the findings are as accurate as the secondary data sources relied on.

The study presumed that there is a linear relationship between stock price and the macro-economic variables considered in the study. There is likelihood that the findings are affected by the shortcomings that are inherent in regression models. When developing the regression model, there was a great need to define the dependent variables and independent variables.

The presumption of a linear regression model also affects the verifiability of the study relationships especially if it is possible that the study variables have curvilinear or cyclic relationships. The current study did not explore possibilities of other forms of relationships.

Time and resources allocated to this study could not allow the study to be conducted as deeply as possible in terms of other predictor variables that affects stock prices. Other than macroeconomic indicators, individual firm specific attributes also affect stock prices. The scope of the study did not include non-listed companies which are a majority in the Kenyan economy.

5.6 Suggestions for Further Studies

The study sought to determine the effect of interest rates on the stock market prices of NSE listed firms in Kenya. Further studies should incorporate the effects of various other institutional and technological changes that occur in the stock market that also affects stock prices.

Another study modelled on a longer study period that is able to show structural changes observable over longer periods of time should be explored. This will involve application of modern data analysis techniques that combine panel and longitudinal data in analysis.

Another study exploring the relationships between stock prices and macro-economic variables should use nonlinear regression assumption and analytical approaches. When developing the models, there is need to define and be concise on measurement of the

dependent variables and independent variables both at the firm level and at the economy wide level.

Further studies should be modelled to explore the possibility of having curvilinear or cyclic relationships between stock market prices and macroeconomic indicators as well as firm specific attributes.

There is need for a study to be conducted to determine the relationship between interest rates and performance of non-listed firms as well. There is a need to narrow down to specific sectors and specific firms to explore the effect of interest rates variables in the other sectors and firms.

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APPENDICES

APPENDIX I: COMMERCIAL BANKS MONTHLY WEIGHTED AVERAGE RATES

COMMERCIAL BANKS' WEIGHTED AVERAGE INTEREST RATES (%) 1/							COMMERCIAL BANKS' WEIGHTED AVERAGE INTEREST RATES (%) 1/					
YEAR	MONTH	Deposit	Savings	Lending	Overdraft		YEAR	MONTH	Deposit	Savings	Lending	Overdraft
1991	JUL	13.5	12.97	16.71	16.15		2003	JAN	4.68	3.41	19.02	18.52
	AUG	13.59	13.24	16.42	13.79			FEB	4.4	3.42	18.83	17.81
	SEP	13.49	13.1	17.26	16.95			MAR	3.99	3.28	18.49	17.26
	OCT	13.47	13.3	17.78	17.53			APR	4.06	3.27	18.57	17.27
	NOV	13.7	13.37	17.94	18			MAY	3.71	3.14	18.52	17.18
	DEC	13.73	13.22	17.87	17.91			JUN	4.84	3.07	15.73	14.93
1992	JAN	13.71	13.18	17.13	15.05			JUL	4.49	1.79	15.3	14.43
	FEB	13.83	13.3	17.61	16.37			AUG	3.37	1.72	14.81	14.96
	MAR	13.85	13.45	18.12	18.47			SEP	3.07	1.44	14.82	14.31
	APR	13.76	13.38	17.37	15.3			OCT	3.13	1.43	14.75	14.13
	MAY	13.66	13.16	18.53	18.81			NOV	3.32	1.44	14.07	14.02
	JUN	13.65	13.43	18.54	18.7			DEC	3.29	1.38	13.47	13.74
	JUL	13.61	13.5	18.68	18.95		2004	JAN	3.12	1.22	13.48	13.3
	AUG	13.61	13.4	18.62	19.02			FEB	2.47	1.47	13.01	12.3
	SEP	13.81	13.47	18.95	19.07			MAR	2.32	1.3	13.12	11.65
	OCT	14.23	13.41	19.47	19.73			APR	1.96	1.24	12.67	11.08
	NOV	14.29	13.28	19.15	19.64			MAY	2.22	1.15	12.55	10.79
	DEC	14.39	13.23	19.51	19.76			JUN	2.2	1.15	12.17	10.72
1993	JAN	14.24	13.15	19.57	19.75			JUL	2.25	1.1	12.31	11.1
	FEB	14.25	13.28	19.7	19.86			AUG	2.26	1.08	12.19	10.81

	MAR	14.45	13.19	19.82	19.96			SEP	2.63	1.03	12.27	10.95
	APR	15.32	14.38	20.77	21.35			OCT	2.33	1.07	12.39	11.85
	MAY	15.49	13.34	24.16	24.2			NOV	2.66	1.3	11.97	12.21
	JUN	17.28	13.43	24.51	25.28			DEC	2.77	0.98	12.25	12.69
	JUL	18.47	14.22	25.45	26.73		2005	JAN	3.08	0.97	12.12	13.14
	AUG	22.51	14.81	26.37	27.73			FEB	3.47	0.96	12.35	13.82
	SEP	23.03	15.45	27.04	28.27			MAR	3.75	0.98	12.84	14.03
	OCT	23.04	16.51	30.06	32.23			APR	3.91	1.1	13.12	14
	NOV	23.43	17.28	30.81	32.86			MAY	4.05	1.07	13.11	13.94
	DEC	22.36	17.37	31.64	33.5			JUN	4.21	1.24	13.09	13.83
1994	JAN	23.27	18.62	32.18	33.31			JUL	4.14	1.3	13.09	13.54
	FEB	20.84	18.4	32.16	33.24			AUG	4.3	1.3	13.03	13.81
	MAR	19.98	17.46	30.68	32.62			SEP	4.35	1.34	12.83	13.5
	APR	18.61	18	32.28	33.28			OCT	4.43	1.32	12.97	13.56
	MAY	17.76	17.44	30.97	32.3			NOV	4.5	1.37	12.93	13.33
	JUN	17.42	16.11	31.49	33.17			DEC	4.52	1.38	13.16	13.67
	JUL	16.69	15.07	32.17	32.94		2006	JAN	4.48	1.33	13.2	13.81
	AUG	16.67	15.07	32.18	32.94			FEB	4.48	1.36	13.27	13.34
	SEP	16.76	14.97	31.37	32.66			MAR	4.28	1.34	13.33	13.26
	OCT	15.11	13.9	29.21	29.76			APR	4.35	1.33	13.51	13.81
	NOV	14.05	12.4	25.96	26.98			MAY	4.36	1.31	13.95	14.02
	DEC	13.05	12.15	25.91	26.87			JUN	4.35	1.27	13.79	13.78
1995	JAN	12.2	12.16	25.24	26.03			JUL	4.31	1.32	13.72	13.48
	FEB	12.08	11.81	24.09	24			AUG	4.08	1.41	13.64	13.43
	MAR	11.3	11.66	23.61	23.33			SEP	4.04	1.36	13.54	13.42

	APR	10.83	9.21	23.32	22.78			OCT	4.11	1.35	14.01	13.94
	MAY	9.81	9.08	23.09	22.61			NOV	4.15	1.37	13.93	13.96
	JUN	10.13	9.31	23.32	23.08			DEC	4.11	1.35	13.74	13.91
	JUL	10.32	9.07	22.96	23.04		2007	JAN	4.35	1.42	13.78	14.11
	AUG	11.9	8.96	24.72	24.64			FEB	4.21	1.41	13.64	14.05
	SEP	11.8	9.22	26.19	25.91			MAR	4.19	1.43	13.56	13.95
	OCT	11.97	9.13	26.43	26.44			APR	4.11	1.35	13.33	13.26
	NOV	12.46	9.26	28.38	28.57			MAY	4.14	1.57	13.38	13.35
	DEC	12.77	9.49	28.99	29.23			JUN	4.18	1.54	13.14	13.2
1996	JAN	13.33	9.64	27.81	27.94			JUL	4.33	1.65	13.29	13.34
	FEB	13.62	9.7	27.79	27.97			AUG	4.31	1.6	13.04	13.39
	MAR	13.89	10.18	28.06	28.42			SEP	4.34	1.67	12.87	13.26
	APR	14.23	10.06	27.99	28.53			OCT	4.27	1.64	13.24	13.29
	MAY	14.19	10.65	28.06	28.39			NOV	4.33	1.65	13.39	13.43
	JUN	14.17	10.74	28.34	28.54			DEC	4.32	1.67	13.32	12.96
	JUL	14.05	10.67	28.15	27.87		2008	JAN	4.37	1.72	13.78	13.41
	AUG	13.9	10.55	28.17	27.99			FEB	4.37	1.7	13.84	13.26
	SEP	14.28	10.74	28.44	28.12			MAR	4.43	1.72	14.06	13.48
	OCT	14.19	10.78	28.78	28.91			APR	4.41	1.71	13.91	13.46
	NOV	14.29	10.97	28.7	28.87			MAY	4.45	1.71	14.01	13.53
	DEC	14.65	11.22	28.58	28.9			JUN	4.48	1.7	14.06	13.3
1997	JAN	14.54	10.91	28.81	28.71			JUL	4.54	1.67	13.9	13.46
	FEB	14.47	10.87	28.6	28.43			AUG	4.65	1.68	13.66	13.11
	MAR	14.33	10.88	28.57	28.46			SEP	4.62	1.73	13.66	13.43
	APR	14.24	10.99	28.57	28.16			OCT	4.65	1.74	14.12	13.91
	MAY	14.95	12.43	27.26	28.78			NOV	4.86	1.61	14.33	13.85

	JUN	13.89	10.59	27.49	28.52			DEC	4.89	1.65	14.87	14.39
	JUL	14.11	10.79	26.86	27.72		2009	JAN	5.19	2.1	14.78	13.84
	AUG	14.06	10.82	26.48	27.37			FEB	5.23	2.13	14.67	13.46
	SEP	14.53	10.71	28.21	28.96			MAR	5.09	1.9	14.87	13.78
	OCT	15.21	10.92	29.07	29.66			APR	5.12	1.91	14.71	13.66
	NOV	15.88	10.19	29.8	30.25			MAY	5.1	1.67	14.85	14.13
	DEC	16.02	9.73	29.85	30.4			JUN	5.28	2.08	15.09	14.41
1998	JAN	15.94	9.77	29.81	30.43			JUL	5.09	1.67	14.79	13.94
	FEB	15.88	9.77	29.9	30.43			AUG	5	1.65	14.76	13.9
	MAR	15.89	9.8	30.2	30.81			SEP	5.05	1.65	14.74	13.76
	APR	18.37	10.81	30.41	29.28			OCT	5.03	1.85	14.78	14.03
	MAY	17.85	11.23	30.54	30.69			NOV	5.06	1.71	14.85	14.24
	JUN	16.87	12.27	30.46	30.74			DEC	4.84	1.73	14.76	14.13
	JUL	16.67	11.56	30.37	30.69		2010	JAN	5	1.75	14.98	14.25
	AUG	16.35	10.81	29.77	30.59			FEB	4.89	1.81	14.98	14.25
	SEP	15.96	10.46	29.08	29.76			MAR	4.74	1.81	14.8	13.59
	OCT	15.39	9.74	28.99	29.58			APR	4.49	1.85	14.58	14.5
	NOV	14.67	9.57	28.19	28.84			MAY	4.58	1.76	14.46	14.38
	DEC	12.99	7.96	26.16	26.66			JUN	4.45	1.75	14.39	14.23
1999	JAN	11.25	6.54	23.67	23.88			JUL	3.85	1.55	14.29	14.03
	FEB	9.66	5.93	22.83	22.94			AUG	3.74	1.5	14.18	13.97
	MAR	8.93	5.49	21.36	21.07			SEP	3.53	1.47	13.98	13.81
	APR	8.18	5.14	20.9	20.9			OCT	3.58	1.46	13.85	13.64
	MAY	7.55	4.52	20.86	20.81			NOV	3.54	1.4	13.95	13.77
	JUN	7.83	4.57	20.7	20.86			DEC	3.59	1.45	13.87	13.69
	JUL	7.65	5.15	21.12	21.02		2011	JAN	3.43	1.25	14.03	13.93
	AUG	7.79	4.81	21.93	21.95			FEB	3.41	1.41	13.92	13.65

	SEP	8.44	5.35	22.45	22.48			MAR	3.47	1.37	13.92	13.6
	OCT	9.1	5.72	23.12	23.14			APR	3.47	1.38	13.92	13.68
	NOV	9.48	6.04	24.43	24.79			MAY	3.51	1.38	13.88	13.72
	DEC	9.74	6.15	25.19	25.58			JUN	3.68	1.37	13.91	13.59
2000	JAN	10.38	6.42	25.14	25.91			JULY	3.85	1.37	14.14	13.89
	FEB	9.17	6.04	25.39	25.67			AUG	4.07	1.37	14.32	14.28
	MAR	8.01	5.14	23.76	24.09			SEP	4.21	1.35	14.79	14.64
	APR	7.61	5.3	23.44	24			OCT	4.83	1.33	15.21	14.87
	MAY	7.21	4.77	23.4	23.93			NOV	5.75	1.41	18.51	18.67
	JUN	7.01	4.89	23.11	22.86			DEC	6.99	1.59	20.04	20.2
	JUL	6.67	4.71	22.39	22.09		2012	JAN	7.66	1.62	19.54	20.38
	AUG	6.26	4.53	21.23	20.93			FEB	8.01	1.69	20.28	20.53
	SEP	6.22	4.36	20.57	20.58			MAR	8.01	1.72	20.34	20.53
	OCT	6.22	4.31	20.22	19.94			APR	9.04	1.58	20.22	20.27
	NOV	6.2	4.36	19.79	20.1			MAY	8.42	1.59	20.12	20.41
	DEC	6.22	4.51	19.6	19.73			JUN	7.88	1.46	20.3	20.36
2001	JAN	6.54	4.67	20.27	20.18			JULY	8.25	1.66	20.15	19.96
	FEB	6.55	4.63	20.13	20.48			AUG	7.85	1.58	20.13	20.31
	MAR	6.92	4.66	20.19	20.12			SEP	7.4	1.55	19.73	19.8
	APR	6.58	4.64	19.56	19.89			OCT	6.86	1.6	19.04	19.13
	MAY	6.44	4.42	19.2	19.52			NOV	8.71	1.58	17.78	18.77
	JUN	6.36	4.39	19.26	19.65			DEC	6.8	1.6	18.15	17.79
	JUL	6.22	4.34	19.71	19.98		2013	JAN	6.51	1.65	18.13	17.97
	AUG	6.24	4.43	19.54	19.71			FEB	6.29	1.61	17.84	17.68
	SEP	6.27	4.89	19.44	19.63			MAR	6.54	1.42	17.73	17.54
	OCT	6.21	4.37	19.77	19.8			APR	6.39	1.45	17.87	17.71
	NOV	5.87	4.35	19.44	19.83			MAY	6.53	1.53	17.45	17.6
	DEC	5.7	4.4	19.49	20.04			JUNE	6.65	1.73	16.97	16.92
2002	JAN	5.72	4.42	19.3	19.31			JULY	6.59	1.64	17.02	17
	FEB	5.52	3.54	19.18	19.19			AUG	6.36	1.67	16.96	16.89
	MAR	5.42	3.71	18.86	18.78			SEP	6.55	1.64	16.86	16.42
	APR	5.48	4.12	18.69	18.88			OCT	6.43	1.63	17	16.96
	MAY	5.31	4.02	18.54	18.73			NOV	6.61	1.58	16.89	16.5
	JUN	5.21	4	18.38	18.46			DEC	6.65	1.58	16.99	16.51
	JUL	5.08	3.89	18.12	18.32		2014	JAN	6.55	1.56	17.03	16.82
	AUG	4.99	3.74	18.12	18.56			FEB	6.57	1.49	17.06	16.88
	SEP	4.8	3.53	18.14	18.52			MAR	6.61	1.56	16.91	16.44

