

**EFFECT OF ANNOUNCEMENT OF THE INTEREST RATES
CAPPING REGULATION ON STOCK PRICES OF COMMERCIAL
BANKS LISTED AT THE NAIROBI SECURITIES EXCHANGE**

BY

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DECLARATION

Student's Declaration

I declare that this research project is my original work and has not been submitted for examination in any other institution.

Signature.....

Date.....

ROSE MWENDE SAMMY (D61/79102/2015)

Supervisor's Declaration

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

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DEDICATION

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TABLE OF CONTENTS

DECLARATION	ii
ACKNOWLEDGEMENT	iii
DEDICATION	iv
LIST OF FIGURES	viii
LIST OF TABLES	ix
ABBREVIATIONS	x
ABSTRACT	xii
CHAPTER ONE: INTRODUCTION	1
1.1 Background of the Study.....	1
1.1.1 Announcement of Interest Rates Capping Regulation (IRCR).....	2
1.1.2 Stock Prices.....	4
1.1.3 Announcement of IRCR and Stock Prices.....	4
1.1.4 Commercial Banks listed at the NSE.....	7
1.2 Research Problem.....	9
1.3 Research Objective.....	11
1.4 Value of the Study.....	11
CHAPTER TWO: LITERATURE REVIEW	13
2.1 Introduction	13

2.2	Theoretical Review	13
2.2.1	Efficient Market Hypothesis	13
2.2.2	Random Walk Theory.....	14
2.2.3	Behavioral Finance Theory.....	16
2.3	Determinants of Stock Price.....	17
2.3.1	Interest Rates Capping Regulation (IRCR).....	17
2.3.2	Company Financial History and Health.....	18
2.3.3	Prevailing Economic Trend	19
2.3.4	Market Forces of Supply and Demand	19
2.4	Empirical Review.....	20
2.5	Conceptual Framework	23
2.6	Summary of Literature Review	24
	CHAPTER THREE: RESEARCH METHODOLOGY	26
3.1	Introduction	26
3.2	Research Design.....	26
3.3	Population.....	26
3.4	Sample Design.....	27
3.5	Data Collection.....	27
3.6	Data Analysis and Presentation.....	27

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND INTERPRETATION.....	32
4.1 Introduction	32
4.2 Descriptive Statistics	32
4.3 Inferential Statistics.....	35
4.3.1 Test of Significance of AAR for 10 th August to 7 th September 2016.....	35
4.3.2 Test of Significance of CAAR for 10 th August to 7 th September 2016.....	36
4.4 Discussion of Findings	38
CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS..	40
5.1 Introduction	40
5.2 Summary of Findings.....	40
5.3 Conclusion.....	41
5.4 Recommendations.....	41
5.5 Limitations of the Study.....	41
5.6 Recommendations for Further Research.....	42
REFERENCES.....	44
APPENDICES	53
APPENDIX I: COMMERCIAL BANKS LISTED AT THE NSE.....	53
APPENDIX II: SAMPLED COMMERCIAL BANKS.....	54
APPENDIX III: DATA COLLECTION FORM.....	55
APPENDIX IV: AR, AAR AND CAAR SCHEDULE.....	56

LIST OF FIGURES

Figure 4.1: Average Abnormal Returns.....	33
Figure 4.2 Cumulative Average Abnormal Returns34

LIST OF TABLES

Table 4.1: Paired Samples Statistics of AAR35
Table 4.2: Paired Samples Test of AAR.....	36
Table 4.3: Paired Samples Statistics of CAAR.....	.37
Table 4.4: Paired Samples Test of CAAR37

ABBREVIATIONS

AR - Abnormal Returns

AAR - Average Abnormal Returns

CAAR - Cumulative Average Abnormal Returns

CBK - Central Bank of Kenya

CBR - Central Bank Rate

CGT - Capital Gains Tax

CMA - Capital Markets Authority

EMH - Efficient Market Hypothesis

FCDA - Financial Centre Development Act

IMF - International Monetary Fund

IRCR - Interest Rates Capping Regulation

JSE - Johannesburg Stock Exchange

KBA - Kenya Bankers' Association

KSE - Karachi Stock Exchange

NASI - NSE All Share Index

NSE - Nairobi Securities Exchange

NYSE - New York Stock Exchange

SEC - Securities Exchange Commission

SPSS - Statistical Package for Social Sciences

US - United States of America

ABSTRACT

This study sought to analyze the announcement effect of the IRCR on stock prices of commercial banks listed at the NSE. Daily opening and closing share prices for the 9 (nine) sampled stocks and the NSE 25 Share Index were extracted from the NSE database and analyzed using MS Excel and SPSS version 21. The study adopted the event study methodology with a 21 days' event window, that is, 10 days before and 10 days after the event, the event day being 0. Daily abnormal returns for each security, AAR and CAAR for each day were computed. The paired t-test of significance was then computed for both the AAR and CAAR. There was a significant cumulative negative difference in stock prices before and after the announcement. The study therefore concludes that the announcement of the IRCR had an effect on stock prices of commercial banks listed at the NSE.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Financial sector regulation and specifically interest rates regulation is crucial because of its economic impacts. It can have both positive and negative effects on the performance of banks, other financial institutions, the securities exchange and the general economy. This explains the high and growing interest by the Kenyan banking industry stakeholders in the Banking (Amendment) Act No.25 of 2016 popularly known as the Interest Rates Capping Regulation (IRCR). Among the stakeholders who have expressed their concerns over the regulation include banks, other financial institutions, the National Treasury, regulatory authorities like the CBK, Kenya Bankers' Association (KBA), international bodies like the IMF and the World Bank, and the investment community among others.

