

**THE RELATIONSHIP BETWEEN INTEREST RATES AND SHARE
PRICES OF COMMERCIAL BANKS LISTED AT THE NAIROBI
SECURITIES EXCHANGE**

BY

MUTHEU ELIZABETH

D63/74922/2014

**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE
OF MASTER OF SCIENCE IN FINANCE, UNIVERSITY OF
NAIROBI**

NOVEMBER 2016

DECLARATION

This research proposal is my own original work and has never been presented for a degree at any other university for examination.

Signature _____ Date _____

Mutheu Elizabeth

D63/74922/2014

This research project has been submitted for examination with my approval as the University supervisor.

Signature _____ Date _____

Mr. Abdullatif Essajee

Lecturer, Department of Finance and Accounting

School of Business

University of Nairobi

ACKNOWLEDGEMENT

I want to thank the Almighty God for His providence, sustenance and strength during my study period, as without Him I would not have come this far.

My special thank you to my supervisor, Abdullatif Essajee for his tireless guidance, selfless dedication, invaluable and active guidance throughout the study.

I am sincerely thankful to my family members and all friends for their moral support and constant encouragement during the research period. To all that I could not mention by name, I remain forever indebted.

DEDICATION

This research is dedicated to my loving parents, my young siblings, Shadrack Mathuri, Meshack Munyaka and Abednego Muchiri. You boys have inspired me to work hard and achieve more.

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LIST OF ABBREVIATIONS

- ADF** - Augmented Dickey Fuller test
- APT** - Arbitrage Pricing Theory
- CAPM** - Capital Asset Pricing Model
- CBK** - Central Bank of Kenya
- CBR** - Central Bank Rate
- EMH** - Efficient Market Hypothesis
- MPC** - Monetary Policy Committee
- NSE** - Nairobi Securities Exchange

ABSTRACT

Interest rate is a proxy for financial prices for credit and affects resource allocation, production levels, prices and profitability. Thus, the relation between stock market and macroeconomic factors like interest rates has attracted interest in the past; whether from practitioners, researchers or even investors due to their belief that stock market enhances or drives the growth of an economy. Thus, this study sought to examine the relation between interest rates and share prices of commercial banks listed at NSE. A descriptive research design was adopted for this study. Population of this study entailed 10 commercial banks listed at NSE. This study used secondary data of commercial banks listed at NSE. This study used three models among them the Augmented Dickey Fuller (ADF) model, the Granger Causality Test (GCT) and finally linear regression model. ADF unit root found that time series had a unit root test and time series variables were stable. GCT found that interest rates do not granger cause share prices while share price does not granger cause interest rates. The study concluded that interest rates do not granger cause share prices while share prices do not granger cause share prices. The study also concluded that an increase in interest rates, exchange rates, inflation rates and decrease in dividend payout decreases share prices of listed Kenyan banks. The study recommended that banks management should come up with effective policies on interest rates since the study found that interest rates adversely affect share prices of listed banks.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The relationship between movements of interest rates and shares prices has been a subject of much speculation and empirical analysis for a while. The relationship between the two is of interest not only to economic theorists, but also for investors who are grappling with issues regarding asset allocation and market timing (Yin & Yang, 2013). Rate of Interest is one of crucial macroeconomic variables, which is more associated with the growth of economy (Alam & Uddin, 2009). Interest rate policy affects economy, mostly through prices of goods and services and one sector of the economy that is affected by interest rate changes is the stock market (Adjasi, 2007).

Financial theory links the changes in interest rates and stock returns (Ferrer, Bolos & Benitez, 2014). The efficient market theory affirms that the share market responds quickly to any emerging information, as such the market contains investors' views about the market (Kitatia, Evusa & Maithya, 2015). Thus, interest rate movements on money markets are immediately reflected in capital market prices (Chovancova, 2001). The wealth effect theory also holds that share prices have the potential of predicting the future of real economy (Pasrun, 2015).

Due to the competition between interest-bearing debt securities and stocks on the stock exchange, a policy action, which leads to increases in interest rates, will result in a shift of funds away from stocks to debt securities, thus depressing the prices of stocks (Adjasi, 2007). A high interest rate resulting from contractionary monetary policy affects stock market returns negatively since high rates of interest has the potential to reduce the value

of equity hence making fixed income securities attractive. On the contrary, low rates of interest resulting from expansionary monetary policy has the potential of improving the stock market (Addo & Sunzuoye, 2012).

Most of Sub Saharan Africa countries still experience high levels of rates of interest, even though majority of them have undertaken some structural adjustment reforms that leads to liberalisation of rates of interest in many countries around the region, including Kenya (Were & Wambua, 2014). Tarus, Chekol, and Mutwol (2012) argued that interest rates were liberalized in Kenya with the main objective of improving efficiency in the intermediation process by reducing the interest risks, which in turn was to improve the listed commercial banks' stock returns. According to the authors, this still seems to be a major challenge within the Kenyan banking sector.

1.1.1 Interest Rates

It is defined as a price that a borrower or a loan client pays for use of borrowed funds from a lender or the fee which is paid for the use of an asset that is borrowed from a lender (Maigua & Gekara, 2016). The rate of interest is described as the cost which is paid for any borrowing or lending money and is normally expressed as an annual percentage rate. In other words, interest rate is cost of capital or price for the use of funds or money in a certain period (Uddin & Alam, 2009). Interest rates are a signal which affects channelling of money or funds from savers to borrowers of such funds or money (Tran, 2013).

Interest rate is a proxy for financial prices for credit and affects resource allocation, production levels, prices and profitability (Uddin & Alam, 2009). Rate of interest has an

advance effect on the market because a rise of rate of interest makes investors change their financial decisions on investments. Their decision may favor investment in fixed income securities other than in capital markets (Syed & Anwar, 2012). High interest risk will either push the lenders out of business or borrowers will be unable to pay (Ariemba, Kiweu & Riro, 2015).

Increase in rates of interest makes the funds costs so expensive and this has the potential of crowding out private demand, especially where there is significant investment sensitivity to interest rate changes. Nevertheless, high rates of interest have the potential of increasing savings and this can attract foreign inflows leading to appreciation of a local currency (Jordaan, 2013). Volatile fluctuations in rates of interest and unpredictability on incidence of next rate of interest, lead to unpredictability in various macroeconomic variables like investment, savings, output, employment, aggregate demand and consumption in the economy (Matete, Ndede & Jagongo, 2014).

Interest rate on money market is the main parameter representing at the same time a minimum yield in comparing various yields on investments of money and capital markets. Investors' decision on investments of money and capital markets is always based on the interest rate prevailing in the money market (Chovancova, 2001).