	OCT	4.66	3.79	18.34	18.89			APR	6.48	1.53	16.7	16.44
	NOV	4.75	3.81	18.05	18.56			MAY	6.42	1.54	16.97	17.85
	DEC	4.75	3.47	18.34	18.56			JUN	6.56	1.5	16.36	15.88
								JUL	6.59	1.33	16.91	17.12
								AUG	6.51	1.5	16.26	16.2
								SEP	6.64	1.51	16.04	15.79
								OCT	6.64	1.55	16	15.77
								NOV	6.72	1.52	15.94	15.66
								DEC	6.81	1.85	15.99	15.86
							2015	JAN	6.65	1.58	15.93	15.95
								FEB	6.68	1.53	15.47	15.67
								MAR	6.63	1.53	15.46	15.68
								APR	6.6	1.9	15.4	15.52
								MAY	6.55	1.48	15.26	15.1
								JUN	6.64	1.85	16.06	15.67
								JUL	6.31	1.37	15.75	16.05
								AUG	6.91	1.5	15.68	15.98
								SEP	7.28	1.71	16.82	16.61
								OCT	7.54	1.68	16.58	16.81
								NOV	7.39	1.32	17.16	17.44
								DEC	8.02	1.56	18.3	18.48
							2016	JAN	7.54	1.56	18	18.25
								FEB	7.51	1.37	17.91	18.06
								MAR	7.17	1.32	17.87	18.06
								APR	6.92	1.4	18.04	18.08
								MAY	6.38	1.69	18.22	18.25
								JUNE	6.78	1.6	18.18	18.04
								JULY	6.64	1.67	18.1	17.84
							1/ The weights correspond to each bank's market share in either deposit liability in the case of deposit interest rates or loans and advances in the case of lending rates. Source: Central Bank of Kenya					

APPENDIX II: Daily Security Prices

DAILY SECURITIES PRICES - FROM JUNE 2009 TO JUNE 2015						
DATE	**NSE 20**	**NASI**				
				30-Jul-09	3,246.09	70.99
2-Jun-09	2,860.37	58.99		31-Jul-09	3,273.10	71.43
3-Jun-09	2,890.79	60.60		3-Aug-09	3,249.09	71.33
4-Jun-09	2,924.77	61.01		4-Aug-09	3,229.53	71.43
5-Jun-09	2,912.10	61.38		5-Aug-09	3,224.32	71.55
8-Jun-09	2,927.41	61.61		6-Aug-09	3,237.20	71.81
9-Jun-09	2,945.35	61.99		7-Aug-09	3,257.38	71.98
10-Jun-09	2,953.14	62.35		10-Aug-09	3,259.46	71.59
11-Jun-09	2,959.47	62.95		11-Aug-09	3,261.76	71.64
12-Jun-09	2,996.59	63.92		12-Aug-09	3,254.42	71.40
15-Jun-09	3,010.17	64.52		13-Aug-09	3,255.19	71.12
16-Jun-09	3,052.94	65.36		14-Aug-09	3,262.92	71.27
17-Jun-09	3,087.74	66.44		17-Aug-09	3,234.31	70.62
18-Jun-09	3,202.18	69.20		18-Aug-09	3,232.42	70.49
19-Jun-09	3,279.67	70.52		19-Aug-09	3,219.47	70.21
22-Jun-09	3,345.62	71.70		20-Aug-09	3,183.71	69.40
23-Jun-09	3,322.17	71.21		21-Aug-09	3,179.30	69.16
24-Jun-09	3,239.61	69.60		24-Aug-09	3,153.14	68.50
25-Jun-09	3,246.43	69.74		26-Aug-09	3,113.87	67.82
26-Jun-09	3,266.45	70.01		27-Aug-09	3,099.92	67.53
29-Jun-09	3,278.00	69.99		28-Aug-09	3,092.07	67.20
30-Jun-09	3,294.56	70.96		31-Aug-09	3,102.68	67.79
1-Jul-09	3,299.69	71.16		1-Sep-09	3,126.04	67.94
2-Jul-09	3,357.66	72.30		2-Sep-09	3,175.73	69.05
3-Jul-09	3,381.20	73.27		3-Sep-09	3,188.87	69.42
6-Jul-09	3,360.72	73.53		4-Sep-09	3,185.98	69.14
7-Jul-09	3,359.97	73.39		7-Sep-09	3,174.12	69.91
8-Jul-09	3,330.69	72.43		8-Sep-09	3,126.61	68.44
9-Jul-09	3,312.64	71.85		9-Sep-09	3,114.19	68.34
10-Jul-09	3,296.27	71.60		10-Sep-09	3,090.31	67.87
13-Jul-09	3,286.56	71.37		11-Sep-09	3,096.15	68.10
14-Jul-09	3,247.39	70.44		14-Sep-09	3,093.04	68.33
15-Jul-09	3,220.90	69.98		15-Sep-09	3,088.18	68.18
16-Jul-09	3,256.75	71.15		16-Sep-09	3,080.00	68.26
17-Jul-09	3,281.02	71.30		17-Sep-09	3,064.42	68.15
20-Jul-09	3,302.77	71.20		18-Sep-09	3,045.78	67.95
21-Jul-09	3,301.40	71.42		22-Sep-09	3,037.87	67.57

22-Jul-09	3,310.34	71.63		23-Sep-09	3,040.10	67.81
23-Jul-09	3,317.62	71.79		24-Sep-09	3,040.69	68.14
24-Jul-09	3,308.46	71.85		25-Sep-09	3,046.04	67.62
27-Jul-09	3,295.47	71.61		28-Sep-09	3,023.03	67.39
28-Jul-09	3,266.97	71.50		29-Sep-09	3,015.72	67.21
29-Jul-09	3,242.75	70.10		30-Sep-09	3,005.41	66.73
1-Oct-09	3,022.33	67.04		7-Dec-09	3,186.64	69.53
2-Oct-09	3,037.00	67.22		8-Dec-09	3,192.04	69.81
5-Oct-09	3,021.69	66.79		9-Dec-09	3,192.98	69.83
6-Oct-09	3,020.62	66.41		10-Dec-09	3,181.76	70.14
7-Oct-09	2,986.83	65.84		11-Dec-09	3,152.22	70.16
8-Oct-09	2,987.20	65.74		14-Dec-09	3,147.43	70.02
9-Oct-09	2,983.38	65.71		15-Dec-09	3,164.25	70.38
12-Oct-09	2,961.01	65.62		16-Dec-09	3,174.73	70.59
13-Oct-09	2,976.80	65.89		17-Dec-09	3,186.76	70.82
14-Oct-09	2,969.15	65.90		18-Dec-09	3,194.60	71.00
15-Oct-09	3,001.21	66.16		21-Dec-09	3,184.21	70.48
16-Oct-09	3,031.79	66.71		22-Dec-09	3,199.79	70.62
19-Oct-09	3,042.42	66.93		23-Dec-09	3,189.59	70.76
21-Oct-09	3,031.10	66.74		24-Dec-09	3,209.67	71.27
22-Oct-09	3,049.99	66.97		28-Dec-09	3,212.51	71.50
23-Oct-09	3,044.44	67.09		29-Dec-09	3,235.89	71.75
26-Oct-09	3,057.23	67.25		30-Dec-09	3,232.80	71.41
27-Oct-09	3,043.22	67.09		31-Dec-09	3,247.44	71.64
28-Oct-09	3,047.87	67.16		4-Jan-10	3,261.17	71.89
29-Oct-09	3,066.01	67.37		5-Jan-10	3,254.26	71.94
30-Oct-09	3,083.63	67.68		6-Jan-10	3,266.53	72.75
2-Nov-09	3,082.92	67.84		7-Jan-10	3,282.58	73.62
3-Nov-09	3,081.87	67.65		8-Jan-10	3,303.56	73.56
4-Nov-09	3,076.44	67.54		11-Jan-10	3,349.59	74.67
5-Nov-09	3,077.11	67.52		12-Jan-10	3,344.54	75.00
6-Nov-09	3,089.44	68.12		13-Jan-10	3,370.37	76.25
9-Nov-09	3,082.36	68.23		14-Jan-10	3,246.41	78.14
10-Nov-09	3,094.13	68.21		15-Jan-10	3,491.18	78.08
11-Nov-09	3,114.53	68.37		18-Jan-10	3,545.82	80.45
12-Nov-09	3,131.47	68.41		19-Jan-10	3,610.60	81.61
13-Nov-09	3,136.89	68.43		20-Jan-10	3,639.99	80.85
16-Nov-09	3,142.30	68.49		21-Jan-10	3,628.53	79.99
17-Nov-09	3,141.66	68.38		22-Jan-10	3,628.68	79.82
18-Nov-09	3,112.80	68.38		25-Jan-10	3,607.45	80.02
19-Nov-09	3,111.95	68.86		26-Jan-10	3,607.14	79.99
20-Nov-09	3,132.62	69.76		27-Jan-10	3,598.81	79.76
23-Nov-09	3,156.65	70.75		28-Jan-10	3,572.39	78.95

24-Nov-09	3,156.71	70.56		29-Jan-10	3,565.28	78.15
25-Nov-09	3,188.71	71.55		1-Feb-10	3,579.27	77.94
26-Nov-09	3,191.93	72.08		2-Feb-10	3,577.15	77.31
27-Nov-09	3,197.84	72.00		3-Feb-10	3,583.56	78.43
30-Nov-09	3,189.55	71.29		4-Feb-10	3,584.24	79.75
1-Dec-09	3,176.45	71.02		5-Feb-10	3,599.40	79.98
2-Dec-09	3,174.22	70.93		8-Feb-10	3,594.77	79.37
3-Dec-09	3,170.51	70.51		9-Feb-10	3,604.95	79.33
4-Dec-09	3,184.55	70.17		10-Feb-10	3,604.74	79.05
11-Feb-10	3,591.02	78.83		20-Apr-10	4,109.86	87.52
12-Feb-10	3,606.46	79.06		21-Apr-10	4,148.09	88.32
15-Feb-10	3,600.47	78.83		22-Apr-10	4,181.41	88.72
16-Feb-10	3,570.92	78.38		23-Apr-10	4,226.03	89.52
17-Feb-10	3,520.92	77.34		26-Apr-10	4,278.31	90.32
18-Feb-10	3,536.72	78.13		27-Apr-10	4,289.85	90.57
19-Feb-10	3,553.99	78.49		28-Apr-10	4,280.80	90.33
22-Feb-10	3,562.47	78.62		29-Apr-10	4,270.87	90.31
23-Feb-10	3,596.21	78.69		30-Apr-10	4,233.24	90.13
24-Feb-10	3,634.11	78.98		3-May-10	4,217.18	89.72
25-Feb-10	3,627.30	79.16		4-May-10	4,205.54	89.66
26-Feb-10	3,629.41	79.18		5-May-10	4,243.57	90.54
1-Mar-10	3,621.04	79.33		6-May-10	4,270.74	91.26
2-Mar-10	3,657.52	80.00		7-May-10	4,277.63	91.18
3-Mar-10	3,666.53	80.40		10-May-10	4,237.35	90.11
4-Mar-10	3,675.54	80.41		11-May-10	4,226.63	89.79
5-Mar-10	3,706.80	80.63		12-May-10	4,241.79	89.94
8-Mar-10	3,743.11	80.99		13-May-10	4,251.20	90.39
9-Mar-10	3,810.74	81.59		14-May-10	4,288.84	91.13
10-Mar-10	3,900.12	82.76		17-May-10	4,285.61	90.86
11-Mar-10	3,964.86	83.29		18-May-10	4,299.50	91.06
12-Mar-10	4,015.13	83.52		19-May-10	4,305.85	92.09
15-Mar-10	4,061.10	83.76		20-May-10	4,306.30	92.14
16-Mar-10	4,096.45	83.90		21-May-10	4,314.90	92.28
17-Mar-10	4,066.29	83.73		24-May-10	4,319.66	92.63
18-Mar-10	4,008.17	83.32		25-May-10	4,320.06	92.58
19-Mar-10	3,954.40	82.40		26-May-10	4,262.24	91.87
22-Mar-10	3,990.22	82.96		27-May-10	4,203.40	90.70
23-Mar-10	4,010.56	83.57		28-May-10	4,221.11	91.86
24-Mar-10	4,017.81	83.93		31-May-10	4,241.81	92.33
25-Mar-10	4,042.87	84.11		2-Jun-10	4,212.22	92.25
26-Mar-10	4,055.16	84.02		3-Jun-10	4,234.29	92.65
29-Mar-10	4,029.73	83.53		4-Jun-10	4,242.10	92.93
30-Mar-10	4,057.63	84.36		7-Jun-10	4,249.44	92.85

31-Mar-10	4,072.93	84.43		8-Jun-10	4,257.58	92.87
1-Apr-10	4,060.03	84.70		9-Jun-10	4,247.09	92.44
6-Apr-10	4,061.93	84.96		10-Jun-10	4,263.06	92.76
7-Apr-10	4,059.15	84.97		11-Jun-10	4,272.72	93.18
8-Apr-10	4,062.91	85.01		14-Jun-10	4,298.84	93.52
9-Apr-10	4,067.40	85.50		15-Jun-10	4,315.31	93.94
12-Apr-10	4,074.02	86.11		16-Jun-10	4,337.63	94.35
13-Apr-10	4,060.17	86.09		17-Jun-10	4,327.40	94.39
14-Apr-10	4,073.86	87.00		18-Jun-10	4,312.44	94.32
15-Apr-10	4,099.44	87.91		21-Jun-10	4,284.62	93.85
16-Apr-10	4,111.49	87.97		22-Jun-10	4,272.97	93.95
19-Apr-10	4,095.56	87.29		23-Jun-10	4,277.64	94.09
24-Jun-10	4,309.51	94.59		31-Aug-10	4,454.59	95.93
25-Jun-10	4,296.61	94.73		1-Sep-10	4,446.68	95.78
28-Jun-10	4,318.80	94.64		2-Sep-10	4,466.96	96.11
29-Jun-10	4,339.52	95.00		3-Sep-10	4,437.69	95.58
30-Jun-10	4,339.28	95.10		6-Sep-10	4,427.77	95.14
1-Jul-10	4,313.01	95.03		7-Sep-10	4,424.72	95.19
2-Jul-10	4,324.63	95.00		8-Sep-10	4,442.60	95.56
5-Jul-10	4,323.85	94.72		9-Sep-10	4,457.47	95.38
6-Jul-10	4,309.41	94.94		10-Sep-10	4,486.28	95.60
7-Jul-10	4,304.38	94.90		13-Sep-10	4,503.86	95.59
8-Jul-10	4,321.39	95.24		14-Sep-10	4,545.86	96.98
9-Jul-10	4,308.35	95.09		15-Sep-10	4,547.37	97.70
12-Jul-10	4,322.99	95.28		16-Sep-10	4,541.25	97.76
13-Jul-10	4,310.81	95.38		17-Sep-10	4,549.87	97.81
14-Jul-10	4,329.95	96.18		20-Sep-10	4,583.01	98.43
15-Jul-10	4,344.84	96.50		21-Sep-10	4,579.93	98.21
16-Jul-10	4,372.53	97.06		22-Sep-10	4,613.75	98.68
19-Jul-10	4,332.52	96.55		23-Sep-10	4,601.81	98.33
20-Jul-10	4,345.30	96.69		24-Sep-10	4,581.72	98.38
21-Jul-10	4,329.95	95.87		27-Sep-10	4,589.83	97.79
22-Jul-10	4,345.86	95.88		28-Sep-10	4,605.11	98.40
23-Jul-10	4,329.92	95.56		29-Sep-10	4,643.70	98.68
26-Jul-10	4,326.01	94.84		30-Sep-10	4,629.80	98.92
27-Jul-10	4,325.20	95.25		1-Oct-10	4,636.18	99.15
28-Jul-10	4,338.25	95.53		4-Oct-10	4,623.81	99.38
29-Jul-10	4,398.32	96.94		5-Oct-10	4,623.19	99.38
30-Jul-10	4,438.58	97.74		6-Oct-10	4,638.18	100.09
2-Aug-10	4,494.78	99.12		7-Oct-10	4,626.19	100.59
3-Aug-10	4,591.04	100.87		8-Oct-10	4,620.21	100.41
5-Aug-10	4,667.47	102.16		11-Oct-10	4,611.37	100.33
6-Aug-10	4,674.31	102.26		12-Oct-10	4,642.28	100.53