An estimated 40% of world countries have a form of capping on loan interest rates for the following main reasons: to increase loan accessibility and affordability, and for consumer protection from extortionate interest rates. However, the trend in the last few decades has been downward as most countries continue to liberalize their financial policies (World Bank Group, 2014). The rationale for these changes is that increasing access to financial markets impacts positively on productivity, poverty reduction and growth (Bekaert, Harvey, & Lundblad, 2001).

Contrary to the above-mentioned trend, several countries have introduced fresh caps on interest rates in the recent past, for instance; El Salvador in 2012, Zambia in 2013, and Kenya in 2016 among others.

Political and economic reasons have been the major motivation for this; for instance, support for particular industries or economic sectors negatively impacted by market failure; or where there is need for greater concentration of financial resources (Miller, 2013).

Announcement of new government financial sector regulations, for instance, the IRCR constitutes new public market information. Market participants anticipate an impromptu reaction of stock prices to the new information according to the EMH (Fama, 1970). New regulations can drive stock prices in both directions, that is, upwards or downwards depending on investor beliefs about future stock returns (Paes, 2015). Given rationality in the market place as assumed by the EMH, the effects of the IRCR will reflect immediately in the prices of securities (Mackinlay, 1997).

Empirical evidence on the impact of new financial sector regulatory announcements on prices and returns of stocks includes international studies by Largay and West (1973); Eysell and Arshadi (1990); Greenstone, Oyer and Vissing-Jorgensen (2006); Paes (2015); Pham, Ramiah, Moosa, and Nguyen (2017) among others. Local studies include those done by Odongo (2013) and Karinga (2015). Findings from the studies have however been mixed.

1.1.1 Announcement of Interest Rates Capping Regulation (IRCR)

A rate of interest is the cost of using borrowed funds and is usually set for a specified period, which is mostly annually (Ali, 2014). A cap on interest rates is a limit imposed on loan interest rate changes, that is, either increases or decreases.

The limit can be enforced over the entire life of the facility or from one regulation period to the next (www.superbrokers.ca).

In the context of this study, interest rates capping can be said to be a government financial sector regulatory measure that limits the amount by which interest rate chargeable on a credit facility can change from one regulation period to the other or over the facility's entire life. It also sets the minimum interest rate payable on funds deposited in an interest earning account.

The IRCR in Kenya was enacted on 24th August 2016 with a commencement date of 14th September 2016 after several unsuccessful attempts in the past to have the law in place. It did away with the concept of risk-based pricing by banks and other financial institutions by setting an interest rate ceiling for credit facilities at 4% above the CBR. It also set an interest rate floor on interest earning accounts' deposits at 70% the CBR (www.kenyalaw.org). According to data available from the CBK, the CBR as at August 2016 was 10% (www.centralbank.go.ke).

Announcement of new financial sector regulations for instance the IRCR is a major factor in determining share price movement, performance of banks, other financial institutions, the securities exchange and the general economy. For purposes of this study, the announcement date was the date of enactment on 24th August 2016, the date when new information on the regulation was relayed to the public and impounded into the prices of stocks. This is evidenced by the slump in listed banks' share prices and the major NSE indices immediately after the announcement as investors reacted to the news; and the concerns immediately raised by the banking sector stakeholders who were not expecting a presidential move in that direction.

1.1.2 Stock Prices

The EMH findings indicate that stock prices are influenced by both private and public information (Fama, 1965). Such information comprises of various corporate announcements including earnings and dividends, stock splits, rights and bonus issues, mergers, acquisitions, takeovers, and major regulatory changes for instance the IRCR. The reaction to news is always spontaneous and the prices jump on the day the information is made public. Stock price does not shift further once the information becomes public (Marcus, Bodie, & Kane, 2009).

Empirical evidence in support of stock price change in response to new fundamental information includes international studies by Fama (1965-1970) on capital market efficiency, Aharon and Swary (1980) on dividend changes, Bae, Cheon, and Kang (2008) on earnings releases.

Local evidence includes that by Ondigo (1995) on annual reports and earnings announcements, Njoroge (2003) on rights issues announcements, Cherono (2010) on cross-border listing for NSE listed companies and Muturi (2014) on announcement of presidential election results among others.

1.1.3 Announcement of IRCR and Stock Prices

Schwert (1981) argued that market participants pursue regulation that impacts positively on security prices and shun regulation that impacts negatively on security prices and that if there is any association between regulation and the prices of securities, regulation effects are impounded into prices at the time of first anticipation.

Rational investors should naturally respond to announcement of new financial sector regulations, which constitute new public market information, thereby causing stock prices to react spontaneously to the news as per the EMH (Fama, 1970). Announcement of new regulations can drive stock prices in both directions depending on investor beliefs about future stock returns (Paes, 2015). If rationality in the market place as assumed by the EMH holds, the effects of new regulations will reflect immediately in the prices of stocks (Mackinlay, 1997). This implies that the securities exchange will quickly digest the new information on the IRCR and transmit it rapidly into changes in stock prices.

Announcement of the IRCR in Kenya has far-reaching and long lasting effects on securities' price movement, performance of banks, other financial institutions, the securities exchange and the economy. It was expected to alter the market players' perception and expectations on the profit potential and riskiness of listed banks. This was in turn expected to influence the attractiveness or otherwise of the listed banks' stocks, leading to adjustment of their share prices either upwards or downwards. The magnitude, direction and timing of the reaction was however uncertain to the investors (Lee & Schweitzer, 1989).