1.1.2 Share Prices

Share price is the price prevailing today for a certain security or stock. Stock price provides a measure of firm's value and performance in an efficient market (Sloan, 2012). The stock or share price is a vital indicator that investors use to make an investment decision (Gill et al., 2012). Stock prices usually fluctuate and that's a good indicator of a

firm's performance (Sloan, 2012). Changes in share prices have a great effect on a country's economy (Pasrun, 2015).

Share prices are highly affected by the business fundamentals, which are either economic or political. These factors affect the share prices but are outside the share market itself. The many traders and investors in the market are at all times seeking to know the trend of the share prices, and this trend is mainly based on the fundamental conditions (Ngugi, 2014). The stability rise and fall of share prices at the securities exchange in Kenya is mostly dependent on the market forces. That is the demand and supply which has a direct impact on market capitalization of the individual companies and the market in general (Sifunjo & Mwasaru, 2012).

1.1.3 Interest Rates and Share Prices

Various authors have examined the relation between macroeconomic variables like interest rates and stock returns and different models have been used to explain the relationship. CAPM assumes that uncertainties surrounding future securities prices are the only risks that concern many investors (Kirui, Wawire & Onono, 2014). The Arbitrage Theory (AT) on the other hand postulates that a rise in real rate of interest reduces firm's present value (PV) of its future cash flows and causes a fall in stock prices. However, high rate of interest stimulates capital inflow, and therefore a fall in exchange rate (Mlambo, Maredza & Sibanda, 2013).

According to Zohaib, Sangeen and Lala (2012), an increase in interest rate results to a decrease in stock prices since the required rate of return on shares rises that causes a decline in share prices. Chovancova (2001) posits that share prices respond more to long-

term rates of interest changes, thus a rise in interest rates makes equity investors to shift investment from equity market to fixed-income securities market. Conversely, according to Chovancova (2001), greater reduction in rates of interest makes investors to shift their investments to capital markets because securities traded in capital markets provide higher rates of capital appreciation than money market instruments.

Kitatia, Evusa and Maithya (2015) points out that when bank's depositors interest rate increases, the rate of lending of interest also increases, leading to a decrease in investments, that is also a cause for decrease in stock price. Henceforth, theoretically there is a negative relation between share price and rate of interest. Mondal and Imran (2012) posit that a low interest rate indicates a low demand for capital, which in turn drives stock price down. Yin and Yang (2013) also examined interest rate as a determinant of stock returns of commercial banks from developed economies perspective and established that changes of central bank interest rates have a potential influence on stock returns of commercial banks.

1.1.4 Commercial Banks Listed at the Nairobi Securities Exchange

According to CBK's directory, there are forty-three commercial banks in the country some of which are internationally based. The headquarters of these banks are in Nairobi and they serve both retail and corporate customers. The banks in the country perform the following function: creation of money, community savings, ensure smooth support of payment mechanisms, ensure smooth flow of international transactions, storage of valuable goods and provision of credit services. The Central Banks of Kenya falls under Treasury docket, is accountable for the formulation and execution of monetary policy and

foster of liquidity and proper operations of Kenyan commercial banks. This policy formulation and implementation also include commercial banks financial risk management and financial performance (Central bank of Kenya, 2015). Out of the 43 banks, 31 are owned by locals and 13 by foreigners while 10 are listed on the Nairobi Securities Exchange (NSE).

The Kenyan banking sector has undergone many regulatory and financial reforms in the past. Such reforms have brought in some important changes to the banking sector as well as inspiring foreign banks to enter the Kenyan market (Irungu, 2013). The banking sector is governed by the Banking Act including Prudential Guidelines. In Kenya, banking sector plays a vital role in financial sector, mainly with respect to saving mobilization and provision of credit (Were & Wambua, 2013).

Banks are the main transmitters of monetary policies implemented by CBK in Kenyan economy (Onuonga, 2014). The monetary policy adopted has a significant effect on banks' market value and most of banks' specific factors that have an effect on stock returns of banks are current earnings, future earnings, stock price, sources of capital and returns on capital and target capital structure (Lilian, Mungai & Eddie 2014). Commercial banks also perform the role of servicing and portfolio risk management and interest rates directly affect banks' activities (Akingunola, Adekunle & Ojodu, 2012).

1.2 Research Problem

Interest rate is a proxy for financial prices for credit and affects resource allocation, production levels, prices and profitability (Akingunola, Adekunle & Ojodu, 2012). Thus, the relation between stock market and some macro-economic factors such as rates of

interest has attracted interest in the past; whether from practitioners, researchers or even investors due to their belief that stock market enhances or drives the growth of an economy (Al-Adayleh, 2015). As such, efficiency in stock returns and rate of interest has created fiery debates and interests among many groups of people such as economists, market analysts and so on (Forgha, 2012).

In Kenya, CKK lowered central bank rate (CBR) by one hundred basis points to 8.5% from 9.50% as at 7th May 2013 because of unrelenting inflationary pressures and stability of the exchange rates. In 2015, the MPC raised the CBR by a further 150 basis points to 11.50% which has been retained through March 2016 (CBK, 2016). However, Were and Tiriongo (2012) posits that the frequent changes in the CBR affects short term interest rates thereby affecting the cost of capital and private sector borrowing. This has a great effect on share prices and subsequently on stock returns at NSE (Kirui, Wawire & Onono, 2014). In addition, the dynamic interactions among various macro-economic variables and the share market prices of quoted firms, has consequential effects on both market capitalization and companies' valuations, which makes investors sceptical about the future performance of companies (Kitatia, Evusa & Maithya, 2015). Thus, the need to examine the relation between interest rates and share prices of banks listed at NSE.

Moreover, several papers have analysed the relation between macroeconomic variables and share prices locally and on global scene. Internationally, a study by Alam & Uddin (2009) assessed the relationship of the rate of interest and share price in developed and developing nations and established that rate of interest had a negative but significant relation with changes of stock price.

Locally, Chirchir (2014) examined how changes in interest rates influenced stock prices in Kenya and established a no significant causal relation between rate of interest and stock price. Ouma & Muriu (2014) also assessed the effect of macroeconomic variables on stock returns and established that with exception of rates of interest, there exists a significant relation between returns on stock market and supply of money, exchange rates and inflation hence rates of interest were not important in determination of returns in long run at NSE. As such, most of the local and international studies have posted mixed results on relation between rates of interest and share prices. In addition, most of available studies have combined interest rates with other macro-economic variables, Further; a few studies have also concentrated on the relation between rates of interest and share prices of commercial banks hence a gap in literature. Thus, this study sought to address the question; what is the relation between rates of interest and share prices of commercial banks listed at NSE?