9-Aug-10	4,666.36	102.27		13-Oct-10	4,612.57	100.29
10-Aug-10	4,626.41	101.47		14-Oct-10	4,608.36	100.45
11-Aug-10	4,554.24	99.98		15-Oct-10	4,625.96	100.85
12-Aug-10	4,544.52	98.86		18-Oct-10	4,629.26	101.27
13-Aug-10	4,495.27	98.10		19-Oct-10	4,648.20	101.91
16-Aug-10	4,532.46	98.91		21-Oct-10	4,664.03	102.15
17-Aug-10	4,574.54	100.04		22-Oct-10	4,678.10	102.77
18-Aug-10	4,604.77	100.71		25-Oct-10	4,666.21	102.90
19-Aug-10	4,603.26	100.49		26-Oct-10	4,701.15	103.37
20-Aug-10	4,597.07	99.54		27-Oct-10	4,649.52	102.24
23-Aug-10	4,588.61	98.50		28-Oct-10	4,640.42	101.95
24-Aug-10	4,564.83	98.39		29-Oct-10	4,659.56	102.36
25-Aug-10	4,541.70	97.80		1-Nov-10	4,675.17	102.73
26-Aug-10	4,509.56	96.31		2-Nov-10	4,686.98	102.56
30-Aug-10	4,476.19	96.13		3-Nov-10	4,647.21	101.66
4-Nov-10	4,629.03	101.95		10-Jan-11	4,610.92	102.74
5-Nov-10	4,652.09	101.95		11-Jan-11	4,579.52	102.04
8-Nov-10	4,668.00	102.27		12-Jan-11	4,547.34	101.48
9-Nov-10	4,626.47	101.88		13-Jan-11	4,563.65	101.91
10-Nov-10	4,622.46	101.64		14-Jan-11	4,551.07	101.75
11-Nov-10	4,587.49	101.36		17-Jan-11	4,541.70	101.24
12-Nov-10	4,595.28	101.79		18-Jan-11	4,540.31	100.76
15-Nov-10	4,574.28	101.51		19-Jan-11	4,547.14	100.83
16-Nov-10	4,546.28	100.75		20-Jan-11	4,537.30	100.69
17-Nov-10	4,541.20	100.62		21-Jan-11	4,514.59	100.77
18-Nov-10	4,555.28	100.52		24-Jan-11	4,501.88	100.78
19-Nov-10	4,580.33	100.73		25-Jan-11	4,498.29	100.64
22-Nov-10	4,577.17	100.71		26-Jan-11	4,516.40	101.05
23-Nov-10	4,576.80	100.38		27-Jan-11	4,526.78	101.11
24-Nov-10	4,548.77	100.17		28-Jan-11	4,497.14	100.11
25-Nov-10	4,528.26	99.63		31-Jan-11	4,464.92	99.02
26-Nov-10	4,471.42	98.92		1-Feb-11	4,431.04	98.63
29-Nov-10	4,435.51	98.51		2-Feb-11	4,399.99	98.02
30-Nov-10	4,395.17	98.01		3-Feb-11	4,386.69	97.75
1-Dec-10	4,390.98	97.13		4-Feb-11	4,390.46	97.91
2-Dec-10	4,388.43	97.41		7-Feb-11	4,391.29	97.84
3-Dec-10	4,385.03	97.36		8-Feb-11	4,383.57	97.91
6-Dec-10	4,376.77	97.27		9-Feb-11	4,361.82	97.85
7-Dec-10	4,378.63	97.25		10-Feb-11	4,326.57	97.63
8-Dec-10	4,381.40	97.47		11-Feb-11	4,327.54	97.96
9-Dec-10	4,371.89	97.75		14-Feb-11	4,322.33	97.68
10-Dec-10	4,383.36	97.51		15-Feb-11	4,311.24	97.80
14-Dec-10	4,384.23	97.38		16-Feb-11	4,295.12	97.79

15-Dec-10	4,382.43	96.91		17-Feb-11	4,284.90	97.77
16-Dec-10	4,368.31	96.48		18-Feb-11	4,267.87	97.42
17-Dec-10	4,326.08	96.68		21-Feb-11	4,246.91	96.53
20-Dec-10	4,364.49	96.55		22-Feb-11	4,258.58	96.94
21-Dec-10	4,329.71	96.06		23-Feb-11	4,261.58	96.96
22-Dec-10	4,334.16	96.25		24-Feb-11	4,264.66	97.52
23-Dec-10	4,337.06	96.49		25-Feb-11	4,269.51	97.73
24-Dec-10	4,361.27	96.84		28-Feb-11	4,240.18	96.66
27-Dec-10	4,359.49	96.51		1-Mar-11	4,199.91	95.35
28-Dec-10	4,347.90	96.69		2-Mar-11	4,182.83	95.11
29-Dec-10	4,396.37	96.93		3-Mar-11	4,182.58	95.08
30-Dec-10	4,396.49	97.27		4-Mar-11	4,163.65	95.01
31-Dec-10	4,432.60	97.82		7-Mar-11	4,136.65	94.01
3-Jan-11	4,495.41	99.23		8-Mar-11	4,090.07	93.03
4-Jan-11	4,486.49	99.62		9-Mar-11	4,028.88	91.47
5-Jan-11	4,531.11	100.59		10-Mar-11	3,915.01	89.24
6-Jan-11	4,594.45	102.69		11-Mar-11	3,928.25	90.01
7-Jan-11	4,621.66	103.52		14-Mar-11	3,986.59	91.33
15-Mar-11	4,026.78	92.46		23-May-11	4,002.83	93.21
16-Mar-11	4,017.80	92.28		24-May-11	4,051.05	93.23
17-Mar-11	3,993.53	92.27		25-May-11	4,071.37	93.35
18-Mar-11	3,983.49	91.68		26-May-11	4,070.05	93.37
21-Mar-11	3,922.24	90.18		27-May-11	4,089.61	93.29
22-Mar-11	3,899.85	89.65		30-May-11	4,078.32	93.15
23-Mar-11	3,881.89	89.57		31-May-11	4,078.10	93.21
24-Mar-11	3,873.45	89.22		2-Jun-11	4,091.55	93.70
25-Mar-11	3,882.96	89.51		3-Jun-11	4,086.96	93.62
28-Mar-11	3,891.97	89.74		6-Jun-11	4,088.90	93.23
29-Mar-11	3,870.97	89.31		7-Jun-11	4,089.38	93.45
30-Mar-11	3,877.32	89.27		8-Jun-11	4,098.52	93.49
31-Mar-11	3,887.07	89.50		9-Jun-11	4,086.62	93.25
1-Apr-11	3,924.55	90.33		10-Jun-11	4,066.90	92.92
4-Apr-11	3,966.89	91.55		13-Jun-11	4,031.37	92.36
5-Apr-11	3,998.38	92.92		14-Jun-11	4,009.31	92.03
6-Apr-11	4,010.22	92.98		15-Jun-11	3,981.53	91.38
7-Apr-11	3,993.07	93.29		16-Jun-11	3,992.30	91.45
8-Apr-11	4,001.50	93.73		17-Jun-11	3,984.79	91.46
11-Apr-11	4,019.14	94.30		20-Jun-11	3,986.05	91.28
12-Apr-11	4,006.94	93.86		21-Jun-11	3,995.64	91.43
13-Apr-11	3,981.08	93.42		22-Jun-11	3,964.17	90.73
14-Apr-11	3,998.59	93.69		23-Jun-11	3,970.59	90.85
15-Apr-11	4,022.66	94.37		24-Jun-11	3,969.03	90.60
18-Apr-11	4,032.06	94.13		27-Jun-11	3,953.25	90.62

19-Apr-11	4,017.42	94.01		28-Jun-11	3,936.89	90.89
20-Apr-11	4,007.73	93.72		29-Jun-11	3,967.74	91.20
21-Apr-11	4,023.19	93.83		30-Jun-11	3,986.12	91.36
26-Apr-11	4,025.91	93.65		1-Jul-11	3,942.94	90.86
27-Apr-11	4,037.49	94.03		4-Jul-11	3,962.79	91.12
28-Apr-11	4,005.78	93.81		5-Jul-11	3,938.53	90.74
29-Apr-11	4,029.23	94.18		6-Jul-11	3,923.82	90.37
3-May-11	4,031.44	94.66		7-Jul-11	3,906.71	90.18
4-May-11	4,032.16	94.92		8-Jul-11	3,885.39	89.68
5-May-11	4,031.78	95.31		11-Jul-11	3,865.72	89.14
6-May-11	4,036.35	95.32		12-Jul-11	3,813.18	87.52
9-May-11	4,035.26	94.88		13-Jul-11	3,777.13	86.52
10-May-11	4,007.86	94.26		14-Jul-11	3,746.00	86.01
11-May-11	4,013.38	93.72		15-Jul-11	3,782.47	86.78
12-May-11	3,992.55	93.34		18-Jul-11	3,738.64	86.31
13-May-11	3,987.19	93.70		19-Jul-11	3,784.79	86.14
16-May-11	3,975.53	93.68		20-Jul-11	3,780.93	85.73
17-May-11	3,993.09	93.64		21-Jul-11	3,756.69	85.40
18-May-11	3,988.01	93.46		22-Jul-11	3,777.41	85.57
19-May-11	3,986.78	93.54		25-Jul-11	3,766.46	85.43
20-May-11	4,001.64	93.29		26-Jul-11	3,757.89	85.26
27-Jul-11	3,769.45	85.40		30-Sep-11	3,284.06	69.38
28-Jul-11	3,733.34	84.65		3-Oct-11	3,280.96	69.34
29-Jul-11	3,738.46	84.32		4-Oct-11	3,277.79	69.74
1-Aug-11	3,710.80	83.87		5-Oct-11	3,273.33	69.71
2-Aug-11	3,747.83	84.67		6-Oct-11	3,281.96	69.65
3-Aug-11	3,745.07	84.82		7-Oct-11	3,273.05	69.36
4-Aug-11	3,744.59	84.75		10-Oct-11	3,293.95	69.45
5-Aug-11	3,721.53	83.65		11-Oct-11	3,296.55	69.31
8-Aug-11	3,645.12	81.97		12-Oct-11	3,306.34	69.37
9-Aug-11	3,520.47	78.89		13-Oct-11	3,290.90	68.52
10-Aug-11	3,514.21	78.45		14-Oct-11	3,277.50	68.49
11-Aug-11	3,519.28	78.95		17-Oct-11	3,289.51	68.80
12-Aug-11	3,511.10	78.60		18-Oct-11	3,301.18	69.11
15-Aug-11	3,501.64	78.54		19-Oct-11	3,300.48	68.97
16-Aug-11	3,507.34	78.64		21-Oct-11	3,304.39	69.20
17-Aug-11	3,516.75	78.68		24-Oct-11	3,304.85	69.18
18-Aug-11	3,540.42	78.82		25-Oct-11	3,309.05	69.40
19-Aug-11	3,546.33	78.63		26-Oct-11	3,328.57	69.88
22-Aug-11	3,510.65	77.96		27-Oct-11	3,381.90	70.45
23-Aug-11	3,507.75	77.85		28-Oct-11	3,450.33	71.61
24-Aug-11	3,476.61	77.34		31-Oct-11	3,507.34	72.71
25-Aug-11	3,444.28	76.14		1-Nov-11	3,536.25	73.47

26-Aug-11	3,458.39	76.20		2-Nov-11	3,540.03	73.37
29-Aug-11	3,439.21	75.81		3-Nov-11	3,497.10	72.53
30-Aug-11	3,465.02	76.15		4-Nov-11	3,500.55	72.57
1-Sep-11	3,402.13	75.14		7-Nov-11	3,459.51	72.44
2-Sep-11	3,397.83	74.91		8-Nov-11	3,449.31	72.43
5-Sep-11	3,366.36	74.04		9-Nov-11	3,449.24	72.52
6-Sep-11	3,397.83	73.60		10-Nov-11	3,447.66	72.47
7-Sep-11	3,360.61	74.13		11-Nov-11	3,422.82	72.45
8-Sep-11	3,400.68	74.62		14-Nov-11	3,387.51	71.87
9-Sep-11	3,393.70	73.94		15-Nov-11	3,374.37	71.51
12-Sep-11	3,398.66	73.78		16-Nov-11	3,355.67	71.36
13-Sep-11	3,430.92	74.70		17-Nov-11	3,370.72	71.60
14-Sep-11	3,444.70	74.93		18-Nov-11	3,350.29	71.40
15-Sep-11	3,464.65	75.06		21-Nov-11	3,348.44	71.29
16-Sep-11	3,507.77	75.31		22-Nov-11	3,333.09	70.92
19-Sep-11	3,491.07	75.10		23-Nov-11	3,320.77	70.62
20-Sep-11	3,478.35	74.87		24-Nov-11	3,288.70	69.46
21-Sep-11	3,439.86	74.69		25-Nov-11	3,252.59	68.05
22-Sep-11	3,430.27	74.55		28-Nov-11	3,235.54	67.87
23-Sep-11	3,417.60	74.29		29-Nov-11	3,185.71	67.28
26-Sep-11	3,383.27	73.29		30-Nov-11	3,155.46	66.33
27-Sep-11	3,361.51	72.29		1-Dec-11	3,122.50	66.04
28-Sep-11	3,323.44	71.36		2-Dec-11	3,103.04	65.57
29-Sep-11	3,291.79	70.07		5-Dec-11	3,072.38	65.37
6-Dec-11	3,070.36	65.23		13-Feb-12	3,156.19	69.13
7-Dec-11	3,078.49	65.14		14-Feb-12	3,142.74	68.81
8-Dec-11	3,109.25	65.41		15-Feb-12	3,143.90	69.44
9-Dec-11	3,115.64	65.89		16-Feb-12	3,154.46	69.94
13-Dec-11	3,110.64	65.91		17-Feb-12	3,182.14	70.23
14-Dec-11	3,120.88	66.07		20-Feb-12	3,176.36	69.91
15-Dec-11	3,106.90	65.98		21-Feb-12	3,183.01	70.16
16-Dec-11	3,118.92	66.11		22-Feb-12	3,199.67	70.02
19-Dec-11	3,109.79	66.26		23-Feb-12	3,208.63	70.19
20-Dec-11	3,106.72	66.47		24-Feb-12	3,248.40	70.73
21-Dec-11	3,128.03	67.23		27-Feb-12	3,258.43	70.80
22-Dec-11	3,139.67	67.80		28-Feb-12	3,275.87	71.51
23-Dec-11	3,145.72	67.72		29-Feb-12	3,303.75	72.07
27-Dec-11	3,168.55	68.15		1-Mar-12	3,312.15	72.37
28-Dec-11	3,163.16	68.24		2-Mar-12	3,329.16	72.78
29-Dec-11	3,160.03	67.85		5-Mar-12	3,343.96	73.69
30-Dec-11	3,205.02	68.03		6-Mar-12	3,362.59	74.53
3-Jan-12	3,212.86	68.38		7-Mar-12	3,380.27	74.89
4-Jan-12	3,203.35	68.25		8-Mar-12	3,394.29	74.52