Investors viewed announcement of the IRCR as unfavorable. They also viewed listed banks' stocks as unattractive immediately after the announcement. This is evidenced by the decline in banking sector share prices and the major market indices as investors rushed to harvest accumulated capital gains before the regulation's effective date.

Investors expected that with time, as the IRCR became operational, lending by commercial banks would focus more on the government at the risk free rate as opposed to individuals and private investors due to the perceived high-risk level associated with the later (World Bank Group, 2014). Due to reduction in private investment in the listed commercial banks as a result of limited access to credit facilities, investors expected share prices to shrink. They also expected interest, which is a major income source for the banks, to shrink, hence profitability and general performance. When a company is said not to be performing well, investors are forced to sell their stock and this leads to lower share prices (Capozzi, 2008).

Just a day after the IRCR was signed into law, Lola Okulo, a columnist in the Star newspaper of 25th August 2016 observed a free fall in the NSE listed banks' share prices as investors exited the counters. As at 11.25a.m., Equity Bank Ltd's share price was down 9.72% and Barclays Bank was down 9.79%. He observed massive offers for bank stocks, mostly from foreign investors. Nyambura-Mwaura and Felix Njini, also columnists in the Star newspaper, early edition of 26th August 2016 observed that KCB Bank Groups' share price dropped 9.9% as at 2.32p.m. on 25th August 2016. I&M Holdings' share price slid 9.8% and Standard Chartered Bank's share price fell by 1.45% as investors focused on the relative aversion of lenders to retail loans.

John Aglionby and Lenny Ruvaga, reporters in the Financial Times newspaper of 25th August 2016, observed that on the first day of trading after the IRCR was signed into law, the major NSE indices declined. The NSE 20 Share Index shed 152.92 points, an equivalent of 4.4%, the NSE 25 Share Index lost 3 points to close the day at 3,913.93 and the NASI dropped by 5%.

Various finance studies have been done in the past on the relationship between new government regulations and share prices. Rose (1985) assessed the effects of deregulatory reforms announcements in the motor carrier industry on shareholders' wealth. Milloncornett and Tehranian (1989) researched on the passage impact of the Depository Institutions Deregulation and Monetary Control Act of 1980 on bank shareholders' wealth. Prager (1992) did a research on the effects of the 1992 Cable Act, which reinstated price controls on US cable television operators, on shareholders' wealth. Local evidence is as mentioned in 1.1 (background of the study). The studies generated mixed findings.

1.1.4 Commercial Banks listed at the NSE

This study focused on the NSE listed banks. The NSE is a capital market that operates under the license and regulation of the CMA. It is charged with the responsibility of providing a platform for trading in listed securities and overseeing operations of member firms. As at August 2016, there were 67 companies listed at the NSE, 11 (eleven) of them in the banking sector (www.nse.co.ke) (See Appendix 1).

The IRCR directly affects the Kenyan banking sector. It was enacted on 24th August 2016 with a commencement date of 14th September 2016. It set the maximum interest rate that commercial banks can charge on credit facilities at 4% above the CBR and the minimum interest payable on deposits in interest earning accounts at 70% the CBR (www.kenyalaw.org). By implication, the IRCR limited listed banks' interest income and hence profitability. Its announcement therefore caused fears among investors in banking sector stocks, who viewed the regulation as unfavorable and the stocks as unattractive.

This led to massive offers as investors rushed to harvest accumulated capital gains before the regulation's effective date, and hence an increase in supply and decrease in demand for the banking sector stocks, leading to a decline in their prices.

Data available at the NSE indicates a downward trend in all banking sector stock prices as from 25th August 2016, just a day after the IRCR was enacted. For Instance, Barclays Bank of Kenya share price declined from Kshs.9.70 on 24th August 2016 to Kshs.8.85 on 25th August 2016, and further declined to Kshs.8.55 on 26th August 2016. The same trend was observed for I&M Holdings Ltd whose shares traded at Kshs.107.00 on 24th August 2016, Kshs.96.50 on 25th August 2016 and Kshs.87.00 on 26th August 2016. KCB Group shares traded at Kshs.32.75 on 24th August 2016, Kshs.30.00 on 25th August 2016 and Kshs.27.00 on 26th August 2016. The Co-operative Bank of Kenya Ltd shares traded at Kshs.13.25, Kshs.11.95 and Kshs.10.80 on 24th, 25th and 26th August 2016 respectively (www.nse.co.ke).

Immediately after announcement of the IRCR, the NSE experienced decreased trading volumes in the banking sector stocks due to increased supply and decreased demand. A total of 7,388,300 shares were traded on 24th August 2016 compared to 441,000 and 578,700 traded on 25th and 26th August respectively (www.nse.co.ke). There was a downward trend in the major market indices. NASI went down from 146.48 on 24th August 2016 to 139.14 and 134.97 on 25th and 26th August respectively. The NSE 20 Share Index declined from 3,462.68 on 24th August 2016 to 3,309.76 and 3,216.62 on 25th and 26th August respectively. The NSE 25 Share Index was down from 3,913.93 on 24th August 2016 to 3,704.68 and 3,551.80 on 25th and 26th August respectively.

1.2 Research Problem

Government financial sector regulation has increasingly become a popular topic of research because of its potential impact on the securities exchange and the economy. Securities exchanges play an important role in the economy. Their behavior in prediction of share prices and returns cannot be underrated, hence the trend towards increasing popularity in the measurement of the actual rather than the intended effects of regulation majorly concentrating on “wealth effects” (Schwert, 1981).