1.3 Research Objective

To examine relationship between rates of interest and stock prices of commercial banks listed on at the NSE.

1.4 Value of the Study

From the findings of the study, investors will benefit to establish the existing relation between rates of interest and stock prices, hence investors may use these findings to choose their investment portfolio based on the prevailing interest rates.

It will also benefit the banks' managers as its findings will establish whether there is a casual relation between rates of interest and stock prices of listed banks at NSE.

The study findings will also be of significance to various policy makers, including the government of Kenya, the central bank of Kenya and the monetary policy committees who are involved in generating policies on monetary policy instruments and other economic indices for growth of stock market. Finally, the findings of this study will provide additional literature for prospective researches who intend to examine effects of other macroeconomic variables on share prices.

Research organization in the banking industry may also use the study recommendations to introduce new regulatory measures and policies in the banking sector more specifically on interest rates and economic growth as a whole.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Chapter two reviews existing literature concerning the relation between macro-economic variables including interest rates and their relationship with share prices in various parts of the globe and also in Kenya. The chapter entails the theoretical literature review, the determinants of share prices, the empirical literature review and summary of literature review.

2.2 Theoretical Literature Review

The efficient market hypothesis, the arbitrage pricing theory and the capital assets pricing theory will be explored as the underlying theories to explain the relationship between interests' rates and share prices.

2.2.1 Efficient Market Hypothesis (EMH)

EMH was proposed by Fama (1970). According to this hypothesis, the market is only efficient at the point in time where prices being charged at the market totally reflect available information on economical asset's value (Reinikainen, 2010). EMH is purely based on the concept that an immediate absorption of all kind of information available in the market in prices of stocks will only result to a normal profit for investors. EMH affirms that no single person or an investor can continuously earn high returns since all publicly important and available information is normally and immediately incorporated in stock prices (Mittal, 2015). The EMH is subject to assumptions, namely that all investors

are rational, the price of the stock is always right, and an investor cannot make an abnormal return (Nielsen, 2016).

The concept of efficient markets affirms that the publicly important and available information on a firm is normally incorporated immediately in stock prices and that the capital invested is usually allocated efficiently (Reinikainen, 2010). The EMH is generally defined in three different forms, namely weak form, semi-strong form of efficiency of efficiency, and strong form of efficiency (Chavali & Zahid, 2011). Weak form is related to past information, the semi-strong efficiency concerns public information, and finally, the strong efficiency is all information, including both public and private information. Similar for all forms is that the market reacts too fast for an investor to make an abnormal return be it past, outside, or inside information (Nielsen, 2016).

The efficient market hypothesis bases its assumptions on the notion that all stakeholders aim at maximization utility, agents of investors got a rational expectation and every time that any new and relevant information appears, agents appropriately update their expectations (Kiremu et al., 2013). According to the hypothesis, in efficient market, dealers are not able to earn or make abnormal profits by dealing on stock split public announcement (Niini, 2000).

2.2.3 Arbitrage Pricing Theory (APT)

APT was introduced by Ross (1976). The theory presumes that stock market returns are influenced by some economic variables through their effect on discount rates and future dividends (Shrestha & Subedi, 2015). APT correlates with market portfolio concept,

according to arbitrage theory individuals have different portfolio of investments with their specific systematic risk. APT is a multifactor model and most of the empirical literature argues that APT proposes better results comparatively to CAPM, because it used multiple factors for explaining shared and systematic risk (Waqar & Mustabsar, 2015).

The theory established a theoretical framework that links share returns with some variables that have the potential to influence sources of income volatility (Shrestha & Subedi, 2015). Arbitrage Pricing theory (APT) uses macro-economic variables to predict stock returns and the theory assumes that various macro-economic variables can actually affect stock returns other than systematic risk beta (Waqar & Mustabsar, 2015).

2.2.3 Capital Asset Pricing Model (CAPM)

CAPM emanated from Sharpe (1964). The model examines the effects that risk has on expected return of a given investment in relation to a market portfolio. CAPM describes the relation between expected returns and the involved risks (Ozbay, 2009). CAPM highlights correlation between return and systematic risk; here the focus is only on beta. Other studies conducted on stock returns indicate that there are some other factors affecting the riskiness of stock returns. Factors affecting stock returns other than beta proved ineffectiveness of asset pricing model (Waqar & Mustabsar, 2015).

2.3 Determinants of Share Prices

Price of equity stock is usually influenced by demand and supply factors in the sense that when people start buying stocks, the stock prices go up but when they start selling, stock prices go down. In addition, macro- economic points like politics, economic conditions in

general, government regulations are also posited to influence stock prices (AL- Shubiri, 2010). Other factors that influence share prices include dividends, inflation, exchange rates, profitability, liquidity and firm size as the determinants of stock prices banks listed at NSE.

2.3.1 Dividends

Dividend refers to that share of profit of a firm after tax that is usually distributed or shared by the firm's shareholders for their investments in the company. As such, dividend is the cash payment or income that firms distribute among its stockholders. It can also be paid in form of additional shares being issued to the existing firm shareholders. After dividend announcement, the share price of a firm may rise (Mondal & Imran, 2012). The failure to announce and pay dividend may have an impact on firm's shares prices as well as denying existing shareholders additional funds to invest (Oseni, 2009).

2.3.2 Inflation

Inflation is defined as a continuous rise in all price level of general goods or services over a specified time period in an economy (Mugambi & Okech, 2016). Any anticipated inflation has the potential of affecting nominal interest rate that is usually charged, this leads to high quoted repayments and therefore front-loading payments so as to recompense the loss of the purchasing power for a given period of time (Bank of Ghana, 2007).

The uncertainty from persistent instability of any currency due to unstable level of inflation in an economy usually hinders access to external financing for mortgage lending (Bank of Ghana, 2007). Low inflation is an essential ingredient of a successful mortgage

market as it will lead to low and stable interest rates. High inflation leads to high interest rates as lenders seek to compensate loss of purchasing power of their money (Ariemba, Kiweu & Riro, 2015).

2.3.3 Exchange Rate

In finance, the rate of foreign exchange is a rate at which a nation's currency is to be exchanged for another nation's currency (Kabeer et al., 2016). Rates of exchange affect the stocks' value in home country and in abroad. When there is an appreciation of a currency, and the country involved is an export-oriented country, a reduction in competitiveness is usually expected to occur on exports, and would thus have a negative effect on domestic stock market (Kirui, Wawire & Onono, 2014). Fluctuations in rate of exchange have the potential to affect performance of stock market as well as a country's financial sector (Mlambo, Maredza & Sibanda, 2013).