5-Jan-12	3,220.74	68.31		9-Mar-12	3,401.06	74.16
6-Jan-12	3,224.87	68.50		12-Mar-12	3,399.97	74.04
9-Jan-12	3,200.46	68.82		13-Mar-12	3,358.60	73.32
10-Jan-12	3,180.55	68.69		14-Mar-12	3,332.89	73.05
11-Jan-12	3,200.80	68.93		15-Mar-12	3,326.35	73.06
12-Jan-12	3,196.86	68.84		16-Mar-12	3,318.95	73.13
13-Jan-12	3,184.92	68.61		19-Mar-12	3,317.62	72.71
16-Jan-12	3,187.22	68.87		20-Mar-12	3,285.51	71.64
17-Jan-12	3,190.78	68.78		21-Mar-12	3,293.10	72.47
18-Jan-12	3,202.57	68.73		22-Mar-12	3,293.91	72.98
19-Jan-12	3,204.76	68.76		23-Mar-12	3,312.95	73.52
20-Jan-12	3,185.14	68.83		26-Mar-12	3,312.56	73.23
23-Jan-12	3,171.63	67.96		27-Mar-12	3,339.27	73.38
24-Jan-12	3,182.88	68.11		28-Mar-12	3,367.23	73.53
25-Jan-12	3,191.72	67.85		29-Mar-12	3,360.12	73.46
26-Jan-12	3,188.23	67.97		30-Mar-12	3,366.89	73.47
27-Jan-12	3,202.34	68.79		2-Apr-12	3,363.72	73.24
30-Jan-12	3,224.89	68.91		3-Apr-12	3,392.23	73.40
31-Jan-12	3,224.18	68.94		4-Apr-12	3,408.70	73.92
1-Feb-12	3,205.01	68.68		5-Apr-12	3,400.48	73.97
2-Feb-12	3,215.70	69.05		10-Apr-12	3,396.83	73.71
3-Feb-12	3,196.70	69.04		11-Apr-12	3,429.02	74.10
6-Feb-12	3,167.49	68.90		12-Apr-12	3,454.34	74.37
7-Feb-12	3,168.27	68.92		13-Apr-12	3,456.35	74.72
8-Feb-12	3,167.87	69.05		16-Apr-12	3,443.94	74.68
9-Feb-12	3,156.87	68.96		17-Apr-12	3,461.19	74.93
10-Feb-12	3,160.51	69.03		18-Apr-12	3,489.24	75.49
19-Apr-12	3,534.27	76.14		26-Jun-12	3,738.15	81.13
20-Apr-12	3,554.46	76.72		27-Jun-12	3,739.00	80.80
23-Apr-12	3,571.20	77.20		28-Jun-12	3,709.84	80.50
24-Apr-12	3,581.33	77.91		29-Jun-12	3,703.94	80.75
25-Apr-12	3,579.57	78.29		2-Jul-12	3,763.91	81.80
26-Apr-12	3,557.13	77.12		3-Jul-12	3,790.07	82.51
27-Apr-12	3,534.53	76.71		4-Jul-12	3,791.79	82.32
30-Apr-12	3,546.66	76.91		5-Jul-12	3,795.32	82.47
2-May-12	3,541.07	77.06		6-Jul-12	3,793.32	82.31
3-May-12	3,585.12	77.93		9-Jul-12	3,791.06	82.18
4-May-12	3,611.10	78.57		10-Jul-12	3,789.33	82.11
7-May-12	3,599.13	78.50		11-Jul-12	3,797.40	82.17
8-May-12	3,599.18	78.09		12-Jul-12	3,789.33	82.11
9-May-12	3,585.93	78.09		13-Jul-12	3,788.64	81.71
10-May-12	3,589.43	78.36		16-Jul-12	3,795.10	81.84
11-May-12	3,599.33	78.46		17-Jul-12	3,778.10	81.73

14-May-12	3,628.64	78.46		18-Jul-12	3,788.52	82.50
15-May-12	3,637.08	79.19		19-Jul-12	3,825.93	83.26
16-May-12	3,655.07	79.41		20-Jul-12	3,840.36	83.54
17-May-12	3,677.81	79.91		23-Jul-12	3,840.36	83.54
18-May-12	3,699.69	80.09		24-Jul-12	3,845.93	83.85
21-May-12	3,708.88	80.11		25-Jul-12	3,878.49	84.66
22-May-12	3,672.36	79.51		26-Jul-12	3,878.52	84.35
23-May-12	3,678.02	79.14		27-Jul-12	3,870.51	84.32
24-May-12	3,668.21	78.79		30-Jul-12	3,854.28	84.02
25-May-12	3,634.85	78.25		31-Jul-12	3,832.42	83.26
28-May-12	3,618.53	78.40		1-Aug-12	3,825.65	83.01
29-May-12	3,627.64	78.20		2-Aug-12	3,825.08	82.98
30-May-12	3,650.85	78.15		3-Aug-12	3,843.58	83.69
31-May-12	3,626.07	78.48		6-Aug-12	3,830.24	83.27
4-Jun-12	3,653.29	78.21		7-Aug-12	3,815.44	83.46
5-Jun-12	3,635.86	78.16		8-Aug-12	3,815.10	83.64
6-Jun-12	3,634.82	78.19		9-Aug-12	3,823.49	83.86
7-Jun-12	3,651.27	78.62		10-Aug-12	3,831.01	83.86
8-Jun-12	3,639.46	78.62		13-Aug-12	3,792.22	83.13
11-Jun-12	3,657.01	78.43		14-Aug-12	3,800.23	83.22
12-Jun-12	3,670.18	78.94		15-Aug-12	3,801.03	83.16
13-Jun-12	3,670.75	79.17		16-Aug-12	3,804.54	83.60
14-Jun-12	3,685.36	79.41		17-Aug-12	3,814.10	83.67
15-Jun-12	3,694.23	79.82		21-Aug-12	3,808.47	83.48
18-Jun-12	3,682.23	79.83		22-Aug-12	3,819.45	83.70
19-Jun-12	3,663.11	80.18		23-Aug-12	3,817.70	84.01
20-Jun-12	3,694.55	80.94		24-Aug-12	3,826.89	83.64
21-Jun-12	3,682.24	80.83		27-Aug-12	3,839.12	83.95
22-Jun-12	3,704.70	81.15		28-Aug-12	3,842.38	83.91
25-Jun-12	3,725.55	80.90		29-Aug-12	3,878.13	84.36
30-Aug-12	3,875.11	84.87		2-Nov-12	4,125.74	91.30
31-Aug-12	3,865.75	84.66		5-Nov-12	4,124.53	91.44
3-Sep-12	3,855.14	84.95		6-Nov-12	4,113.96	91.36
4-Sep-12	3,895.86	85.62		7-Nov-12	4,121.13	91.84
5-Sep-12	3,897.45	85.82		8-Nov-12	4,148.79	91.83
6-Sep-12	3,888.14	85.35		9-Nov-12	4,159.73	92.94
7-Sep-12	3,899.62	85.90		12-Nov-12	4,152.11	92.91
10-Sep-12	3,860.41	85.16		13-Nov-12	4,156.86	92.62
11-Sep-12	3,903.72	86.59		14-Nov-12	4,157.89	92.36
12-Sep-12	3,941.10	87.25		15-Nov-12	4,160.49	92.66
13-Sep-12	3,953.84	87.22		16-Nov-12	4,155.99	92.59
14-Sep-12	3,953.53	86.61		19-Nov-12	4,147.94	92.26
17-Sep-12	3,950.18	86.84		20-Nov-12	4,158.38	92.59

18-Sep-12	3,956.54	87.04		21-Nov-12	4,171.87	93.13
19-Sep-12	3,959.10	86.95		22-Nov-12	4,162.79	93.18
20-Sep-12	3,934.52	86.37		23-Nov-12	4,166.55	93.47
21-Sep-12	3,927.44	86.41		26-Nov-12	4,163.91	93.90
24-Sep-12	3,942.40	86.29		27-Nov-12	4,139.02	92.78
25-Sep-12	3,950.97	86.43		28-Nov-12	4,128.62	92.56
26-Sep-12	3,950.90	86.22		29-Nov-12	4,111.92	92.26
27-Sep-12	3,980.53	86.98		30-Nov-12	4,083.52	92.20
28-Sep-12	3,972.03	87.38		3-Dec-12	4,063.09	92.05
1-Oct-12	3,965.75	87.71		4-Dec-12	4,056.41	91.98
2-Oct-12	3,945.25	86.63		5-Dec-12	4,057.39	91.86
3-Oct-12	3,958.62	87.11		6-Dec-12	4,022.64	91.52
4-Oct-12	3,961.05	87.08		7-Dec-12	4,037.99	91.95
5-Oct-12	3,975.79	87.54		10-Dec-12	4,012.05	91.87
8-Oct-12	3,971.68	86.97		11-Dec-12	4,031.72	92.20
9-Oct-12	3,983.16	87.19		13-Dec-12	4,031.70	92.80
10-Oct-12	3,982.94	87.13		14-Dec-12	4,056.18	93.03
11-Oct-12	3,997.00	87.85		17-Dec-12	4,067.21	93.19
12-Oct-12	3,995.03	87.71		18-Dec-12	4,085.70	93.38
15-Oct-12	4,029.50	87.89		19-Dec-12	4,124.06	93.80
16-Oct-12	4,032.41	88.02		20-Dec-12	4,127.60	94.00
17-Oct-12	4,014.03	88.05		21-Dec-12	4,119.10	94.13
18-Oct-12	4,023.55	88.85		24-Dec-12	4,109.28	94.24
19-Oct-12	4,034.07	89.13		27-Dec-12	4,122.74	94.74
22-Oct-12	4,053.79	89.51		28-Dec-12	4,122.22	94.78
23-Oct-12	4,072.50	89.78		31-Dec-12	4,133.02	94.86
24-Oct-12	4,095.26	90.28		2-Jan-13	4,140.43	95.55
25-Oct-12	4,119.50	90.62		3-Jan-13	4,159.25	96.07
26-Oct-12	4,132.91	91.18		4-Jan-13	4,191.05	97.30
29-Oct-12	4,141.23	91.43		7-Jan-13	4,212.49	97.55
30-Oct-12	4,143.35	91.78		8-Jan-13	4,247.74	98.91
31-Oct-12	4,147.28	91.67		9-Jan-13	4,305.03	101.03
1-Nov-12	4,133.28	91.28		10-Jan-13	4,319.73	101.02
11-Jan-13	4,349.87	101.63		19-Mar-13	4,721.23	113.20
14-Jan-13	4,413.97	102.97		20-Mar-13	4,719.50	113.52
15-Jan-13	4,474.68	104.28		21-Mar-13	4,708.56	113.21
16-Jan-13	4,553.25	106.10		22-Mar-13	4,713.60	113.45
17-Jan-13	4,545.70	105.82		25-Mar-13	4,732.79	114.09
18-Jan-13	4,500.09	104.78		26-Mar-13	4,758.22	114.78
21-Jan-13	4,471.21	104.13		27-Mar-13	4,830.44	117.23
22-Jan-13	4,461.32	104.10		28-Mar-13	4,860.83	117.91
23-Jan-13	4,417.17	103.39		2-Apr-13	5,030.91	121.58
24-Jan-13	4,385.00	102.45		3-Apr-13	5,019.73	121.39

25-Jan-13	4,379.71	103.03		4-Apr-13	4,975.77	120.45
28-Jan-13	4,403.38	102.95		5-Apr-13	4,985.68	120.65
29-Jan-13	4,402.75	102.64		8-Apr-13	4,980.84	120.41
30-Jan-13	4,412.61	102.79		10-Apr-13	4,990.04	121.53
31-Jan-13	4,416.60	103.50		11-Apr-13	5,027.90	122.14
1-Feb-13	4,420.79	104.09		12-Apr-13	5,020.50	121.71
4-Feb-13	4,450.78	104.30		15-Apr-13	4,994.94	120.94
5-Feb-13	4,483.62	104.58		16-Apr-13	4,947.51	120.15
6-Feb-13	4,522.53	105.39		17-Apr-13	4,932.77	119.73
7-Feb-13	4,561.16	106.23		18-Apr-13	4,902.60	119.46
8-Feb-13	4,588.42	107.42		19-Apr-13	4,868.29	118.99
11-Feb-13	4,611.03	108.36		22-Apr-13	4,839.49	118.26
12-Feb-13	4,633.48	109.23		23-Apr-13	4,824.44	117.98
13-Feb-13	4,648.09	109.50		24-Apr-13	4,810.40	118.38
14-Feb-13	4,637.54	108.50		25-Apr-13	4,764.52	117.47
15-Feb-13	4,614.75	107.58		26-Apr-13	4,785.38	117.41
18-Feb-13	4,573.88	106.72		29-Apr-13	4,763.09	117.36
19-Feb-13	4,551.06	106.06		30-Apr-13	4,765.23	118.07
20-Feb-13	4,502.75	105.13		2-May-13	4,788.26	119.49
21-Feb-13	4,505.59	105.39		3-May-13	4,821.17	120.06
22-Feb-13	4,477.89	105.27		6-May-13	4,846.43	120.99
25-Feb-13	4,463.65	104.92		7-May-13	4,881.75	121.95
26-Feb-13	4,469.19	105.19		8-May-13	4,905.68	122.90
27-Feb-13	4,513.55	106.55		9-May-13	4,917.46	123.35
28-Feb-13	4,515.59	106.91		10-May-13	4,888.97	122.52
1-Mar-13	4,510.47	107.18		13-May-13	4,866.05	122.57
5-Mar-13	4,533.82	108.09		14-May-13	4,844.81	122.86
6-Mar-13	4,546.83	109.28		15-May-13	4,918.27	125.16
7-Mar-13	4,585.07	110.30		16-May-13	4,955.61	126.52
8-Mar-13	4,658.64	111.79		17-May-13	4,978.79	126.75
11-Mar-13	4,796.33	115.37		20-May-13	4,960.30	126.72
12-Mar-13	4,985.91	119.37		21-May-13	4,978.65	127.81
13-Mar-13	4,911.45	118.02		22-May-13	4,983.54	128.93
14-Mar-13	4,831.85	115.93		23-May-13	4,956.95	127.77
15-Mar-13	4,774.12	113.23		24-May-13	4,965.98	126.89
18-Mar-13	4,727.04	112.56		27-May-13	4,953.03	126.25
28-May-13	4,967.75	126.76		31-Jul-13	4,787.56	122.86
29-May-13	4,987.16	126.47		1-Aug-13	4,781.40	123.03
30-May-13	4,996.07	126.72		2-Aug-13	4,777.12	123.30
31-May-13	5,006.96	126.80		5-Aug-13	4,783.40	123.29
3-Jun-13	4,986.93	126.81		6-Aug-13	4,783.12	123.35
4-Jun-13	4,985.48	126.68		7-Aug-13	4,801.03	123.55
5-Jun-13	4,984.33	126.68		8-Aug-13	4,792.87	124.67