Stock prices react spontaneously to new information in the market as stated by the EMH (Fama, 1965-70). New market information could be in the form of major regulatory changes; for instance, the IRCR. A study to determine its announcement impact on the movement of listed banks’ stock prices as investors responded to the news is of prime importance. It will uncover the immediate effects of the regulation and form the basis of any research in this area. Whilst most event studies on stock prices have concentrated on mergers and acquisitions, earnings and dividend announcements, stock splits, bonus issues, and regulatory changes on capital adequacy, the wealth effect of announcement of the IRCR has not been researched on.

Market failures characterize the Kenyan financial sector. Banks and other financial institutions realize excessive profits by charging extortionate interest rates on credit to clients and paying very low interest rates on client deposits. This has led to fears among members of the public frustrated by the high credit cost and poor savings rates. Information asymmetries that are rampant within the Kenyan banking sector have led to high levels of non-performing loans.

This is brought about by inability to fully identify a client's potential for repayment and hence inability for banks to differentiate between safe and risky borrowers on making credit decisions. These market imperfections have been a source of major concern for banks and the regulators (Miller, 2013). This has therefore necessitated the need for government intervention through interest rates capping as a form of enhancing the regulatory framework.

This study is important because whether the IRCR meets the intended outcomes by addressing the financial market imperfections or not is still a subject of study. There have been mixed views on the impact of capping interest rates, with critics viewing it as detrimental to the economy. International bodies like the IMF and the World Bank have expressed concerns over the negative effects of the law on pricing, access to and growth of credit, banking sector earnings, economic stability and growth. There has been growing opposition to the regulation, fears on its sustainability and calls for a repeal of the Act by banks and other banking industry stakeholders, for instance, CBK and KBA (Cytonn Investments, 2017).

Various global finance scholars have carried out studies on the wealth effect of financial sector regulatory announcements. Findings have however been mixed and no concrete conclusions have been reached. Studies done on interest rate caps have emphasized on announcement effect of their removal and not introduction, hence creating a research gap which this study seeks to address. Dann and James (1982) assessed the removal of maximum interest rates on deposits on stock prices of stock-owned Savings and Loans Associations and found a negative effect.

Smirlock (1984) did a research on the removal of maximum interest rates on returns of bank stocks to see if they reacted to the deregulatory event. He found out that bank stock returns were unaffected by the removal of interest rate ceilings. Lee and Schweitzer (1989) studied the announcement effect of the Financial Centre Development Act (FCDA) in Delaware and found it to be in line with shareholder wealth maximization. Michaely (1991) analyzed the implementation impact of the 1986 Tax Reform Act on the ex-dividend stock price behavior and found no effect. These conflicting findings create a research gap.

Locally, Odongo (2013) analyzed the reaction of stock prices to announcement of increased capital adequacy requirements regulation and found a negative effect. Karinga (2015) studied the announcement effect of CGT on stock performance at the NSE and found a positive effect. Both studies focused on the NSE as a whole and none focused on the banking sector only. Most of the other studies done locally focused on monetary and fiscal policy announcements. None of them addressed the IRCR's announcement effect on shareholder wealth.

This research therefore sought to answer the question: What is the announcement effect of the IRCR on stock prices of NSE listed banks?

1.3 Research Objective

To analyze the announcement effect of the IRCR on stock prices of NSE listed banks.

1.4 Value of the Study

This research is of value to academic researchers because it adds to the literature already in existence and provides a basis for further research.

Regulators, especially the government and the CBK have been guided on future legislation of banks and other financial institutions, and the potential impact on the securities exchange and the economy at large.

Policy makers at different levels of NSE listed banks and other financial institutions have been made to understand the implications of the IRCR and are in a position to make informed financial and strategic decisions.

The study provides guidance to individual and corporate investors in making informed securities exchange investment decisions with regard to selling, buying or holding and adjustment of their investment portfolios appropriately.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter addresses the relevant theories to financial markets' behavior and specifically stock prices movement on release of new information into the market, followed by the determinants of stock price, international and local empirical evidence and finally a summary of the chapter.

2.2 Theoretical Review

This section covers a review of the theories that guide the study and their applicability to the study. The theories reviewed include; The EMH, Random Walk and Behavioral Finance.

2.2.1 Efficient Market Hypothesis

The EMH is a popular investment theory in Finance developed by Fama (1965). As stated by the EMH, a capital market is efficient if prices of securities adjust instantaneously to new market information and therefore the current price is a fair representation of all the information about the security.

The EMH implies that investors consider all available information in security prices in making sell or buy decisions (Reilly & Brown, 1999). Securities always trade at fair prices in the stock markets and therefore it is impossible for any investor to “beat the market”. Efficiency of the securities market causes the security prices to integrate all the pertinent information. It is therefore not possible for market participants to dispose-off securities at above average prices or purchase stocks at underestimated prices.

It is not possible to outperform the overall market through engaging experts in stock selection or by employing market-timing techniques (www.investopedia.com). Neither fundamental nor technical analysis would enable a market participant to earn greater returns than what would possibly be earned if investments were made in a portfolio of comparable-risk individual securities selected at random. Efficient markets therefore imply that in order for market participants to earn returns above the average, they must also undertake corresponding risks (Malkiel, 2003).

This theory was applicable to this study in demonstrating whether investors' reacted instantaneously to the IRCR announcement as demonstrated by the change or otherwise in stock prices.

2.2.2 Random Walk Theory

This theory is an important model used in economics and finance in testing stock price behavior (Fama, 1965). A random walk means that past and future security price trends are completely independent of each other (Mbat, 2001).