2.3.4 Profitability

Profitability refers to money that a firm can produce with the resources it has. The goal of most organization is profit maximization (Niresh & Velnampy, 2014). Profitability involves the capacity to make benefits from all the business operations of an organization, firm or company (Muya & Gathogo, 2016). Profit usually acts as the entrepreneur's reward for his/her investment. As a matter of fact, profit is the main motivator of an entrepreneur for doing business. Profit is also used as an index for performance measuring of a business (Ogbadu, 2009). Profit is the difference between revenue received from sales and total costs which includes material costs, labor and so on (Stierwald, 2010).

Profitability can be expressed either by accounting profits or economic profits and it is the main goal of a business venture (Anene, 2014). Profitability portrays the efficiency of the management in converting the firm's resources to profits (Muya & Gathogo, 2016). Thus, firms are likely to gain a lot of benefits related increased profitability (Niresh & Velnampy, 2014). One important precondition for any long-term survival and success of a firm is profitability. It is profitability that attracts investors and the business is likely to survive for a long period of time (Farah & Nina, 2016). Many firms strive to improve their profitability and they do spend countless hours on meetings trying to come up with a way of reducing operating costs as well as on how to increase their sales (Schreibfeder, 2006).

In accounting theory profitability shows the surplus of profit over expense for a specified duration that represent earning of commercial banks from the various activities they perform in a growing economy (Tariq et al., 2014). The profitability of a banking institution can thus be defined as net profit of the bank (San and Heng, 2013). A commercial bank is profitable if it has accrued more gains in financial perspective from invested capital. Thus, the bank's success is determined from the profits it has made in a given financial year (Adeusi, Kolapo and Aluko, 2014). In accounting theory, profitability shows the surplus of profit over expense for a specified duration that represent earning of commercial banks from the various activities they perform in a growing economy (Tariq et al., 2014). The profitability of a banking institution can thus be defined as net profit of the bank (San and Heng, 2013). A commercial bank is profitable if it has accrued more gains in financial perspective from invested capital. Profitability also shows the association between the absolute amount of income that

indicates the capability of the bank to advance loans to its customers and enhance its profit. In today's competitive environment, profitability is a key factor for the smooth running of the business and has significance to the banks performance and economic development as well (Tariq et al., 2014). Profitability is also crucial for a banking institution to maintain its ongoing activities and for shareholders to generate fair returns (Ponce, 2011).

Profitability is one of main aspects of financial reporting for many firms (Farah & Nina, 2016). Profitability is vital to the firm's manager as well as the owners and other stakeholders that are involved or associated to the firm since profitability gives a clear indication of business performance. Profitability ratios are normally used to measure earnings generated by a firm for a certain time period based on firm's sales level, capital employed, assets and earnings per share (EPS). Profitability ratios are also used to measure the firm's earning capacity and considered as a firm's growth and success indicator (Majed, Said & Firas, 2012).

2.3.5 Liquidity

Liquidity refers to available funds that can be easily used for an investment and or expenditure. It is also an indicator of the ability of the firm to meet its obligations when they fall due (Alkhatib, 2012). Liquidity is a firm's ability to fulfil both expected and unexpected demands of cash on an ongoing basis. In order for a firm to sustain its activities and remain in existence for a long time, it must be liquid and able to meet its obligations at any time (Kumar and Agarwal, 2012). Working capital management is crucial to any successful business. With poor management of working capital, the firm's

funds are likely to be tied up in idle assets. This may reduce the firm's liquidity and the firm will not be able to invest in more profitable projects that may arise (Bashar & Islam, 2014).

2.3.6 Firm Size

Firm's size determines the level of economics of scale enjoyed by a firm. When a firm becomes larger it enjoys economics to scale and the average production cost is lower and operational activities are more efficient. Hence, larger firms generate larger returns on assets. However, larger firms can be less efficient if the top management lose their control over strategic and operational activities within the firm (Chandrapala & Knápková, 2013). Big firms are more likely to diversify than small ones and have greater market power and during good times may have relatively more organizational slack.

The size of the firm or enterprise also determines the cash flow sensibility to investments (Predescu, 2008). In measuring the firm size, total number of employees of the firm, volume of sales and amount of property are the main factors that are usually measured (Salman & Yazdanfar, 2012).

2.4 Empirical Literature Review

Many studies have been carried out by various authors on the relation between interest rates and others variables on shares prices globally and locally in Kenya.

2.4.1 Global Studies

A study by Shrestha and Subedi (2015) examined determinants of stock market performance in Nepal. The study used the multiple linear regression model to analyse

data. The study findings established that stock market performance responded positively to inflation and growth in money, and negatively to rate of interest. In addition, the study established that availability of liquidity and low rates of interest stimulate stock market performance.

A study by Hamdan (2014) explored effect of rate of interest on stock market in Pakistan. The study used closing share prices of Karachi Stock Exchange and rates of interest of previous 10 years starting from the year 2004 - 2013. The study findings established that rates of interest has a negative effect on the stock market hence a higher rate of interest, the low stock market efficiency.

Teker and Alp (2014) investigated the causality relation between stock market and the rates of interest in Turkey, Brasil, China and Hungary. The study findings revealed that causal relation, direction differs between maturities and countries such that the Hungary market showed causal relation between the stock market and rate of interest while the China market predicated a low causal relation. However, the findings established that apart from Brazil, each returns on stock market are Granger cause of 3-month T-bill rates and the causality relationship of T-bonds between countries' indices returns is few, apart from Hungary.

Khrawish, Siam and Jaradat (2010) examined the impact of rates of interest on rate of stock market capitalization in Amman Stock Exchange for the year between 1999 and 2008. The study used multiple linear regression model and time series analysis to analyse data. The study findings revealed a significant positive relation between government prevailing rate of interest and the rate of stock market capitalization.