6-Jun-13	4,989.04	126.58		12-Aug-13	4,805.34	125.39
7-Jun-13	4,962.66	126.19		13-Aug-13	4,810.29	124.82
10-Jun-13	4,957.08	126.07		14-Aug-13	4,799.06	125.31
11-Jun-13	4,886.64	125.24		15-Aug-13	4,812.27	125.77
12-Jun-13	4,862.69	124.23		16-Aug-13	4,842.59	125.95
13-Jun-13	4,838.01	122.97		19-Aug-13	4,851.54	126.21
14-Jun-13	4,806.52	121.27		20-Aug-13	4,840.69	125.82
17-Jun-13	4,761.89	119.63		21-Aug-13	4,830.50	124.91
18-Jun-13	4,701.22	118.78		22-Aug-13	4,814.12	124.36
19-Jun-13	4,705.19	119.62		23-Aug-13	4,821.50	124.47
20-Jun-13	4,713.39	120.33		26-Aug-13	4,806.48	124.36
21-Jun-13	4,706.80	119.64		27-Aug-13	4,774.58	122.85
24-Jun-13	4,680.33	118.38		28-Aug-13	4,742.15	121.24
25-Jun-13	4,641.07	117.29		29-Aug-13	4,708.05	120.39
26-Jun-13	4,602.40	116.24		30-Aug-13	4,697.75	119.96
27-Jun-13	4,584.50	115.33		2-Sep-13	4,669.85	119.00
28-Jun-13	4,598.16	116.31		3-Sep-13	4,648.21	119.86
1-Jul-13	4,579.21	115.64		4-Sep-13	4,659.85	120.69
2-Jul-13	4,561.74	115.44		5-Sep-13	4,677.60	121.82
3-Jul-13	4,562.83	115.48		6-Sep-13	4,708.95	122.30
4-Jul-13	4,574.10	116.23		9-Sep-13	4,722.89	122.76
5-Jul-13	4,585.42	117.34		10-Sep-13	4,722.91	123.12
8-Jul-13	4,576.21	118.03		11-Sep-13	4,727.66	122.92
9-Jul-13	4,600.45	118.18		12-Sep-13	4,732.92	122.88
10-Jul-13	4,640.50	118.85		13-Sep-13	4,749.32	122.86
11-Jul-13	4,658.46	119.87		16-Sep-13	4,710.36	122.38
12-Jul-13	4,720.53	121.39		17-Sep-13	4,715.34	122.81
15-Jul-13	4,746.26	122.51		18-Sep-13	4,728.03	123.11
16-Jul-13	4,786.47	123.21		19-Sep-13	4,745.47	123.80
17-Jul-13	4,778.88	124.40		20-Sep-13	4,751.82	124.66
18-Jul-13	4,800.16	123.42		23-Sep-13	4,739.42	124.26
19-Jul-13	4,807.53	123.70		24-Sep-13	4,729.30	124.21
22-Jul-13	4,807.41	123.48		25-Sep-13	4,746.71	124.92
23-Jul-13	4,790.67	122.92		26-Sep-13	4,764.12	125.50
24-Jul-13	4,787.78	123.21		27-Sep-13	4,768.03	126.05
25-Jul-13	4,796.30	123.22		30-Sep-13	4,793.20	127.35
26-Jul-13	4,801.63	123.71		1-Oct-13	4,804.48	127.69
29-Jul-13	4,793.82	123.23		2-Oct-13	4,830.38	128.59
30-Jul-13	4,796.97	123.63		3-Oct-13	4,838.07	129.20
4-Oct-13	4,841.33	129.90		11-Dec-13	4,913.55	133.92
7-Oct-13	4,881.44	131.36		16-Dec-13	4,912.36	133.53
8-Oct-13	4,930.79	133.60		17-Dec-13	4,876.05	132.14
9-Oct-13	4,946.02	132.82		18-Dec-13	4,855.50	132.23

10-Oct-13	4,947.00	132.08		19-Dec-13	4,849.30	132.06
11-Oct-13	4,929.62	131.87		20-Dec-13	4,851.06	132.17
14-Oct-13	4,925.96	131.31		23-Dec-13	4,851.84	132.73
15-Oct-13	4,934.07	130.90		24-Dec-13	4,885.87	135.22
16-Oct-13	4,923.47	130.87		27-Dec-13	4,886.52	135.12
17-Oct-13	4,919.17	130.67		27-Dec-13	4,886.52	135.12
18-Oct-13	4,948.77	131.32		30-Dec-13	4,874.29	135.83
22-Oct-13	4,943.83	131.03		31-Dec-13	4,926.97	136.65
23-Oct-13	4,953.84	131.56		2-Jan-14	4,910.74	136.56
24-Oct-13	4,949.65	131.56		3-Jan-14	4,901.12	136.74
25-Oct-13	4,935.91	131.06		6-Jan-14	4,940.51	138.50
28-Oct-13	4,940.32	130.73		7-Jan-14	4,993.12	139.63
30-Oct-13	4,970.88	132.03		8-Jan-14	5,010.93	140.35
31-Oct-13	4,992.88	133.24		9-Jan-14	5,044.35	141.59
1-Nov-13	4,989.97	133.87		10-Jan-14	5,059.52	141.50
4-Nov-13	4,964.42	134.27		13-Jan-14	5,071.20	140.69
5-Nov-13	4,954.69	134.26		14-Jan-14	5,023.05	140.79
6-Nov-13	4,990.24	134.70		15-Jan-14	5,058.51	141.01
7-Nov-13	5,017.78	135.29		16-Jan-14	5,021.07	140.35
8-Nov-13	5,019.18	134.71		17-Jan-14	5,018.58	140.28
11-Nov-13	5,027.28	134.52		20-Jan-14	5,023.12	141.11
12-Nov-13	5,031.02	134.64		21-Jan-14	5,075.06	141.85
13-Nov-13	5,026.82	134.69		22-Jan-14	5,092.16	142.73
14-Nov-13	5,036.76	135.11		23-Jan-14	5,063.98	142.73
15-Nov-13	5,043.58	135.13		24-Jan-14	5,091.30	144.57
18-Nov-13	5,058.16	135.57		27-Jan-14	5,078.13	144.40
19-Nov-13	5,052.63	135.67		28-Jan-14	5,060.53	143.36
20-Nov-13	5,024.08	136.26		29-Jan-14	5,015.67	141.27
21-Nov-13	5,053.91	138.14		30-Jan-14	4,960.99	139.06
22-Nov-13	5,054.21	138.83		31-Jan-14	4,856.15	134.66
25-Nov-13	5,068.36	140.08		3-Feb-14	4,828.34	134.58
26-Nov-13	5,085.83	141.08		4-Feb-14	4,883.90	136.51
27-Nov-13	5,125.74	141.86		5-Feb-14	4,870.43	136.72
28-Nov-13	5,137.21	142.58		6-Feb-14	4,843.90	137.72
29-Nov-13	5,100.88	141.17		7-Feb-14	4,843.90	137.35
2-Dec-13	5,072.87	140.84		10-Feb-14	4,818.28	137.26
3-Dec-13	5,076.47	140.66		11-Feb-14	4,833.36	138.08
4-Dec-13	5,042.94	139.86		12-Feb-14	4,842.22	138.17
5-Dec-13	5,005.45	137.91		13-Feb-14	4,839.52	137.71
6-Dec-13	4,976.77	136.70		14-Feb-14	4,838.47	137.70
9-Dec-13	4,969.32	136.22		17-Feb-14	4,806.73	136.51
10-Dec-13	4,943.64	134.62		18-Feb-14	4,797.20	135.67
19-Feb-14	4,786.18	136.37		28-Apr-14	4,958.16	150.45

20-Feb-14	4,806.69	137.00		29-Apr-14	4,956.52	151.18
21-Feb-14	4,836.25	138.44		30-Apr-14	4,948.97	151.13
24-Feb-14	4,848.71	139.57		2-May-14	4,959.91	151.85
25-Feb-14	4,875.82	140.65		5-May-14	4,930.63	151.60
26-Feb-14	4,903.48	141.04		6-May-14	4,942.87	151.43
27-Feb-14	4,915.85	141.11		7-May-14	4,946.24	151.77
28-Feb-14	4,933.41	141.05		8-May-14	4,962.06	151.78
3-Mar-14	4,935.01	140.85		9-May-14	4,963.76	151.95
4-Mar-14	4,906.70	140.36		12-May-14	4,978.20	152.67
5-Mar-14	4,902.72	140.12		13-May-14	4,975.39	152.27
6-Mar-14	4,896.40	140.94		14-May-14	4,940.99	151.28
7-Mar-14	4,906.72	140.87		15-May-14	4,945.33	150.73
10-Mar-14	4,943.57	141.85		16-May-14	4,967.57	151.15
11-Mar-14	4,915.84	141.88		19-May-14	4,939.49	150.58
12-Mar-14	4,935.81	142.31		20-May-14	4,920.61	150.51
13-Mar-14	4,960.65	144.29		21-May-14	4,902.62	150.31
14-Mar-14	4,983.83	143.57		22-May-14	4,915.06	150.05
17-Mar-14	4,922.65	142.94		23-May-14	4,925.58	149.80
18-Mar-14	4,928.74	142.98		26-May-14	4,899.92	149.41
19-Mar-14	4,936.68	143.72		27-May-14	4,888.36	149.24
20-Mar-14	4,940.97	144.50		28-May-14	4,885.29	149.17
21-Mar-14	4,971.74	144.50		29-May-14	4,895.13	149.84
24-Mar-14	4,961.02	149.63		30-May-14	4,881.56	150.20
25-Mar-14	4,974.05	144.73		3-Jun-14	4,866.71	149.12
26-Mar-14	4,969.24	144.99		4-Jun-14	4,856.54	149.24
27-Mar-14	4,958.62	144.55		5-Jun-14	4,835.53	149.29
28-Mar-14	4,972.45	144.38		6-Jun-14	4,847.83	149.33
31-Mar-14	4,945.78	143.89		9-Jun-14	4,835.69	149.61
1-Apr-14	4,959.96	143.76		10-Jun-14	4,828.65	150.24
2-Apr-14	4,933.56	143.77		11-Jun-14	4,832.09	150.09
3-Apr-14	4,918.07	143.91		12-Jun-14	4,811.00	150.04
4-Apr-14	4,908.75	143.40		13-Jun-14	4,836.71	150.60
7-Apr-14	4,869.75	142.79		16-Jun-14	4,787.94	149.47
8-Apr-14	4,882.33	142.87		17-Jun-14	4,764.11	148.84
9-Apr-14	4,892.70	143.68		18-Jun-14	4,790.38	149.02
10-Apr-14	4,878.88	144.36		19-Jun-14	4,797.42	149.41
11-Apr-14	4,905.46	145.14		20-Jun-14	4,825.52	149.72
14-Apr-14	4,909.10	145.41		23-Jun-14	4,843.36	150.17
15-Apr-14	4,910.92	146.42		24-Jun-14	4,856.15	149.92
16-Apr-14	4,906.96	147.37		25-Jun-14	4,845.60	149.66
17-Apr-14	4,921.13	148.11		26-Jun-14	4,856.35	149.52
22-Apr-14	4,904.58	148.22		27-Jun-14	4,834.02	149.69
23-Apr-14	4,904.66	148.46		30-Jun-14	4,885.04	150.37

24-Apr-14	4,923.71	149.95		1-Jul-14	4,925.86	152.11
25-Apr-14	4,956.78	150.46		2-Jul-14	4,922.99	153.64
3-Jul-14	4,884.69	152.63		8-Sep-14	5,168.80	159.78
4-Jul-14	4,885.71	152.09		9-Sep-14	5,182.89	159.82
7-Jul-14	4,868.81	152.02		10-Sep-14	5,190.01	159.94
8-Jul-14	4,876.01	152.29		11-Sep-14	5,161.21	159.34
9-Jul-14	4,892.84	152.20		12-Sep-14	5,169.50	159.43
10-Jul-14	4,898.29	151.93		15-Sep-14	5,182.98	160.72
11-Jul-14	4,902.18	151.12		16-Sep-14	5,217.25	161.33
14-Jul-14	4,902.30	151.19		17-Sep-14	5,209.10	159.93
15-Jul-14	4,889.99	151.12		18-Sep-14	5,333.87	161.10
16-Jul-14	4,870.96	150.49		19-Sep-14	5,307.52	162.80
17-Jul-14	4,913.61	151.03		22-Sep-14	5,406.39	165.36
18-Jul-14	4,910.60	151.55		23-Sep-14	5,377.29	165.45
21-Jul-14	4,896.77	151.07		24-Sep-14	5,322.65	163.69
22-Jul-14	4,882.73	150.77		25-Sep-14	5,249.07	161.92
23-Jul-14	4,903.68	151.53		26-Sep-14	5,216.96	162.35
24-Jul-14	4,883.75	151.01		29-Sep-14	5,257.81	163.40
25-Jul-14	4,879.09	151.42		30-Sep-14	5,255.62	163.45
28-Jul-14	4,863.87	150.40		1-Oct-14	5,267.54	164.23
30-Jul-14	4,891.03	151.57		2-Oct-14	5,249.65	163.63
31-Jul-14	4,906.09	151.69		3-Oct-14	5,292.42	163.66
1-Aug-14	4,942.28	153.18		6-Oct-14	5,323.49	163.49
4-Aug-14	4,954.51	153.62		7-Oct-14	5,300.21	163.27
5-Aug-14	5,003.36	155.39		8-Oct-14	5,287.87	162.65
6-Aug-14	5,022.36	156.68		9-Oct-14	5,272.53	162.42
7-Aug-14	5,011.51	155.83		10-Oct-14	5,280.46	162.54
8-Aug-14	5,003.78	154.53		13-Oct-14	5,311.27	161.95
11-Aug-14	5,015.57	154.41		14-Oct-14	5,299.12	161.73
12-Aug-14	5,023.49	154.40		15-Oct-14	5,304.86	161.88
13-Aug-14	5,010.13	154.50		16-Oct-14	5,290.09	161.59
14-Aug-14	5,019.28	154.50		17-Oct-14	5,279.88	160.42
15-Aug-14	5,042.90	155.39		21-Oct-14	5,259.18	159.84
18-Aug-14	5,040.56	155.71		22-Oct-14	5,251.09	160.58
19-Aug-14	5,070.13	156.14		23-Oct-14	5,259.43	160.82
20-Aug-14	5,048.69	156.58		24-Oct-14	5,197.67	159.22
21-Aug-14	5,024.64	156.58		27-Oct-14	5,174.41	158.76
22-Aug-14	5,028.06	156.43		28-Oct-14	5,198.89	158.41
25-Aug-14	5,033.69	156.77		29-Oct-14	5,221.44	159.36
26-Aug-14	5,044.40	157.17		30-Oct-14	5,233.42	159.68
27-Aug-14	5,072.87	157.32		31-Oct-14	5,194.89	159.23
28-Aug-14	5,089.16	157.09		3-Nov-14	5,193.11	159.05
29-Aug-14	5,139.39	157.94		4-Nov-14	5,151.46	158.59

1-Sep-14	5,140.92	159.12		5-Nov-14	5,101.11	159.21
2-Sep-14	5,163.21	159.82		6-Nov-14	5,075.93	159.13
3-Sep-14	5,163.28	160.24		7-Nov-14	5,074.93	159.48
4-Sep-14	5,157.15	159.51		10-Nov-14	5,058.41	159.40
5-Sep-14	5,160.32	159.44		11-Nov-14	5,098.40	160.31
12-Nov-14	5,138.46	161.84		21-Jan-15	5,159.96	164.78
13-Nov-14	5,123.45	162.63		22-Jan-15	5,172.88	165.17
14-Nov-14	5,139.37	163.70		23-Jan-15	5,217.88	166.68
17-Nov-14	5,111.47	163.20		26-Jan-15	5,209.84	165.61
18-Nov-14	5,108.84	162.93		27-Jan-15	5,213.48	165.82
19-Nov-14	5,117.08	162.63		28-Jan-15	5,207.04	165.88
20-Nov-14	5,145.28	162.07		29-Jan-15	5,194.21	165.23
21-Nov-14	5,166.45	162.06		30-Jan-15	5,212.11	165.80
24-Nov-14	5,145.98	161.15		2-Feb-15	5,222.76	166.25
25-Nov-14	5,137.94	161.30		3-Feb-15	5,242.61	166.85
26-Nov-14	5,174.02	163.02		4-Feb-15	5,268.98	167.94
27-Nov-14	5,152.26	163.77		5-Feb-15	5,284.14	168.37
28-Nov-14	5,156.33	163.27		6-Feb-15	5,280.72	168.19
1-Dec-14	5,172.57	164.15		9-Feb-15	5,296.07	169.03
2-Dec-14	5,170.57	164.29		10-Feb-15	5,313.06	169.32
3-Dec-14	5,111.37	164.04		11-Feb-15	5,330.01	170.09
4-Dec-14	5,169.88	165.84		12-Feb-15	5,333.86	171.67
5-Dec-14	5,184.92	166.50		13-Feb-15	5,340.08	171.94
8-Dec-14	5,193.96	167.54		16-Feb-15	5,357.69	172.45
9-Dec-14	5,173.77	166.85		17-Feb-15	5,403.72	172.90
10-Dec-14	5,135.97	165.58		18-Feb-15	5,446.04	174.17
11-Dec-14	5,124.80	163.52		19-Feb-15	5,473.81	175.65
15-Dec-14	5,106.67	162.76		20-Feb-15	5,465.90	176.00
16-Dec-14	5,091.30	162.37		23-Feb-15	5,455.84	175.81
17-Dec-14	5,048.21	160.29		24-Feb-15	5,455.23	176.82
18-Dec-14	4,957.52	157.56		25-Feb-15	5,467.78	177.51
19-Dec-14	4,910.10	156.19		26-Feb-15	5,475.84	175.97
22-Dec-14	4,910.32	156.86		27-Feb-15	5,491.37	175.70
23-Dec-14	4,907.27	159.10		2-Mar-15	5,499.64	174.70
24-Dec-14	4,907.27	159.10		3-Mar-15	5,474.45	173.07
29-Dec-14	5,049.19	162.12		4-Mar-15	5,461.08	172.80
30-Dec-14	5,091.60	163.25		5-Mar-15	5,411.05	172.28
31-Dec-14	5,112.65	162.89		6-Mar-15	5,411.05	172.51
2-Jan-15	5,117.43	163.24		9-Mar-15	5,371.69	171.67
5-Jan-15	5,089.71	162.17		10-Mar-15	5,368.69	172.52
6-Jan-15	5,098.49	161.86		11-Mar-15	5,362.43	172.71
7-Jan-15	5,102.67	161.80		12-Mar-15	5,347.54	172.42
8-Jan-15	5,097.80	161.78		13-Mar-15	5,350.30	172.01