Kendall (1950) pioneered support for the perspective that stock prices behave in an unsystematic manner. Foley (1991) supported Kendall's argument. According to Lo and McKinley (1999), current stock prices are a full reflection of all available information and returns above the average cannot be realized from trading based on available information. This leads to a random walk of security prices whereby the more efficient the market is, the more random the sequence of price changes will be.

The idea of a random walk of security prices is closely associated with the EMH. Kendall (1953) studied security price behavior over a period of time and found out that prices tend to follow a random walk, that is, the prices were equally likely to go up or down. The random stock price movement indicates an efficient market. The premise is that investors react instantaneously to any new public information in the market for example, changes in the company, industry or economy, thereby eliminating information-based profit opportunities. Information received by the market about these changes immediately alters the security price and the price shifts to a new level, either downwards or upwards, depending on the information type.

This rapid drift to a new level of equilibrium whenever new information is received is recognition of the fact that all pertinent information, which is known, is fully reflected in security prices. Security price changes show independent behavior. They are dependent on the new information that is received but within themselves are not dependent of each other (Kevin, 2001). However, a random walk of stock prices should not be misconstrued as implying an efficient market with rational investors. Random walks and the EMH do not amount to the same thing (Dupernex, 2007)

This theory was applicable to this study in demonstrating whether investors reacted instantaneously to new public market information and specifically announcement of the IRCR. This was evidenced by the change or otherwise in security prices immediately after the announcement. In cases where investors reacted instantaneously to the information on the IRCR, there was no difference between expected and actual stock prices in the measurement period after the announcement.

2.2.3 Behavioral Finance Theory

Behavioral Finance integrates economics and psychology in finance theory. Psychologists Kahneman and Tversky (1979) spearheaded it. Different scholars have given different definitions for behavioral finance. Shefrin (2001) defined it as the study of the effect of psychological factors on economic decision-making processes and financial markets. Sewell (2007) defined it as the study of the effect that psychology has on financial practitioners' behavior and the resultant impact on markets. It helps in explaining the how and why of markets' inefficiency and is therefore of great interest. It is an attempt to provide explanations and increase levels of understanding of the reasoning patterns of investors, including the emotional processes they go through and the extent to which they influence the process of investment decision-making (Nyamolo, 2010).

Behavioral finance recognizes that social influences, emotions and herd instincts play a crucial part in determination of investment decisions and thereby lead to differences between fundamental value and security prices (Nyamute, Lishenga, & Oloko, 2015).

Various behavioral finance studies have been done and all acknowledge that emotions and psychological factors have a substantial influence on securities exchanges' behavior and prices. Huberman (2001) provided empirical evidence that people have a tendency to invest in securities they are familiar with while often times ignoring portfolio theory principles, whose key tenet is that if an investor wishes to reduce the risk and increase the performance of an entire portfolio of investments, they should combine investments that are non-correlated with one another.

Hong, Kubik and Stein (2005) presented evidence that oral messages play a major role in spreading information about stocks among investors, consequently ignoring portfolio theory principles. Daniel, Hirshleifer and Teoh (2002) indicated that overconfidence significantly influences investor view of investment strategies and that investors often rely on the masses or on more experienced market players' decisions; hence are prone to systematic errors. Mwaka (2013) demonstrated that investors of different demographic characteristics were differently affected by herding and overconfidence biases among other biases and hence made investment decisions differently.

Financial markets' behavior is therefore greatly influenced by investor perception and reaction among many other factors including; political and institutional constraints, dissemination and accessibility of information, and a country's economic processes.

This theory was applicable to this study in demonstrating whether announcement of the IRCR influenced investors perception and expectations about the future financial performance of the banking sector stocks and hence their investment behavior as demonstrated by the resultant effect on the movement or otherwise of stock prices.

2.3 Determinants of Stock Price

Research on the factors that determine stock price is not conclusive due to mixed findings. However, some of the general factors that determine stock prices and their movement include the following;

2.3.1 Interest Rates Capping Regulation (IRCR)

The IRCR was expected to reduce listed banks' interest income and hence their profitability.

This was in turn expected to lead to decreased attractiveness of their shares to investors because of lower expected future returns. In effect, demand for their shares was also expected to decrease, leading to a decrease in share prices.

2.3.2 Company Financial History and Health

Information on the financial health condition of a company is a major factor in determining its share price. Announcement of poor earnings sends a negative signal to investors and hence compels them to sell their stocks leading to a lower share price. By implication, this means that not all the share prices move together towards the same direction and at the same rate because the direction of the movement is dependent on the individual company's financial health (Karinga, 2015).

The history of a company is a major player in determining share prices, size and direction of their movement. A company whose financial history demonstrates a long-term earnings potential attracts more buyers, leading to an increase in its share prices. A company, whose outlook is poor may on the contrary, attract more sellers than buyers, resulting in lower prices. Generally, prices rise during periods of increase in demand when buyers are more than sellers and fall during periods of increase in supply when sellers are more than buyers (www.boursedeparis.fr).

On announcement of the IRCR, investors were forced to dispose off their stocks in companies that have been poor financial performers in the past and do not show any signs of future improvement, in order to avoid further losses.

2.3.3 Prevailing Economic Trend

Investors avoid stocks during a bear market leading to a decrease in demand. This naturally drives the price of stocks downwards. A bear market is one that is in a recession. Securities' prices are continuously declining, leading to a downward trend. Investors believe that this downward trend will be long term, which, in turn, perpetrates the spiral. Investors buy more securities during a bull market. This leads to an increase in stock price. A bull market is one that is on an upturn. It is characterized by continued increase in security prices. Investors believe that the uptrend will continue in the long run (www.boursedeparis.fr).