2.4.2 Local Studies

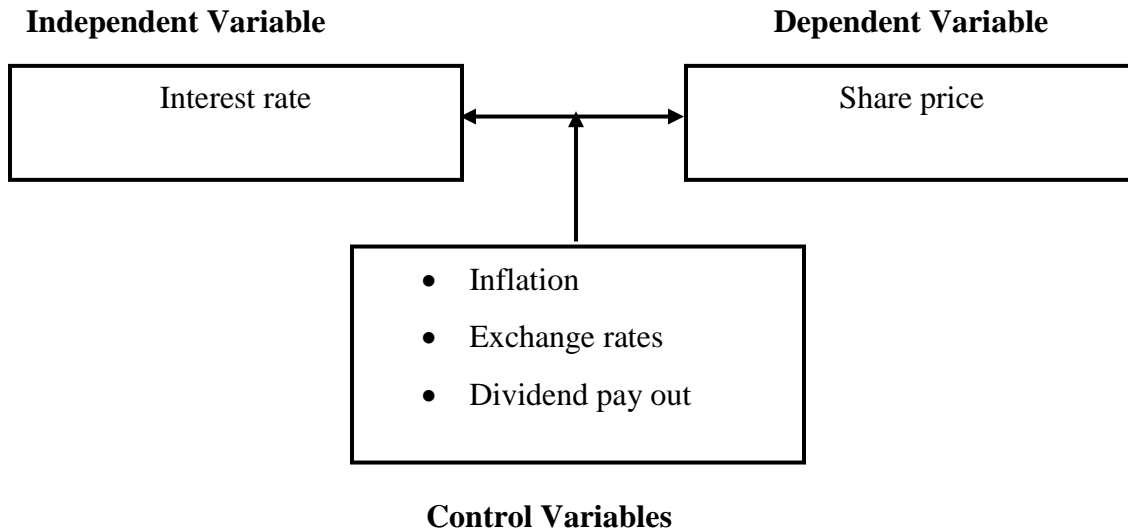
Ombati (2014) studied how variations in rates of interest (represented by an average lending rate by the Central Bank of Kenya) and commercial rent (represented by the quarterly average rent per square foot in Nairobi's commercial zones) are related to each other. The study findings established that there was causal relation between rate of interest and commercial rent albeit in one direction share price i.e. the movement in commercial rent causes changes in interest. However, the study revealed that there was no evidence suggesting that movement in interest causes changes in commercial rent.

Ngugi (2014) analyzed the effects of lending rates on stock prices of the banks listed at NSE. The study carried out a census of the 10 listed commercial banks at the NSE and used multiple linear regression to analyse data. The study findings revealed that lending interest rate has been widely varying for last 5 years, changes that have been mimicked by the commercial banks' share prices. The study findings also established that the lending interest rate inversely affects commercial banks' share prices where an increase in lending rates causes a decline in the share prices. The study recommended that the lending rate variations to be considered in solving the stock crisis arising in the NSE emanating from the commercial banks involvement in the bourse.

Gatuhi & Macharia (2013) studied the relation between oil prices, rates of exchange, rates of interest and many other macroeconomic variables and stock market. It was established that diesel prices and rates of interest have significance relation with stock market performance. However, the study revealed that whereas the relation is positive for diesel prices, the relation for rates of interest is negative.

2.5 Conceptual Framework

Figure 2.1 shows the conceptual framework



2.6 Summary of Literature Review

Studies have been done on the relation between rates of interest and shares prices in various countries and also in Kenya. The efficient market hypothesis, the arbitrage pricing theory and the capital assets pricing model have also been explored to explain the relationship that exist between share prices and interest rates. The reviewed studies have established diverse results with some studies establishing negative relationship, positive relationship and others establishing that there is no causal relation between rates of interest and shares prices. In addition, among reviewed studies none has attempted to examine the relation between rates of interest and shares prices in commercial banks hence the need for this study.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

Chapter three focuses on research design, population of the study, data collection and analysis of data.

3.2 Research Design

A research design refers to plan which guides a researcher on how to organize the research activities (Bryman & Bell 2003). A research design presents a framework or arrangement of action for a study. A descriptive research design was adopted which provided a comprehensive picture of a circumstance or a situation. It is normally done in order to determine and be in a position where one can describe features of a given variable of interest for a certain situation was used in this study.

3.3 Population of the Study

This is a set of people or items with similar features that a researcher intends to study and to draw statistical inferences or conclusions (Gall et al., 2006). Population of the study entailed the 10 commercial banks listed at NSE.

3.4 Data Collection Procedure

This study used secondary data from annual closing common stock prices of 10 listed banks at NSE for a 5 years period starting from 02/1/2011 to 31/12/2015. In addition, the study used the weighted annual average lending rates by commercial banks in Kenya for

a period of 5 years from 2011-2015. The annual data on stock prices was obtained from NSE while the average data on rates of interest was obtained from CBK.

3.5 Data Analysis

Collected data was analyzed by the help of a descriptive and inferential statistics using Gretl software. Descriptive statistics involved use of arithmetic mean and standard deviation while inferential statistics was used to draw conclusions.

3.5.1 Analytical Models

This study used three models among them the Augmented Dickey Fuller (1979) model, the Granger Causality test (1987) and finally the linear regression model. The Augmented Dickey-Fuller (ADF) test was used to investigate the stationary. ADF unit root test is normally carried out to test stability of time series variables. The Augmented Dickey Fuller (1979) model took the following form

$$\Delta Y = \beta_1 + \beta_2 t + \delta Y_{t-1} + \alpha_i \sum_{i=1}^m \Delta Y_{t-1} + \varepsilon_t \dots \dots \dots (3.1)$$

In addition, after determining the data stationary set, the Granger Causality test (1987) was also employed to test the casual relation between the study variables. Granger causality measures whether one thing happens before another and helps predict it – and nothing else. This test involved following equation

$$\Delta SP_t = \beta_0 + \sum_{i=1}^q \beta_{1i} \Delta SP_{t-1} + \sum_{i=1}^q \beta_{2i} \Delta IR_{t-1} + \varepsilon_t \dots \dots \dots (3.2)$$

Where,

Δ = Difference operator

$\beta, \delta \& \alpha$ = Coefficients to be estimated

Y = Variables whose time series properties are examined

ϵ_t = Uncorrelated stationary random process where t denotes time

Finally, regression analysis was used to establish the linear relation between dependent variables and independent variables. Regression analysis is a statistical method that deals with the formulation of mathematical model depicting relation between dependent variables and independent variables. The regression equation took the following form

$$SP_t = \beta_0 + \beta_1(IR) + \beta_2(IF) + \beta_3(ER) + \beta_4(DP) + \epsilon \dots \dots \dots (3.3)$$

Where,

SP_t = Measured using the weighted average share price for each listed commercial bank

IR = Interest rates, which will be, measure using the average interest rate for each commercial bank in Kenya

IF = Inflation, which will be a proxy of the monthly inflation rate (Control variable)

ER = Exchange Rate as a proxy of the monthly average Kenya shilling per unit of US dollar (Control variable)

DP = Dividend Payout measured by the ratio of total total dividends to total income (Control variable)

β_0 = Constant

β_1 - β_4 = Regression coefficients

ε = Error term

3.5.2 Test of Significance

At 95%, confidence level the study used the t and F-test to test statistical significance of study variables in the regression model. T- test was employed to test statistical significance of regression coefficients while ANOVA and F – test was utilized to test statistical significance of regression equation. To test for Multicollinearity the study computed variance inflation factors (VIF) for each variable where a VIF above 5.0 suggests problems with multicollinearity. According to Zikmund et al (2011), VIFs of 5 or over are indicative of problems with multicollinearity which can make interpreting parameter estimates difficult or impossible.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND INTERPRETATION

4.1 Introduction

Chapter four presents descriptive statistics, correlation analysis, and inferential statistics comprising of ADF unit root, the granger causality test, regression analysis and diagnostic tests. The chapter also presents an interpretation of the study findings.