9-Jan-15	5,121.76	162.08		16-Mar-15	5,342.17	171.66
12-Jan-15	5,121.99	162.05		17-Mar-15	5,313.84	171.99
13-Jan-15	5,138.07	164.76		18-Mar-15	5,342.36	172.63
14-Jan-15	5,193.93	166.08		19-Mar-15	5,346.56	173.50
15-Jan-15	5,201.61	165.47		20-Mar-15	5,304.41	172.47
16-Jan-15	5,203.72	166.81		23-Mar-15	5,265.67	172.02
19-Jan-15	5,177.38	165.88		24-Mar-15	5,254.60	172.57
20-Jan-15	5,139.06	164.00		25-Mar-15	5,275.10	173.05
26-Mar-15	5,252.74	173.73		4-Jun-15	4,773.79	164.22
27-Mar-15	5,242.35	174.16		5-Jun-15	4,784.07	163.78
30-Mar-15	5,242.62	174.83		8-Jun-15	4,761.44	162.53
31-Mar-15	5,248.16	175.11		9-Jun-15	4,745.42	162.36
1-Apr-15	5,240.53	175.22		10-Jun-15	4,744.66	162.65
2-Apr-15	5,196.86	173.39		11-Jun-15	4,744.95	162.70
7-Apr-15	5,179.76	171.15		12-Jun-15	4,765.02	162.89
8-Apr-15	5,142.35	170.80		15-Jun-15	4,759.58	162.75
9-Apr-15	5,128.03	170.46		16-Jun-15	4,773.23	162.88
10-Apr-15	5,123.97	169.61		17-Jun-15	4,790.42	163.02
13-Apr-15	5,136.20	170.31		18-Jun-15	4,796.26	162.82
14-Apr-15	5,128.02	170.78		19-Jun-15	4,778.63	162.40
15-Apr-15	5,126.02	171.07		22-Jun-15	4,780.48	163.34
16-Apr-15	5,078.74	171.57		23-Jun-15	4,776.35	162.27
17-Apr-15	5,093.00	173.20		24-Jun-15	4,793.77	162.56
20-Apr-15	5,102.04	173.68		25-Jun-15	4,798.73	162.68
21-Apr-15	5,073.86	172.96		26-Jun-15	4,810.36	162.51
22-Apr-15	5,042.85	171.79		29-Jun-15	4,837.58	163.08
23-Apr-15	5,026.79	171.58		30-Jun-15	4,906.07	164.41
24-Apr-15	5,061.09	172.55		1-Jul-15	4,858.42	163.21
27-Apr-15	5,056.27	171.59		2-Jul-15	4,839.60	162.35
28-Apr-15	5,055.00	171.70		3-Jul-15	4,812.57	161.50
29-Apr-15	5,061.11	172.35		6-Jul-15	4,814.11	161.43
30-Apr-15	5,091.43	173.20		7-Jul-15	4,815.28	161.61
4-May-15	5,085.40	173.14		8-Jul-15	4,762.87	160.24
5-May-15	5,100.51	173.94		9-Jul-15	4,754.66	159.59
6-May-15	5,083.94	173.49		10-Jul-15	4,727.46	159.46
7-May-15	5,074.76	171.52		13-Jul-15	4,723.76	159.29
8-May-15	5,070.75	171.47		14-Jul-15	4,692.17	158.39
11-May-15	5,042.52	170.65		15-Jul-15	4,690.16	158.45
12-May-15	5,012.94	169.46		16-Jul-15	4,676.16	156.59
13-May-15	4,980.48	167.27		17-Jul-15	4,638.44	155.96
14-May-15	4,979.71	167.82		20-Jul-15	4,627.90	156.32
15-May-15	4,980.71	167.73		21-Jul-15	4,605.25	156.31
18-May-15	4,932.32	167.48		22-Jul-15	4,578.62	155.70

19-May-15	4,941.71	167.83		23-Jul-15	4,539.47	154.25
20-May-15	4,924.45	167.38		24-Jul-15	4,500.43	153.18
21-May-15	4,928.91	166.48		27-Jul-15	4,467.36	153.02
22-May-15	4,879.95	164.92		28-Jul-15	4,485.71	153.10
25-May-15	4,858.61	164.14		29-Jul-15	4,532.28	152.22
26-May-15	4,853.44	162.80		30-Jul-15	4,487.38	150.95
27-May-15	4,835.75	161.31		31-Jul-15	4,404.72	148.39
28-May-15	4,805.89	161.46		3-Aug-15	4,354.99	147.04
29-May-15	4,786.74	162.13		4-Aug-15	4,343.16	146.25
2-Jun-15	4,816.66	164.25		5-Aug-15	4,317.23	145.82
3-Jun-15	4,790.50	164.23		6-Aug-15	4,350.70	146.43
7-Aug-15	4,415.09	150.45		12-Oct-15	3,991.49	140.92
10-Aug-15	4,483.58	153.74		13-Oct-15	3,978.70	139.87
11-Aug-15	4,519.63	154.91		14-Oct-15	3,875.84	136.33
12-Aug-15	4,499.06	154.61		15-Oct-15	3,868.18	135.71
13-Aug-15	4,495.52	153.38		16-Oct-15	3,901.13	136.94
14-Aug-15	4,469.23	152.09		19-Oct-15	3,930.32	138.01
17-Aug-15	4,509.84	152.04		21-Oct-15	3,909.27	138.96
18-Aug-15	4,482.19	151.63		22-Oct-15	3,935.88	139.43
19-Aug-15	4,464.74	151.01		23-Oct-15	3,952.97	139.54
20-Aug-15	4,429.87	150.42		26-Oct-15	3,936.60	138.28
21-Aug-15	4,405.29	149.66		27-Oct-15	3,913.51	137.86
24-Aug-15	4,337.47	146.40		28-Oct-15	3,905.88	137.99
25-Aug-15	4,242.73	142.80		29-Oct-15	3,884.13	138.07
26-Aug-15	4,171.35	139.43		30-Oct-15	3,868.83	137.28
27-Aug-15	4,080.83	137.51		2-Nov-15	3,856.75	136.93
28-Aug-15	4,101.67	140.18		3-Nov-15	3,829.91	137.27
31-Aug-15	4,176.59	142.80		4-Nov-15	3,830.15	136.89
1-Sep-15	4,153.21	143.12		5-Nov-15	3,868.09	139.42
2-Sep-15	4,127.08	142.52		6-Nov-15	3,872.57	140.18
3-Sep-15	4,153.31	144.95		9-Nov-15	3,892.84	140.64
4-Sep-15	4,134.41	144.04		10-Nov-15	3,887.53	141.34
7-Sep-15	4,194.73	145.11		11-Nov-15	3,919.10	143.12
8-Sep-15	4,216.83	145.64		12-Nov-15	3,916.62	143.79
9-Sep-15	4,219.89	145.51		13-Nov-15	3,917.64	143.32
10-Sep-15	4,217.78	146.19		16-Nov-15	3,928.72	143.73
11-Sep-15	4,210.02	146.46		17-Nov-15	3,950.97	144.44
14-Sep-15	4,234.66	147.58		18-Nov-15	3,946.99	144.71
15-Sep-15	4,250.60	149.14		19-Nov-15	3,971.30	146.31
16-Sep-15	4,257.27	148.68		20-Nov-15	3,992.58	147.04
17-Sep-15	4,248.95	148.28		23-Nov-15	4,021.14	147.93
18-Sep-15	4,236.26	147.19		24-Nov-15	4,020.55	145.96
21-Sep-15	4,242.26	147.27		25-Nov-15	4,044.72	145.65

22-Sep-15	4,212.11	147.29		27-Nov-15	3,994.56	142.93
23-Sep-15	4,207.27	147.52		30-Nov-15	4,016.18	143.47
24-Sep-15	4,222.55	148.30		1-Dec-15	3,978.17	143.48
25-Sep-15	4,221.10	148.32		2-Dec-15	3,989.87	144.21
28-Sep-15	4,206.15	148.10		3-Dec-15	3,994.49	143.26
29-Sep-15	4,189.22	148.10		4-Dec-15	3,990.64	143.29
30-Sep-15	4,173.52	146.92		7-Dec-15	3,990.02	143.61
1-Oct-15	4,153.00	145.65		8-Dec-15	3,994.88	144.04
2-Oct-15	4,109.60	143.16		9-Dec-15	4,002.63	144.39
5-Oct-15	4,084.36	143.42		10-Dec-15	3,986.28	144.28
6-Oct-15	4,064.16	142.93		11-Dec-15	3,995.09	144.72
7-Oct-15	4,071.56	142.70		14-Dec-15	3,968.20	144.76
8-Oct-15	4,041.35	142.40		15-Dec-15	3,987.57	144.94
9-Oct-15	4,017.34	141.78		16-Dec-15	4,011.66	146.08
17-Dec-15	4,005.22	145.31		23-Feb-16	3,844.58	140.38
18-Dec-15	3,989.95	145.55		24-Feb-16	3,850.93	140.52
21-Dec-15	4,008.63	145.61		25-Feb-16	3,867.06	140.90
22-Dec-15	3,954.54	144.77		26-Feb-16	3,871.62	141.22
23-Dec-15	3,918.75	142.85		29-Feb-16	3,862.24	142.03
24-Dec-15	3,955.73	142.51		1-Mar-16	3,884.01	141.80
28-Dec-15	3,980.57	142.94		2-Mar-16	3,932.86	143.71
29-Dec-15	4,004.91	143.97		3-Mar-16	3,932.48	145.21
30-Dec-15	3,992.57	144.37		4-Mar-16	3,981.47	146.96
31-Dec-15	4,040.75	145.70		7-Mar-16	3,980.09	147.21
4-Jan-16	4,007.33	145.50		8-Mar-16	3,941.46	144.76
5-Jan-16	3,974.58	145.49		9-Mar-16	3,951.42	144.93
6-Jan-16	4,008.53	146.81		10-Mar-16	3,949.82	144.53
7-Jan-16	4,003.11	146.74		11-Mar-16	3,958.82	144.97
8-Jan-16	3,940.42	145.24		14-Mar-16	3,953.13	145.26
11-Jan-16	3,929.92	144.23		15-Mar-16	3,921.10	144.84
12-Jan-16	3,910.14	142.91		16-Mar-16	3,925.25	145.35
13-Jan-16	3,880.13	142.71		17-Mar-16	3,927.65	145.72
14-Jan-16	3,835.78	141.77		18-Mar-16	3,946.19	145.68
15-Jan-16	3,839.29	141.86		21-Mar-16	3,938.22	145.07
18-Jan-16	3,824.60	141.10		22-Mar-16	3,957.06	146.08
19-Jan-16	3,835.10	140.69		23-Mar-16	3,991.95	147.24
20-Jan-16	3,796.49	138.83		24-Mar-16	4,001.36	147.56
21-Jan-16	3,759.94	137.02		29-Mar-16	3,995.56	147.07
22-Jan-16	3,747.40	136.47		30-Mar-16	3,981.33	146.61
25-Jan-16	3,752.45	137.13		4-Apr-16	4,008.50	146.9
26-Jan-16	3,745.38	136.66		5-Apr-16	4,016.64	146.7
27-Jan-16	3,759.86	136.55		6-Apr-16	4,030.00	146.9
28-Jan-16	3,763.36	136.92		7-Apr-16	4,054.29	147.4

29-Jan-16	3,773.17	136.81		8-Apr-16	3,999.33	146.5
1-Feb-16	3,960.59	138.03		11-Apr-16	3,958.57	145.7
2-Feb-16	3,781.36	139.65		12-Apr-16	3,925.32	144.7
3-Feb-16	3,805.15	141.95		13-Apr-16	3,909.47	144.8
4-Feb-16	3,785.73	140.92		14-Apr-16	3,901.45	145.2
5-Feb-16	3,833.07	141.38		15-Apr-16	3,920.00	146.1
8-Feb-16	3,844.39	141.67		18-Apr-16	3,929.51	146.3
9-Feb-16	3,853.56	141.64		19-Apr-16	3,934.58	146.4
10-Feb-16	3,851.07	140.88		20-Apr-16	3,939.50	146.9
11-Feb-16	3,825.18	140.41		21-Apr-16	3,968.75	147.4
12-Feb-16	3,790.54	140.49		22-Apr-16	4,010.82	147.6
15-Feb-16	3,794.41	140.13		25-Apr-16	4,019.85	146.3
16-Feb-16	3,789.59	140.24		26-Apr-16	4,012.72	145.7
17-Feb-16	3,815.40	139.89		27-Apr-16	3,985.04	145.1
18-Feb-16	3,804.73	139.96		28-Apr-16		
19-Feb-16	3,834.57	140.69		29-Apr-16	3,990.20	146.9
22-Feb-16	3,814.06	139.64		2-May-16		
3-May-16	4,022.61	146.5		11-Jul-16	3,661.58	140.19
4-May-16	3,989.71	145.7		12-Jul-16	3,619.67	138.87
5-May-16	3,977.85	145.6		13-Jul-16	3,616.10	139.17
6-May-16	3,964.65	145.6		14-Jul-16	3,609.81	138.76
9-May-16	3,962.95	145.6		15-Jul-16	3,596.98	138.30
10-May-16	3,916.74	145.6		18-Jul-16	3,555.18	137.36
11-May-16	3,934.43	146.2		19-Jul-16	3,522.98	137.65
12-May-16	3,923.42	146.4		20-Jul-16	3,520.77	138.62
13-May-16	3,827.69	146.7		21-Jul-16	3,515.00	138.82
16-May-16	3,907.09	146.3		22-Jul-16	3,524.59	138.52
17-May-16	3,866.97	146.3		25-Jul-16	3,508.99	138.75
18-May-16	3,878.42	145.7		26-Jul-16	3,434.05	140.33
19-May-16	3,880.81	146.3		27-Jul-16	3,475.38	141.43
20-May-16	3,890.85	146.8		28-Jul-16	3,468.29	141.95
23-May-16	3,875.69	146.3		29-Jul-16	3,488.67	142.39
24-May-16	3,895.86	146.5				
25-May-16	3,912.33	146.3				
26-May-16	3,871.74	145.8				
27-May-16	3,867.50	145.5				
30-May-16	3,860.94	144.4				
31-May-16	3,827.80	143.6				
1-Jun-16						
2-Jun-16	3,799.57	143.5				
3-Jun-16	3,801.31	143.5				
6-Jun-16	3,801.03	143.8				
7-Jun-16	3,797.74	144.6				