Apart from the announcement of the IRCR, the prevailing stock market condition also determines stock prices of NSE listed banks.

2.3.4 Market Forces of Supply and Demand

The forces of supply and demand for shares influence share prices just the way they influence prices of other commodities. Increased demand pushes stock prices up and vice versa while increased supply pushes the stock price down and vice versa. By implication, on announcement of the IRCR, stock prices should decrease as a result of increased supply of shares from investors who wish to harvest their accumulated capital gains before the regulation's commencement date (www.boursedeparis.fr).

2.4 Empirical Review

Stigler (1964) studied the effects of the 1933 Securities Act in which the SEC sought to regulate the securities markets. The study objective was to establish whether the mandatory disclosure of financial information as required by the Act increased the average return earned by new issues' investors. Secondary data on companies listed at the NYSE for the years from 1923 to 1955, that is, seven years after and six years before the Act was utilized in the study. Changes in prices and average stock returns of new stock issues relative to the Standard and Poor's Index were analyzed. There was no evidence of a substantial positive change in average returns after the regulation. This led to the conclusion that regulation of initial public offerings was inessential and ineffective given existing private market sources of financial information.

Smirlock (1984) examined the removal of ceilings on deposit rates of interest between 1970 and 1978 to see if bank stock returns reacted to this deregulatory event. The study employed the event study methodology and a secondary data set of 17 large banks listed on the major stock exchanges in the US. He found out that bank stock returns were unaffected by the removal of the interest rate ceilings; mainly because the study focused on larger banks which were not as dependent on rate-ceiling protected deposits for funding.

Lee and Schweitzer (1989) assessed the shareholder wealth effect of the FCDA of Delaware, which permitted foreign bank holding companies to establish subsidiaries for special purposes within Delaware. The study objective was to establish the impact of the decision on shareholder wealth.

Event study methodology and secondary quantitative data were employed in the study. The results from the study showed consistency with maximization of shareholder wealth.

Bhana (1996) reviewed the reaction of bank share prices to increased capital requirements on the JSE. Event study methodology was used in the study. Secondary data was obtained for the sample of 14 registered banks in the Bank and Financial Services Sector of the JSE at the time of publication of the regulations, that is, on 30th November 1990. The results showed a negative reaction of bank share prices to the increased capital requirements regulation.

Paes (2015) assessed the impact of announcement of Basel III liquidity requirements on stock returns of 380 different US banks. Event study methodology was employed in the study. Secondary data was collected from the Center for Research in Security Prices for December 2008 until 31st December 2013, that is, 5 years after the 2008 financial crisis. The results found a positive reaction of the market to the first, second and third announcements and a negative non-significant reaction to the fourth announcement.

Ghani and Chaudhary (2016) studied the response of the stock market to announcement of monetary policy in the Pakistan banking sector for the 2014-2015 financial year. Event study methodology was employed in the study. Secondary data was collected for the sample of 14 KSE 100 Index listed banks. The study results revealed a significant effect of monetary policy on bank stock returns.

Ngigi (2000) assessed the impact of monetary and fiscal policy actions on the Kenyan stock market performance. The study objective was to assess the magnitude and nature of the impact that both the fiscal and monetary policies have on the performance of the NSE. Secondary data from the Capital Markets Authority, NSE and CBK was employed in the study. The study found out that expected monetary policy actions, and unforeseen fiscal policy actions affect the stock market negatively, while the unexpected monetary policy adjustments affect it positively. There was also a conclusion that the anticipated fiscal policy actions do not have any impact on the performance of the stock market.

Kiruri (2009) reviewed the reaction of the stock market to macroeconomic announcements in Kenya. The study objective was to test the stock prices at the NSE for information efficiency in relation to macro-economic factors. The research employed all the continuously listed companies at the NSE between the years 2005 and 2008. Share price secondary data was extracted from the NSE and the individual company libraries. Correlation and simple linear regression were used to analyze the data. The study showed a potent relationship between balance of payments and GDP announcements; leading to either negative or positive movement in share prices.

Odongo (2013) studied the reaction of the stock market in Kenya to increased capital adequacy regulation. The study objective was to assess the impact of announcement of the increased capital adequacy regulation on stock prices in the Kenyan banking sector. Secondary data for the nine listed banks for the month of December 2008 was collected from the NSE. Event study methodology was used and data analyzed using SPSS and MS Excel. The study found out that the market reacted negatively to the announcement of increased capital adequacy regulations.

Njeule (2013) researched on the effect of CBK Prudential Banking Regulations of 2006 on the financial performance of banks in Kenya. The study covered a population of all the licensed banks operating in Kenya during the study period. The study covered the twelve year period from 2001 to 2012; that is, six years prior (2001-2006) and six years after (2007-2010) implementation of the prudential regulations. The study used secondary quantitative data sourced from CBK's Bank Supervision Department. Regression analysis was employed in analyzing the data. The study revealed a great positive effect of CBK prudential regulations on the financial performance of banks.

Karinga (2015) reviewed the announcement effect of CGT on stock performance at the NSE. The study objective was to establish the announcement effect of CGT on NSE listed firms' stock returns. Secondary data for all the 57 companies listed and actively trading at the NSE excluding those listed for the first time, for the period from 24th July 2014 to 10th October 2014 was collected. Event study methodology was employed in the study. Data was analyzed using SPSS and MS excel. The study revealed that the announcement of the CGT had a positive effect on stock performance at the NSE.