4.2 Descriptive Statistics

4.2.1 Summary Descriptive Statistics

Table 4.1 shows summary of descriptive statistics which comprises of minimum value and maximum value, the mean and standard deviation.

Table 4.1 Summary Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
SP	50	9.60	334.00	80.65	83.52
IR	50	14.04	22.73	17.32	1.93
IF	50	5.71	13.98	8.56	3.04
ER	50	84.65	98.69	89.27	4.98
DP	50	.000	65.11	28.54	18.93

Source: Research Findings

The results on table 4.1 showed that the mean share price (SP) was 80.65 with the minimum and maximum value of share prices is 9.60 and 334. The results also showed

that the average interest rate (IR) was 17.32 with minimum and maximum values of 14.04 and 22.73 respectively. The results further showed that the average inflation rate (IF) was 8.56 with the minimum and maximum inflation rates being 5.71 and 13.98. The results also showed that the average exchange rate (ER) value was 89.27 with minimum and maximum exchange rate being 84.65 and 98.69 respectively. The results also showed that the average dividend payout ratio (DP) for the listed banks was 28.54 with minimum and maximum payout of 0.000 and 65.11 respectively.

4.2.2 Graphical Analysis

4.2.2.1 Graphical Analysis of Shares Prices

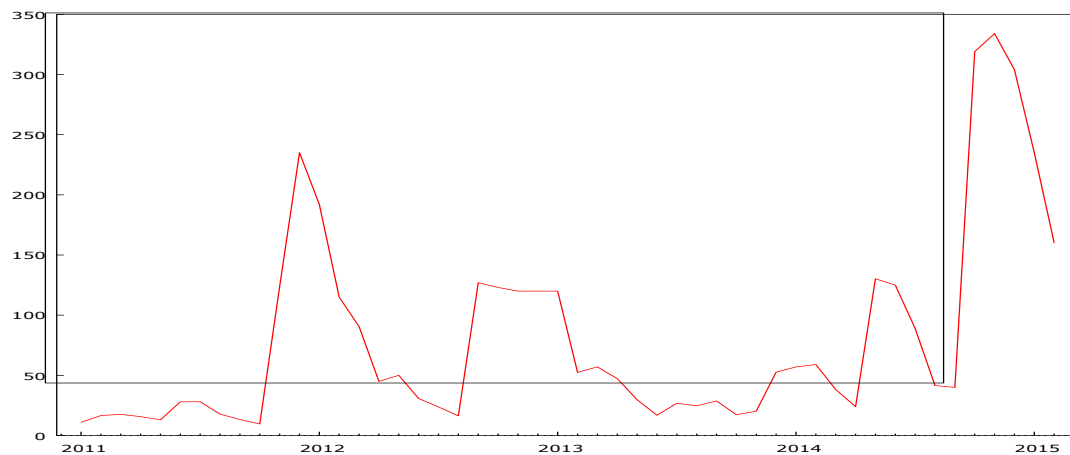


Figure 4.1 Graphical Analysis of Shares Prices

Figure 4.1 shows graphical analysis of share prices. The figures show that shares prices of the listed commercial banks had been fluctuating within the study period.

4.2.2.2 Graphical Analysis of Interest Rates

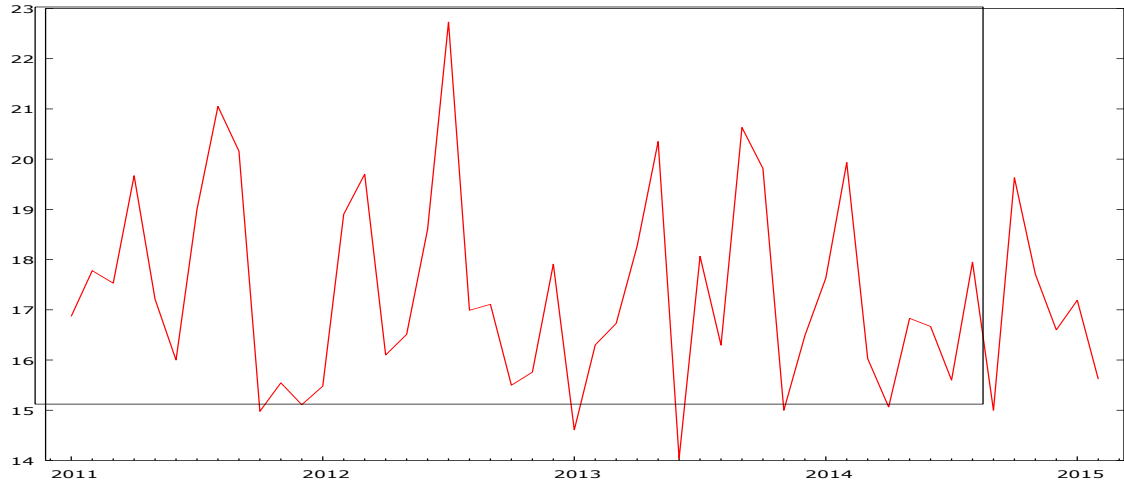


Figure 4.2 Graphical Analysis of Interest Rates

Figure 4.2 shows the graphical analysis of interest rates. The figure shows that interest rates had been fluctuating within the considered study period with the high interest rates being witnessed in between 2012 and 2013.

4.3 Correlation Analysis

Correlation analysis was employed to establish the strength of relationship between variables.

Table 4.2 Correlations

	SP	IR	IF	ER	DP
SP	1				
IR	-.142	1			
IF	-.215	-.224	1		
ER	.065	-.269	-.214	1	

DP	-.043	.013	-.028	-.056	1
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Source: Research Findings

The results on table 4.2 show existence of a negative correlation between share prices and rates of interest, inflation and dividend payout ratio. The results also showed existence of a positive correlation between share prices and exchange rates.

4.4 Inferential Statistics

Inferential statistics included ADF unit root, granger causality test and regression analysis.

4.4.1 Augmented Dickey-Fuller (ADF) unit root test

ADF unit root test was carried out to test stability of time series variables. Table 4.3 shows the obtained results.