8-Jun-16	3,798.43	145.4				
9-Jun-16	3,818.19	146.7				
10-Jun-16	3,833.92	147.0				
13-Jun-16	3,817.66	146.3				
14-Jun-16	3,784.56	145.4				
15-Jun-16	3,799.16	146.5				
16-Jun-16	3,789.94	147.3				
17-Jun-16	3,784.32	147.4				
20-Jun-16	3,767.20	147.3				
21-Jun-16	3,775.09	146.4				
22-Jun-16	3,750.98	145.2				
23-Jun-16	3,744.58	144.3				
24-Jun-16	3,706.44	142.0				
27-Jun-16	3,662.15	140.5				
28-Jun-16	3,636.64	139.6				
29-Jun-16	3,629.05	139.3				
30-Jun-16	3,640.61	140.6				
1-Jul-16	3,652.79	140.5				
4-Jul-16	3,633.98	140.1				
5-Jul-16	3,668.45	140.2				
6-Jul-16	3,664.78	140.8				
7-Jul-16						
8-Jul-16	3,688.46	141.01				

Source: **Nairobi Security Exchange**

APPENDIX III: CBK _ TREASURY BILLS RATE

CENTRAL BANK RATES									
YEAR	MONTH	Repo	Reverse Repo	Inter bank Rate	91-Day Tbill	182-days Tbill	364-days Tbill	Cash Reserve Requirement	Central Bank Rate
1991	JUL	-	-		17.14	-	-	-	-
	AUG	-	-		16.7	-	-	-	-
	SEP	-	-		17.18	-	-	-	-
	OCT	-	-		17.78	-	-		
	NOV	-	-		16.95	-	-		
	DEC	-	-		17.31	-	-		
1992	JAN	-	-		18.2	-	-		
	FEB	-	-		17.19	-	-		
	MAR	-	-		17.9	-	-		
	APR	-	-		18.05	-	-		
	MAY	-	-		18.32	-	-		
	JUN	-	-		18.76	-	-		
	JUL	-	-		17.67	-	-		
	AUG	-	-		17.76	-	-		
	SEP	-	-		18.43	-	-		
	OCT	-	-		19.41	-	-		
	NOV	-	-		18.01	-	-		

	DEC	-	-		18.14	-	-		
1993	JAN	-	-		17.87	-	-		
	FEB	-	-		17.86	-	-		
	MAR	-	-		25.07	-	-		
	APR	-	-		45.79	-	-		
	MAY	-	-		68.04	-	-		
	JUN	-	-		84.29	-	-		
	JUL	-	-		84.67	-	-		
	AUG	-	-		79.51	-	-		
	SEP	-	-		75.69	-	-		
	OCT	-	-		70.88	-	-		
	NOV	-	-		55.26	-	-		
	DEC	-	-		43.52	-	-		
1994	JAN	-	-		33.55	-	-		
	FEB	-	-		23.87	26.44	-		
	MAR	-	-		27.62	29.68	-		
	APR	-	-		30.85	29.24	-		
	MAY	-	-		31.24	32.58	-		
	JUN	-	-		32.38	33.98	-		
	JUL	-	-		29.74	32.42	-		
	AUG	-	-		24.13	25.05	-		
	SEP	-	-		17.39	24.32	-		
	OCT	-	-		16.95	15.89	-		
	NOV	-	-		17.22	16.16	-		
	DEC	-	-		17.49	18.22	-		

1995	JAN	-	-		16.74	18.52	-		
	FEB	-	-		17.63	18.46	-		
	MAR	-	-		16.84	17.33	-		
	APR	-	-		15.16	15.82	-		
	MAY	-	-		15.09	15.84	-		
	JUN	-	-		16.39	17.06	-		
	JUL	-	-		18.48	18.61	-		
	AUG	-	-		19.65	15.04	-		
	SEP	-	-		21.16	15.19	-		
	OCT	-	-		24.07	16.61	-		
	NOV	-	-		24.87	21.03	-		
	DEC	-	-		21.67	18.95	-		
1996	JAN	-	-		21.25	19.26	-		
	FEB	-	-		25.96	22.2	-		
	MAR	-	-		26.68	22.21	-		
	APR	-	-		24.16	18.57	-		
	MAY	-	-		21.96	20.27	-		
	JUN	-	-		21.85	20.77	-		
	JUL	-	-		21.76	20.3	-		
	AUG	-	-		21.63	-	-		
	SEP	23.6	-		23.1	-	-		
	OCT	22.2	-		24.08	-	-		
	NOV	19.7	-		22.09	-	-		
	DEC	18.9	-		21.53	19.49	-		
1997	JAN	16.4	-		21.61	20	-		

	FEB	12.3	-		21.44	20	-		
	MAR	13	-		21.42	-	-		
	APR	10.5	-		21.02	-	-		
	MAY	12.5	-		20.35	-	-		
	JUN	10.2	-		19.44	19.81	-		
	JUL	-	-		18.45	19.39	-		
	AUG	-	-		19.69	19.31	-		
	SEP	-	-		26.2	20.03	-		
	OCT	-	-		27.15	26.97	-		
	NOV	-	-		26.78	26.74	-		
	DEC	-	-		26.36	26.04	-		
1998	JAN	24	-		26.28	25.97	-		
	FEB	-	-		26.33	26.12	-		
	MAR	23.6	-		26.74	26.43	-		
	APR	-	-		26.98	26.63	-		
	MAY	-	-		26.38	26.48	-		
	JUN	-	-		25.48	26.23	-		
	JUL	24.5	-		24.67	25.38	-		
	AUG	-	-		23.74	24.53	-		
	SEP	22.6	-		22.47	22.67	-		
	OCT	20	-		20.59	21.14	-		
	NOV	17.3	-		17.66	18.17	-		
	DEC	10.7	-		12.56	13.32	-		
1999	JAN	10.4	-		10.7	10.52	-		
	FEB	8.55	-		8.95	8.34	-		

	MAR	-	-		8.84	8.71	-		
	APR	9	-		9.03	9.5	-		
	MAY	8.55	-		9.63	9.59	-		
	JUN	11.4	-		11.44	10.33	-		
	JUL	13.7	-		14.47	12.35	-		
	AUG	14.2	-		14.84	15.18	-		
	SEP	16.5	-		15.78	15.36	-		
	OCT	17.1	-		17.63	16.13	-		
	NOV	17.5	-		18.14	17.57	-		
	DEC	16.6	-		19.97	18.8	-		
2000	JAN	17.8	-		20.3	19.67	-		
	FEB	12.6	-		14.84	15.22	-		
	MAR	9.11	-		11.28	11.61	-		
	APR	9.85	-		12.44	-	-		
	MAY	10.1	-		11.22	11.75	-		
	JUN	9.85	-		10.47	-	-		
	JUL	9.61	-		9.9	-	-		
	AUG	9.37	-		9.25	-	-		
	SEP	10.3	-		10.36	-	-		
	OCT	10.2	-		10.65	-	-		
	NOV	11	-		11.17	-	-		
	DEC	12.3	-		12.9	12.1	-		
2001	JAN	14.5	-	11.84	14.76	14.4	-	10	
	FEB	14.9	-	11.95	15.3	15.36	-	10	
	MAR	14.8	-	9.3	14.97	14.88	-	10	

	APR	11.8	-	8.53	12.9	12.9	-	10	
	MAY	11.1	-	10.85	10.52	11.31	-	10	
	JUN	11.9	-	10.71	12.07	-	-	10	
	JUL	12.4	-	10.78	12.87	12.58	-	10	
	AUG	12.4	-	11.98	12.84	-	-	10	
	SEP	11.5	-	10.67	12.39	-	-	10	
	OCT	11.2	-	10.45	11.63	-	-	10	
	NOV	11.2	-	10.13	11.5	-	-	10	
	DEC	11.1	-	10.42	11.01	-	-	10	
2002	JAN	10.8	-	10.29	10.85	-	-	10	
	FEB	10.5	-	9.79	10.61	11.12	-	10	
	MAR	10.2	-	10.05	10.14	10.6	-	10	
	APR	10.1	-	9.64	10.01	10.47	-	10	
	MAY	9.12	-	8.54	9.04	9.98	-	10	
	JUN	8.11	-	8.19	7.34	8.8	-	10	
	JUL	8.2	-	7.63	8.63	9.36	-	10	
	AUG	8.2	-	8.25	8.34	9.49	-	10	
	SEP	7.56	-	7.29	7.6	8.62	-	10	
	OCT	7.84	-	8.3	8.07	8.54	-	10	
	NOV	7.91	-	8.12	8.3	8.76	-	10	
	DEC	8.14	-	8.69	8.38	8.79	-	10	
2003	JAN	8.17	-	9.04	8.38	8.73	-	10	
	FEB	7.17	-	7.06	7.77	8.14	-	10	
	MAR	6.23	-	6.22	6.24	6.64	-	10	
	APR	5.94	-	5.88	6.25	6.83	-	10	

	MAY	5.5	-	5.67	5.84	6.68	-	10	
	JUN	0.84	-	1.62	3	4.12	-	6	
	JUL	0.78	-	0.45	1.54	2.95	-	6	
	AUG	0.48	-	0.43	1.18	2.12	-	6	
	SEP	0.47	-	0.54	0.83	1.35	-	6	
	OCT	0.56	-	0.69	1	1.61	-	6	
	NOV	0.64	-	0.73	1.28	1.88	-	6	
	DEC	0.78	-	0.81	1.46	2.09	-	6	
2004	JAN	1.06	-	0.82	1.58	2.35	-	6	
	FEB	1.13	-	0.9	1.57	2.33	-	6	
	MAR	1.27	-	1.27	1.59	2.53	-	6	
	APR	1.56	-	1.72	2.11	3.12	-	6	
	MAY	1.56	-	2.05	2.87	3.61	-	6	
	JUN	1.29	-	1.29	2.01	3.15	-	6	
	JUL	1.49	-	1.52	1.71	2.98	-	6	
	AUG	1.94	-	2.1	2.27	3.49	-	6	
	SEP	2.5	-	2.95	2.75	4.03	-	6	
	OCT	2.76	-	3.56	3.95	5.16	-	6	
	NOV	4.95	-	4.66	5.06	6.03	-	6	
	DEC	8.97	-	9.41	8.04	8.19	-	6	
2005	JAN	7.25	-	8.72	8.26	8.76	-	6	
	FEB	7.23	-	8.14	8.59	8.96	-	6	
	MAR	7.26	-	8.13	8.63	8.91	-	6	
	APR	7.28	-	8.28	8.68	8.92	-	6	
	MAY	7.26	-	8.3	8.66	9.02	-	6	

	JUN	7.34	-	7.37	8.5	8.96	-	6	
	JUL	7.43	-	7.51	8.59	9.08	-	6	
	AUG	7.67	-	7.77	8.66	9.09	-	6	
	SEP	7.77	-	8.03	8.58	8.9	-	6	
	OCT	7.8	-	7.98	8.19	8.52	-	6	
	NOV	7.72	-	7.64	7.84	8.37	-	6	
	DEC	7.74	-	7.79	8.07	8.49	-	6	
2006	JAN	7.81	-	7.78	8.23	8.84	-	6	
	FEB	7.78	-	7.73	8.02	8.85	-	6	
	MAR	7.5	-	7.52	7.6	8.52	-	6	
	APR	6.78	-	6.97	7.02	7.36	-	6	
	MAY	6.68	-	8.11	7.01	7.48	-	6	
	JUN	6.39	-	6.41	6.6	7.32	-	6	9.75
	JUL	5.73	-	5.74	5.89	6.42	-	6	9.75
	AUG	5.94	-	5.66	5.96	6.47	-	6	10
	SEP	6.16	-	6.02	6.45	7.45	-	6	10
	OCT	6.23	-	6.08	6.83	8.31	-	6	10
	NOV	6.33	-	6.18	6.41	7.99	-	6	10
	DEC	6.34	-	6.34	5.73	7.32	-	6	10
2007	JAN	6.43	-	6.43	6	8.28	-	6	10
	FEB	6.75	-	6.52	6.22	8.56	-	6	10
	MAR	6.7	-	6.55	6.32	7.97	-	6	10
	APR	6.84	-	6.81	6.65	7.93	-	6	10
	MAY	7.03	-	7.11	6.77	7.98	-	6	10
	JUN	7.07	-	6.98	6.53	7.19	-	6	8.5

	JUL	7.19	-	7.07	6.52	7.17	-	6	8.5
	AUG	7.49	-	7.38	7.3	7.99	-	6	8.75
	SEP	7.81	-	7.59	7.35	7.82	-	6	8.75
	OCT	7.44	-	7.65	7.55	7.84	-	6	8.75
	NOV	6.42	-	6.5	7.52	8.04	-	6	8.75
	DEC	7.13	-	7.05	6.87	7.87	-	6	8.75
2008	JAN	7.75	-	7.66	6.95	8.09	-	6	8.75
	FEB	6.9	-	7.18	7.28	8.3	-	6	8.75
	MAR	6.46	-	6.35	6.9	7.82	-	6	8.75
	APR	6.67	-	6.59	7.35	8.3	-	6	8.75
	MAY	7.42	-	7.72	7.76	8.75	-	6	8.75
	JUN	7.61	-	7.79	7.73	8.84	-	6	9
	JUL	7.41	-	8.07	8.03	9.09	-	6	9
	AUG	6.35	-	6.92	8.02	8.75	-	6	9
	SEP	6.06	-	6.7	7.69	8.08	-	6	9
	OCT	6.03	-	6.81	7.75	8.32	-	6	9
	NOV	6.27	-	6.83	8.39	8.86	-	6	9
	DEC	6.36	-	6.67	8.59	9.08	-	5	8.5
2009	JAN	5.1	6.73	5.95	8.46	8.93	-	5	8.5
	FEB	5.08	6.03	5.49	7.55	7.89	-	5	8.5
	MAR	4.62	5.53	5.57	7.31	7.91	-	5	8.25
	APR	4.05	5.79	5.81	7.34	8.34	-	5	8.25
	MAY	6.18	5.43	5.55	7.45	8.77	-	5	8
	JUN	0	4.01	3.08	7.33	8.28	-	4.5	8
	JUL	0	3.35	2.69	7.24	8.14	-	4.5	7.75

	AUG	0	4.31	3.68	7.25	8.12	8.71	4.5	7.75
	SEP	0	3.43	3.38	7.29	8.09		4.5	7.75
	OCT	0	3.5	2.57	7.26	7.98	8.44	4.5	7.75
	NOV	0	3.5	3.11	7.22	8.02		4.5	7
	DEC	0	3.66	2.95	6.82	7.38	8.01	4.5	7
2010	JAN	0	3.91	3.69	6.56	7.02		4.5	7
	FEB	0	2.8	2.39	6.21	6.61	7.38	4.5	7
	MAR	0	2.43	2.21	5.98	6.34		4.5	6.75
	APR	0	2.46	2.46	5.17	5.58	6.01	4.5	6.75
	MAY	0	2.41	2.16	4.21	4.41	-	4.5	6.75
	JUN	0	2.41	1.15	2.98	2.86	4.14	4.5	6.75
	JUL	0	1.72	1.35	1.6	1.72	-	4.5	6
	AUG	0	1.84	1.66	1.83	2.03	2.96	4.5	6
	SEP	0	1.84	1.18	2.04	2.14	-	4.5	6
	OCT	0	1.84	0.98	2.12	2.1	3.06	4.5	6
	NOV	0	1.07	1.01	2.21	2.28	-	4.5	6
	DEC	0	1.41	1.18	2.28	2.59	3.36	4.5	6
2011	JAN	0	1.23	1.24	2.46	2.7	3.69	4.5	5.75
	FEB	0	1.18	1.13	2.59	2.76	3.72	4.5	5.75
	MAR	1.66	1.18	1.24	2.77	3.06	4	4.5	6
	APR	4.5	2.99	3.97	3.26	3.51	5	4.5	6
	MAY	5.72	0	5.54	5.35	4.57	6.77	4.5	6
	JUN	5.73	6.36	6.36	8.95	9.93	-	4.75	6.25
	JULY	0	6.25	8.61	8.99	9.85	10.22	4.75	6.25
	AUG	0	6.25	14.29	9.23	10.15	11.07	4.75	6.25
	SEP	0	5.75	7.46	11.93	11.28	12.54	4.75	7
	OCT	18.9	-	14.95	14.8	14.68	14.5	4.75	11
	NOV	0	-	28.9	16.14	15.9	16.62	4.75	16.5
	DEC	17.8	-	21.75	18.3	18.3	20.96	5.25	18
2012	JAN	17.9	-	19.27	20.56	20.69	21.96	5.25	18
	FEB	13.8	-	18.15	19.7	19.88	20.96	5.25	18
	MAR	0	-	24.02	17.8	18.24	17.04	5.25	18
	APR	15.5	-	16.15	16.01	16.92	16.92	5.25	18
	MAY	17	-	17.16	11.18	12.71	12.43	5.25	18
	JUN	17.6	-	17.09	10.09	10.67	12.43	5.25	18
	JULY	14.3	-	13.71	11.95	12.21	13	5.25	16.5
	AUG	9.65	-	8.97	10.93	11.77	12.85	5.25	16.5
	SEP	8.42	-	7.02	7.77	9.36	10.34	5.25	13
	OCT	9.74	-	9.14	8.98	10.33	10.57	5.25	13
	NOV	8.3	-	7.14	9.8	10.47	11.94	5.25	11
	DEC	6.39	-	5.84	8.3	9.25	11.71	5.25	11