2.5 Conceptual Framework

A conceptual framework is a visual representation of research variables and the presumed relationships among them.



In this study, announcement of the Interest rates capping Regulation was used as the independent variable. Independent variables are those that predict the dependent variable. Stock price was used as the dependent variable. Dependent variables are those that are affected by the change in the independent variables.

2.6 Summary of Literature Review

It is evident from the above literature review that research on the announcement effect of new financial sector regulations on stock prices and returns is not conclusive due to mixed findings. Some studies show no effect, others show insignificant negative or positive effects, while others show significant negative or positive effects.

Earlier studies, that is, those done between the years 1933 and 1984 show no effect of new financial sector regulatory announcements on stock prices and returns. The regulation's nature and firm size were major determinants of the resultant findings.

Later studies, that is, those done between the years 1989 and 2016 support effect of announcement of new financial sector regulations on the stock exchange and specifically stock prices and returns. Thus, the later studies support the semi-strong EMH. They indicate that investors react to information on new financial sector regulations and cause either negative or positive movement in share prices.

All the studies appreciate the fact that the direction of share price movements depends largely on the regulation's nature and whether investors view the regulation as favorable or unfavorable. This applies also to the studies on monetary and fiscal policies; with the exception of anticipated fiscal policy actions, which according to the reviewed literature do not affect the performance of the stock exchange.

It is notable from the review that of all the studies carried out locally; none addressed the wealth effect of the IRCR's announcement.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the methods used in executing the research in order to meet the research objective; which was to analyse the IRCR's announcement effect on stock prices of NSE listed banks. It provides details of the research design, population, sample design, data collection and analysis techniques.

3.2 Research Design

This research employed the event study design to establish whether announcement of the IRCR had an effect on share prices of commercial banks listed at the NSE. The study examined daily stock price trends 10 days before and 10 days after 24th August 2016 when the IRCR was signed into law. There is no rule of thumb on event window choice. Dann and James (1982) used a 26 business days' window; while Karinga (2015) used a 31 business days' event window, among others. This research design was considered effective because only one date is chosen to avoid overlapping of events and the resultant errors. The short event window is considered suitable because past studies have demonstrated that the shorter the event window, the more the significance of an event will be captured (Ryngaert & Netter, 1990). The study used an estimation period of 20 days before the event window.

3.3 Population

The study population was all the eleven NSE listed banks as at August 2016 (See Appendix 1).

3.4 Sample Design

This study considered nine out of the eleven NSE listed commercial banks that were continuously trading during the months of July, August and September 2016, that is, the period covered by the study (See Appendix II). Diamond Trust Bank Kenya Ltd and I & M Holdings Ltd were excluded from the study because of non-continuity of trading during the study period.

3.5 Data Collection

The study made use of secondary quantitative data on stock prices and the NSE 25 Share Index obtained from the NSE database. This being a short-term event study, daily opening and closing stock price data for all the nine sampled NSE listed banks and the NSE 25 Share Index was collected for the period from 13th July to 7th September 2016. This data collection technique has been chosen because stock price data of banks listed at the NSE and the NSE 25 share index is available readily at the NSE database. According to Sekaram (2003), secondary sources of data are time and cost effective.

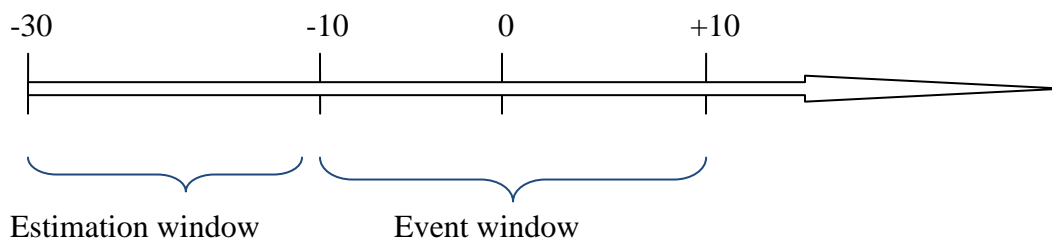
3.6 Data Analysis and Presentation

The study followed the event study methodology as summarised by Mackinlay (1997) by assessing changes in daily stock prices around the announcement date. This methodology has been successfully used by many researchers to investigate the wealth effect of announcements; for instance; Gupta (2006) on earnings announcements' impact on stock prices in the Indian market; Paes (2015) on the effect of announcement of Basel III liquidity requirements on US banks' stock returns; and Mukora (2014) on dividend announcements' impact on NSE listed firms' stock returns.

The event study methodology is comparatively easy to execute because the only data required are the names of NSE listed banks, the event date, stock prices and the NSE 25 Share Index. This methodology makes use of stock prices which cannot be manipulated by insiders as opposed to accounting profits. Stock prices also reflect a firm's true value. They are assumed to reflect the discounted value of all future cash flows and reflect all the pertinent available information (Mc Williams & Sielgel, 1997). The event window was 21 days, that is, 10 days prior to and 10 days after the event, with the event day being 0. Data was analyzed using MS Excel and SPSS. Using daily stock price data and a short term event window increases accuracy of the significance tests as the possibility of confounding events taking place in the event window decreases (Mackinley, 1997).

An estimation window of 20 days before the event period was used to estimate the market proxy using the market model suggested and developed by Sharpe (1963). The estimation period of 20 days has been successfully used by researchers in the past, for instance; Bhana (1996) and Odongo (2013).