Table 4.3 Augmented Dickey-Fuller (ADF) unit root test

Null hypothesis: the time series has a unit root

Augmented Dickey-Fuller test statistic	Interest rates	Share prices
t-statistic	-6.40113	-3.60547
Prob.*	1.112e-005	0.02929

*MacKinnon (1996) one-sided p-values

Source: Research findings

The results on table 4.3 showed that the p-value for interest rates and share prices was 1.112e-005 and 0.02929 respectively. The p – significance level of values was 5% hence

acceptable null hypothesis that time series had a unit root test and the time series variables were stable.

4.4.2 Granger Causality test

Granger Causality test (1987) was used to test causal relationship between study variables. Table 4.4 shows the results obtained.

Table 4.4 Granger Causality Test

Null hypothesis	F- statistics	Prob.	Casual inference
Interest rates does not granger cause share prices	2.5182	0.0924	No causality
Share prices does not granger cause interest rates	1.9646	0.1526	No causality

Source: Research Findings

The results on table 4.4 showed that interest rates does not granger cause share prices and share prices on the other hand share price does not granger cause interest rates since the P-values (0.0924 & 0.1526 > 0.05).

4.4.3 Regression Analysis

Regression analysis was used to establish linear relation between dependent variables and independent variables. Table 4.5 shows regression results

Table 4.5 Regression Analysis

Model 1: OLS, using observations 1-50

Dependent variable: SP

Heteroskedasticity-robust standard errors, variant HC1

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
Const	400.279	398.225	1.0052	0.32020	
IR	-9.42753	6.97479	-1.3517	0.18324	
IF	-7.62244	3.64249	-2.0926	0.04205	**
ER	-0.947657	3.25494	-0.2911	0.77228	
DP	-0.226778	0.73997	-0.3065	0.76066	
Mean dependent var	80.64720	S.D. dependent var		83.51969	
Sum squared resid	311276.9	S.E. of regression		83.17009	
R-squared	0.089305	Adjusted R-squared		0.008354	
F(4, 45)	2.092075	P-value(F)		0.097570	
Log-likelihood	-289.3573	Akaike criterion		588.7146	
Schwarz criterion	598.2747	Hannan-Quinn		592.3552	

Source: Research Findings

The results on table 4.5 showed existence of a negative insignificant, that is a negative relation between rates of interest, exchange rates, dividend payout and share prices of listed banks at NSE. Results also showed existence of a significant negative relation between inflation rates and stock prices. Results also showed that the R squared value was 0.089305, which indicated that independent variables (interest rates, inflation rate,

exchange rates and dividend payout) explained 8.9% of the variation in dependent variable (share prices).

4.4.4 Diagnostic Tests

The study computed variance inflation factors for each variable to be able to test Multicollinearity, Table 4.6 shows obtained results.

Table 4.6 Collinearity Statistics

Variable	Collinearity Statistics	
	Tolerance	VIF
IR	.844	1.184
IF	.867	1.153
ER	.845	1.184
DP	.995	1.005

Source: Research Findings

Table 4.6 showed results of collinearity statistics. The results showed that the Variance Inflation Factor (VIF) for interest rates, inflation rates, exchange rates and dividend payout were 1.184, 1.153, 1.184 and 1.005 respectively. All of the study variables had a VIF factor below 5.0, which indicated there was no multicollinearity among the study variables.

4.5 Interpretation of the Findings

The study found that rates of interest do not granger cause share prices and share prices do not granger cause interest rates. This finding indicated a no significant causality between rates of interest and share prices and no significant causality between share prices and interest rates. This finding conformed to that of Trokon (2014) who revealed that there was no significant causal relation between interest rate and share price. In addition, Chirchir (2014) also established a no significant causal relation between rate of interest and stock price.

The study also found that interest rates, exchange rates, dividend payout had a negative but insignificant effect on share prices and that inflation rates had a negative but significant effect on share prices of listed commercial banks. This indicated that an increase in interest rates, exchange rates, dividend payout and inflation rates decreased share prices of listed banks. The study findings conformed to that of Addo and Sunzuoye (2012) who revealed that interest rates had relationship negative in nature with share market returns but its significance cannot be established. Zohaib, Sangeen and Lala (2012), who established that a rise in rate of interest caused a drop in share prices obtained similar findings.

The findings are also similar to Rahman, Sidek and Fauziah (2009), who established that higher rates of interest or discount rates reduced present value (PV) of cash flows. Oseni (2009) also found that failure to announce and pay dividend would negatively affect stock prices and deny the existing investors additional funds to invest.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

Chapter five outlines the summary of this research, conclusions and recommendations based on research findings, limitations of the study and suggestion of areas which may require further consideration as far as future research is concerned.

5.2 Summary

This study explored the relation between interest rates and share prices of banks listed at NSE. The population of study encompassed of the 10 commercial banks listed at NSE thus the study carried out a census of the listed commercial banks. The study collected data from the entire listed commercial banks hence full response rate. The independent variable for the study was interest rates and the dependent variable was share prices while the control variables included inflation rates, exchange rates and dividend payout.

The summary descriptive results established that the mean share price (SP) was 80.65, the average interest rate (IR) was 17.32 and the average inflation rate (IF) was 8.56. The study also found that the average exchange rate (ER) value was 89.27 while the average dividend payout ratio (DP) for the listed banks was 28.54. The correlation analysis results found a negative correlation between share prices and rates of interest, inflation and dividend payout ratio and a positive correlation between share prices and rates of exchange on other hand.

The results of the ADF unit root established that the time series data considered for the study had the time series variables and unit root test were stable. The findings established that interest rates does not granger cause share prices and share prices on the other hand does not granger cause interest rates. Regression analysis results established an insignificant negative relationship between interest rates, exchange rates, dividend payout and share prices and a negative significant relation between stock prices and inflation rates. The findings further established that the R squared value was 0.089305, which indicated that independent variables explained 8.9% of the variation in the dependent variable and all of the study variables (interest rates, inflation rates, exchange rates and dividend payout) had a Variance inflation Factor (VIF) of below 5.0, which indicated there was no multicollinearity among the study variables.

5.3 Conclusion

The study revealed no significant causality between rates of interest and shares prices and that causality has no significant to share prices and interest rates. The study concluded that interest rates do no granger cause stock prices while stock prices do not granger cause share prices. The findings also found that rates of interest, exchange rates, dividend payout had a negative but insignificant effect on share prices and that inflation rates had significant negative effect on share prices of listed at NSE. The study thus concluded that an increase in interest rates, exchange rates, inflation rates and decrease in dividend payout decreased share prices of listed banks at NSE.