2013	JAN	6.6	-	5.86	8.08	8.09	11.67	5.25	9.5
	FEB	9.1	-	9.25	8.38	8.4	11.66	5.25	9.5
	MAR	9.35	-	8.93	9.88	9.89	12.54	5.25	9.5
	APR	9.14	-	7.9	10.38	10.75	12.49	5.25	9.5
	MAY	7.96	-	7.16	9.46	10.04	11.29	5.25	8.5
	JUNE	7.93	-	7.14	6.21	7.12	8.57	5.25	8.5
	JULY	7.48	-	7.93	5.92	6.23	8.81	5.25	8.5
	AUG	0	9	8.88	10.03	9.57	11.35	5.25	8.5
	SEP	7.11	-	7.52	9.58	10.15	10.91	5.25	8.5
	OCT	0	-	10.66	9.72	10.28	10.75	5.25	8.5
	NOV	0	12	10.77	9.94	10.54	10.97	5.25	8.5
	DEC	7.95	11	8.98	9.52	10.41	10.69	5.25	8.5
2014	JAN	0	-	10.43	9.26	10.36	10.65	5.25	8.5
	FEB	0	-	8.83	9.16	10.35	10.67	5.25	8.5
	MAR	6.92	-	6.47	8.98	10.08	10.46	5.25	8.5
	APR	8.39	-	7.4	8.8	9.83	10.2	5.25	8.5
	MAY	8.42	-	7.76	8.82	9.86	10.09	5.25	8.5
	JUN	6.46	-	6.6	9.81	10.5	10.55	5.25	8.5
	JUL	0	-	8.08	9.78	10.74	10.96	5.25	8.5
	AUG	13	-	11.79	8.29	8.85	10.28	5.25	8.5
	SEP	8.39	-	7.43	8.38	8.61	10.26	5.25	8.5
	OCT	8.39	-	6.73	8.67	8.91	10.28	5.25	8.5
	NOV	8.17	-	6.86	8.64	9.18	10.24	5.25	8.5
	DEC	8.29	-	6.91	8.58	9.49	10.38	5.25	8.5
2015	JAN	8.09	-	7.12	8.59	10.19	10.73	5.25	8.5
	FEB	7.87	-	6.77	8.59	10.37	10.96	5.25	8.5
	MAR	8.08	-	6.85	8.49	10.35	10.69	5.25	8.5
	APR	8.38	-	8.77	8.42	10.26	10.57	5.25	8.5
	MAY	8.5	-	11.17	8.26	10.37	10.77	5.25	8.5
	JUN	9.7	-	11.78	8.26	10.55	10.98	5.25	10
	JUL	10.6	-	12.89	10.57	11.99	11.93	5.25	11.5
	AUG	11.5	-	18.8	11.54	12.06	13.3	5.25	11.5
	SEP	11.5	-	19.85	14.61	13.4	15.24	5.25	11.5
	OCT	11.5	18.12	14.82	21.65	21.52	21.61	5.25	11.5
	NOV		14.21	8.77	12.34	14.02	15.2	5.25	11.5
	DEC	9.23	11.93	7.27	9.81	11.43	12.5	5.25	11.5
2016	JAN	8.85	11.44	6.12	11.36	13.46	14.08	5.25	11.5
	FEB	9.68	11.58	4.54	10.63	13.19	13.74	5.25	11.5
	MAR	4.31	11.63	4.1	8.72	10.83	12.26	5.25	11.5
	APR	5.23	12.49	4.01	8.92	10.87	11.84	5.25	11.5
	MAY	6	11.55	3.82	8.15	10.25	11.6	5.25	10.5

	JUNE	10	10.59	4.56	7.25	9.56	10.84	5.25	10.5
	JULY	9.76	10.57	5.88	6.16	9.79	10.88	5.25	10.5
Source: Central Bank of Kenya									

APPENDIX IV: CBK _ TREASURY BILLS RATE
MONTHLY DATA CONVERTED TO THEIR NATURAL LOG

MONTH	LN NSE 20	LN NASI	LN LENDING RATES	LN SPREAD	LN T - BILLS RATES	LN TERM DEPOSIT RATES
Jun-09	8.038	4.188	2.714	2.283	1.992	1.664
Jul-09	8.101	4.271	2.694	2.272	1.98	1.627
Aug-09	8.073	4.251	2.692	2.278	1.981	1.609
Sep-09	8.035	4.222	2.691	2.271	1.987	1.619
Oct-09	8.014	4.199	2.693	2.277	1.982	1.615
Nov-09	8.048	4.236	2.698	2.281	1.977	1.621
Dec-09	8.068	4.258	2.692	2.295	1.92	1.577
Jan-10	8.149	4.347	2.707	2.301	1.881	1.609
Feb-10	8.185	4.366	2.707	2.312	1.826	1.587
Mar-10	8.275	4.415	2.695	2.309	1.788	1.556
Apr-10	8.329	4.473	2.68	2.312	1.643	1.502
May-10	8.358	4.512	2.671	2.291	1.437	1.522
Jun-10	8.363	4.54	2.667	2.297	1.092	1.493
Jul-10	8.375	4.562	2.66	2.346	0.47	1.348
Aug-10	8.427	4.599	2.652	2.346	0.604	1.319
Sep-10	8.419	4.576	2.638	2.347	0.713	1.261
Oct-10	8.443	4.616	2.628	2.329	0.751	1.275
Nov-10	8.429	4.614	2.635	2.343	0.793	1.264
Dec-10	8.383	4.575	2.63	2.33	0.824	1.278
Jan-11	8.42	4.616	2.641	2.361	0.9	1.233
Feb-11	8.371	4.581	2.633	2.352	0.952	1.227
Mar-11	8.292	4.516	2.633	2.347	1.019	1.244

Apr-11	8.295	4.538	2.633	2.347	1.182	1.244
May-11	8.301	4.542	2.63	2.339	1.677	1.256
Jun-11	8.298	4.521	2.633	2.325	2.192	1.303
Jul-11	8.247	4.469	2.649	2.331	2.196	1.348
Aug-11	8.177	4.376	2.662	2.327	2.222	1.404
Sep-11	8.132	4.302	2.694	2.359	2.479	1.437
Oct-11	8.107	4.243	2.722	2.34	2.695	1.575
Nov-11	8.124	4.264	2.918	2.546	2.781	1.749
Dec-11	8.046	4.198	2.998	2.569	2.907	1.944
Jan-12	8.071	4.228	2.972	2.475	3.023	2.036
Feb-12	8.069	4.245	3.01	2.507	2.981	2.081
Mar-12	8.114	4.295	3.013	2.512	2.879	2.081
Apr-12	8.155	4.323	3.007	2.414	2.773	2.202
May-12	8.197	4.365	3.002	2.46	2.414	2.131
Jun-12	8.211	4.379	3.011	2.519	2.312	2.064
Jul-12	8.247	4.417	3.003	2.477	2.481	2.11
Aug-12	8.25	4.427	3.002	2.508	2.392	2.061
Sep-12	8.276	4.459	2.982	2.512	2.05	2.001
Oct-12	8.302	4.486	2.947	2.5	2.195	1.926
Nov-12	8.329	4.526	2.878	2.205	2.282	2.164
Dec-12	8.313	4.534	2.899	2.429	2.116	1.917
Jan-13	8.383	4.624	2.898	2.453	2.089	1.873
Feb-13	8.42	4.667	2.881	2.447	2.126	1.839
Mar-13	8.462	4.733	2.875	2.415	2.291	1.878
Apr-13	8.499	4.785	2.883	2.441	2.34	1.855
May-13	8.502	4.827	2.859	2.391	2.247	1.876
Jun-13	8.476	4.802	2.831	2.334	1.826	1.895
Jul-13	8.458	4.795	2.834	2.345	1.778	1.886
Aug-13	8.475	4.82	2.831	2.361	2.306	1.85
Sep-13	8.46	4.814	2.825	2.333	2.26	1.879
Oct-13	8.501	4.876	2.833	2.358	2.274	1.861
Nov-13	8.525	4.918	2.827	2.33	2.297	1.889
Dec-13	8.503	4.909	2.833	2.336	2.253	1.895
Jan-14	8.521	4.946	2.835	2.349	2.226	1.879
Feb-14	8.486	4.927	2.837	2.35	2.215	1.883
Mar-14	8.505	4.964	2.828	2.332	2.195	1.889
Apr-14	8.501	4.987	2.815	2.324	2.175	1.869
May-14	8.503	5.016	2.831	2.356	2.177	1.859
Jun-14	8.483	5.008	2.795	2.282	2.283	1.881
Jul-14	8.496	5.021	2.828	2.334	2.28	1.886
Aug-14	8.523	5.048	2.789	2.277	2.115	1.873

Sep-14	8.562	5.083	2.775	2.241	2.126	1.893
Oct-14	8.568	5.083	2.773	2.236	2.16	1.893
Nov-14	8.543	5.084	2.769	2.221	2.156	1.905
Dec-14	8.532	5.091	2.772	2.217	2.149	1.918
Jan-15	8.549	5.102	2.768	2.228	2.151	1.895
Feb-15	8.589	5.148	2.739	2.174	2.151	1.899
Mar-15	8.583	5.153	2.738	2.178	2.139	1.892
Apr-15	8.538	5.147	2.734	2.175	2.131	1.887
May-15	8.509	5.122	2.725	2.164	2.111	1.879
Jun-15	8.474	5.094	2.776	2.243	2.111	1.893
Jul-15	8.445	5.056	2.757	2.245	2.358	1.842
Aug-15	8.381	4.997	2.752	2.171	2.446	1.933
Sep-15	8.344	4.988	2.823	2.255	2.682	1.985
Oct-15	8.287	4.941	2.808	2.202	3.075	2.02
Nov-15	8.277	4.961	2.843	2.279	2.513	2
Dec-15	8.291	4.972	2.907	2.33	2.283	2.082
Jan-16	8.257	4.949	2.89	2.348	2.43	2.02
Feb-16	8.251	4.946	2.885	2.342	2.364	2.016
Mar-16	8.282	4.98	2.883	2.37	2.166	1.97
Apr-16	8.288	4.986	2.893	2.409	2.188	1.934
May-16	8.271	4.983	2.903	2.471	2.098	1.853
Jun-16	8.232	4.973	2.9	2.434	1.981	1.914
Jul-16	8.181	4.939	2.896	2.439	1.818	1.893

Source: Author (2016)

APPENDIX V: Descriptive Data Output

	LN NSE 20	LN NASI	LN Lending rates	LN Spread	LN T bill rates	LN Term deposit rates
Minimum	8.01	4.18	2.63	2.16	.47	1.23
Maximum	8.59	5.15	3.01	2.57	3.08	2.20
Mean	8.33	4.69	2.77	2.3	2.05	1.77
Std. Deviation	.16	.30	.12	.093	.55	.27
Skewness	-.32	-.081	.24	.33	-1.08	-.76
	.26	.260	.26	.26	.26	.26
Kurtosis	-1.01	-1.43	-.96	-.19	1.24	-.56
	.514	.514	.51	.51	.51	.51
N	86	86	86	86	86	86

APPENDIX VI: Stationarity Tests Output

Group unit root test: **Stationarity Tests Output**

Series: LN_NASI, LN_NSE_20, LN_SPREAD, LN_TBILL_RATES, LN_TERM_DEPOSIT_RATES

Sample: 1 86

Exogenous variables: Individual effects

Automatic selection of maximum lags

Automatic lag length selection based on AIC: 2 to 11

Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-0.95773	0.1691	5	403
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-1.06638	0.1431	5	403
ADF - Fisher Chi-square	12.1100	0.2778	5	403
PP - Fisher Chi-square	11.9369	0.2893	5	425

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

APPENDIX VII : Pairwise Granger Causality Tests Sample: 1 86
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
LN_NSE_20 does not Granger Cause LN_NASI	84	0.15200	0.8592
LN_NASI does not Granger Cause LN_NSE_20		0.74023	0.4803
LN_SPREAD does not Granger Cause LN_NASI	84	0.61626	0.5425
LN_NASI does not Granger Cause LN_SPREAD		1.88992	0.1579
LN_TBILL_RATES does not Granger Cause LN_NASI	84	2.24093	0.1131
LN_NASI does not Granger Cause LN_TBILL_RATES		1.50996	0.2272
LN_TERM_DEPOSIT_RATES does not Granger Cause LN_NASI	84	8.33961	0.0005
LN_NASI does not Granger Cause LN_TERM_DEPOSIT_RATES		3.09399	0.0509
LN_SPREAD does not Granger Cause LN_NSE_20	84	0.40655	0.6673
LN_NSE_20 does not Granger Cause LN_SPREAD		3.17957	0.0470
LN_TBILL_RATES does not Granger Cause LN_NSE_20	84	2.74496	0.0704
LN_NSE_20 does not Granger Cause LN_TBILL_RATES		1.09204	0.3405
LN_TERM_DEPOSIT_RATES does not Granger Cause	84	5.14005	0.0080
LN_NSE_20 does not Granger Cause LN_TERM_DEPOSIT_RATES		2.41733	0.0957
LN_TBILL_RATES does not Granger Cause LN_SPREAD	84	1.19721	0.3075
LN_SPREAD does not Granger Cause LN_TBILL_RATES		3.06698	0.0521
LN_TERM_DEPOSIT_RATES does not Granger Cause	84	3.71243	0.0288
LN_SPREAD does not Granger Cause LN_TERM_DEPOSIT_RATES		8.98360	0.0003
LN_TERM_DEPOSIT_RATES does not Granger Cause	84	0.25435	0.7760
LN_TBILL_RATES does not Granger Cause		21.8773	3.E-08

APPENDIX VIII: Correlation Analysis

		Treasury Bill rates	**Lending rates**	**Spread**	**Term deposit rates**	**Security market prices**
Treasury Bill rates	Pearson Correlation	1				
	Sig. (2-tailed)					
Lending Rates	Pearson Correlation	-.311	1			
	Sig. (2-tailed)	.033				
Spread	Pearson Correlation	.772	-.975	1		
	Sig. (2-tailed)	.049	.091			
Term	Pearson Correlation	.901	.008	-.049	1	
	Sig. (2-tailed)	.000	.954	.720		
Security market prices	Pearson Correlation	.984**	.338*	.149*	.645*	1
	Sig. (2-tailed)	.013	.049	.020	.036	
	N	61	61	57	61	61

*. Correlation is significant at the 0.05 level (2-tailed); **. Correlation is significant at the 0.01 level (2-tailed);