5.4 Recommendations for Policy and Practice

The study recommends that banks management should come up with effective policies on interest rates since the study found that interest rates adversely affect share prices of listed banks.

The study recommends that policy-making organisation like the CBK, the ministry of finance should develop effective monetary policies to stabilise exchange rates and inflation since the study found they have an adverse effect on share prices of listed commercial banks in Kenya.

Finally, the study recommends that commercial banks should develop effective policies on dividend payment and payout since the study found that there exists a negative effect of dividend payout on share prices of listed banks.

5.5 Limitations of the Study

The aim of this study was to examine the relation between rates of interest and share prices of commercial banks listed at NSE. Thus, the findings of the study are only limited to listed commercial banks and not other listed organisations in Kenya. In addition this study was done in Kenya, thus the findings may not be generalized in other countries and other listed commercial banks in other parts of the world.

The study also concentrated on interest rates, inflation rates, exchange rates and dividend payout to examine their relationship on share prices of listed commercial banks. However, there are other factors (micro and macro- economic factors) which influence stock prices of listed banks part from the one considered by the research.

5.6 Suggestions for Further Research

The findings of the study found that independent variables (interest rates, inflation rates, exchange rates and dividend payout) explain 8.9% of dependent variables variations (Share prices). Thus indicates that there are factors which influence listed commercial banks' share prices in Kenya. The study thus recommends additional study on those factors. This study also used regression analysis, ADF test and the granger causality test. The study suggest a research on similar topic but using more advanced test like the Phillips-Perron model, the Vector Error Correction Model and Johansen's Multivariate Cointegration Model to determine whether there is cointegration between rates of interest and share prices of listed commercial banks in Kenya.

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APPENDICES

Appendix I: Commercial Banks Listed at the Nairobi Securities Exchange

1. Barclays Bank of Kenya
2. Cooperative Bank of Kenya
3. Diamond Trust Bank Ltd
4. Equity Bank Ltd
5. I&M Bank Ltd
6. Kenya Commercial Bank
7. National Bank of Kenya
8. NIC Bank Ltd
9. Stanbic Bank
10. Standard Chartered Bank Ltd

Appendix II: Data on Share Prices, Interest Rates and Dividend Payout

Bank	Year	SP	IR	DP
Bank 1	2015	11.00	16.87	65.11
Bank 1	2014	16.60	17.78	64.77
Bank 1	2013	17.60	17.53	49.89
Bank 1	2012	15.70	19.67	62.15
Bank 1	2011	13.05	17.21	60.14
Bank 2	2015	28.00	16.00	34.63
Bank 2	2014	28.06	19.00	29.58
Bank 2	2013	17.80	21.05	23.00
Bank 2	2012	13.30	20.16	27.00
Bank 2	2011	9.60	14.98	26.00
Bank 3	2015	123.50	15.55	10.23
Bank 3	2014	235.00	15.11	9.25
Bank 3	2013	192.00	15.48	9.70
Bank 3	2012	115.00	18.90	11.50
Bank 3	2011	90.50	19.70	12.50
Bank 4	2015	45.00	16.10	40.03
Bank 4	2014	50.00	16.51	38.86
Bank 4	2013	30.75	18.60	41.83
Bank 4	2012	23.75	22.73	38.31
Bank 4	2011	16.40	16.99	28.69
Bank 5	2015	127.00	17.11	23.29
Bank 5	2014	123.00	15.50	31.21
Bank 5	2013	120.00	15.76	16.17
Bank 5	2012	120.00	17.91	0.00
Bank 5	2011	120.00	14.61	22.09
Bank 6	2015	52.50	16.30	30.81
Bank 6	2014	57.00	16.73	35.52
Bank 6	2013	47.25	18.27	48.03

Bank 6	2012	29.75	20.35	46.25
Bank 6	2011	16.85	14.04	50.02
Bank 7	2015	26.75	18.06	0.00
Bank 7	2014	24.75	16.30	0.00
Bank 7	2013	28.75	20.63	8.30
Bank 7	2012	17.25	19.82	7.60
Bank 7	2011	20.25	15.00	7.24
Bank 8	2015	52.65	16.48	14.85
Bank 8	2014	57.00	17.63	14.14
Bank 8	2013	59.00	19.93	16.34
Bank 8	2012	38.25	16.03	16.58
Bank 8	2011	24.00	15.06	9.03
Bank 9	2015	130.25	16.83	40.95
Bank 9	2014	125.00	16.67	40.95
Bank 9	2013	89.00	15.60	36.15
Bank 9	2012	41.50	17.95	16.58
Bank 9	2011	40.00	15.00	7.38
Bank 10	2015	319.00	19.63	0.00
Bank 10	2014	334.00	17.71	51.19
Bank 10	2013	304.00	16.60	49.29
Bank 10	2012	235.00	17.19	46.99
Bank 10	2011	160.00	15.62	57.05

Appendix III: Inflation Data

Month/Year	2015	2014	2013	2012	2011
Jan	5.53	7.21	3.67	18.31	5.42
Feb	5.61	6.86	4.44	16.69	6.54
Mar	6.31	6.27	4.11	15.61	9.19
Apr	7.08	6.41	4.12	13.06	12.05
May	6.87	7.30	4.05	12.22	12.95
Jun	7.03	7.39	4.91	10.05	14.49
Jul	6.62	7.67	6.02	7.74	15.53
Aug	5.84	8.36	6.67	6.09	16.67
Sep	5.97	6.60	8.29	5.32	17.32
Oct	6.72	6.43	7.76	4.14	18.91
Nov	7.32	6.09	7.36	3.25	19.72
Dec	8.01	6.02	7.15	3.20	18.93
Average	6.58	6.88	5.71	9.64	13.98

Appendix IV: Data on Exchange Rates

Month/Year	2015	2014	2013	2012	2011
Jan	91.67	86.24	87.61	84.59	81.27
Feb	91.42	86.33	86.24	82.97	82.36
Mar	92.34	86.44	85.64	83.06	82.99
Apr	94.60	86.87	83.82	83.22	83.42
May	97.78	87.80	85.12	86.83	85.70
Jun	98.64	87.63	86.01	84.23	89.86
Jul	102.52	87.80	87.28	84.21	91.10
Aug	103.87	88.39	87.60	84.32	93.62
Sep	105.29	89.28	86.65	85.28	99.83
Oct	101.80	89.35	85.15	85.18	99.78
Nov	102.11	90.18	86.99	85.94	89.72
Dec	102.31	90.60	86.31	86.03	85.07
Average	98.70	88.08	86.20	84.65	88.73