Diagrammatically, the event timeline can be represented as follows;



Mathematically, the market model can be expressed as;

$$\mathbf{E}(\mathbf{R}_{i,t}) = \alpha_i + \beta_i \mathbf{R}\mathbf{M}_t + e_{it}$$

Where;

$\mathbf{E}(\mathbf{R}_{i,t})$ = expected/normal return of the security i in period t .

α_i = alpha, a constant (the intercept of the dependent variable)

β_i = Beta coefficient (slope characteristic line) that depicts the security's excess returns sensitivity to the market portfolio's return.

$\mathbf{R}\mathbf{M}_t$ = Market return on index in period t (the NSE 25 Share Index will be used as a proxy)

e_{it} = the abnormal return due to the event/ the unsystematic or avoidable risk

Due to efficient diversification, total risk of a portfolio is reduced to a point where only systematic risk remains leading to compensation of investors only for systematic risk and reduction of the model to;

$$\mathbf{E}(\mathbf{R}_{i,t}) = \alpha_i + \beta_i \mathbf{R}\mathbf{M}_t$$

The event date (day zero) was 24th August 2016, that is only one day. Stock movements around this date were analyzed to determine the impact of the event on stock prices.

Alpha (α_i) and Beta (β_i) were calculated using the market model and data from the estimation window, using linear regression analysis.

Daily individual security abnormal returns were computed using the following model;

$$AR_{i,t} = R_{i,t} - E(R_{i,t})$$

Where;

$AR_{i,t}$ = abnormal return of security i in period t

$R_{i,t}$ = actual return of security i in period t

Average Abnormal Return (AAR) across all the securities were then computed with the aim of improving reliability of the analysis using the model. The AAR represents average deviation of actual returns of a security from the expected/normal return. The formula for computation of AAR was;

$$AAR_t = \sum AR_t / n$$

Where;

AAR_t = average abnormal return at time t

AR_t = Abnormal returns at time t .

n = number of securities

Cumulative Average Abnormal Return (CAAR) for all the securities was then computed. The CAAR provides information about the average behavior of selected company stocks.

The model for computation of CAAR was as follows;

$$CAAR = \sum AAR_t$$

Where $\sum AAR_t$ is the sum of AAR in period t .

The AAR and CAAR are both measures of market efficiency. If the stock market is efficient, the AARs and CAARs are close to zero. The AAR and CAAR before and after announcement of the IRCR were then compared. If higher or lower after the announcement than before, it is an indication of positive or negative effect hence the null hypothesis is rejected in favor of the alternative.

If the AAR and CAAR remain the same before and after announcement of the IRCR, this is an indication of no effect on stock prices hence the null hypothesis is accepted.

The paired t-test statistic was used to measure the level of significance of the impact on stock prices before and after the announcement date of the IRCR for both AAR and CAAR.

The hypotheses were:

Null hypothesis: Announcement of the IRCR has no effect on stock prices.

Alternative hypothesis: Announcement of the IRCR has an effect on stock prices.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND INTERPRETATION

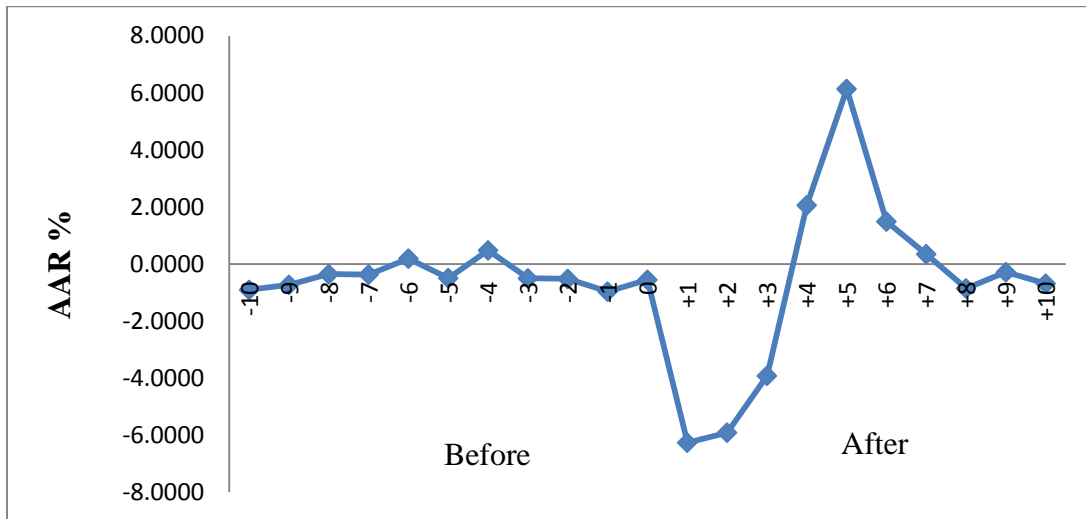
4.1 Introduction

This chapter presents the analysis and interpretation of the data collected for the study based on the study objective which was to analyze the announcement effect of the IRCR on stock prices of commercial banks listed at the NSE. It also presents a discussion of the findings. The study focused on the 9 (nine) sampled commercial banks listed at the NSE and continuously trading during the study period. The data used comprised of the daily opening and closing stock prices and the NSE 25 Share Index for the period under study.

4.2 Descriptive Statistics

Daily individual security abnormal returns were computed by taking the difference between actual returns and expected returns. AAR across all the sampled securities were then derived from the resulting abnormal returns. CAAR were then calculated by summing up the AAR over the event window (see appendix IV for details of daily individual security abnormal returns, AAR and CAAR for each day). The AAR and CAAR for the study period were then plotted on graphs and the following were the results;

Figure 4.1: Graphical Representation of AAR for 10th August to 7th September 2016

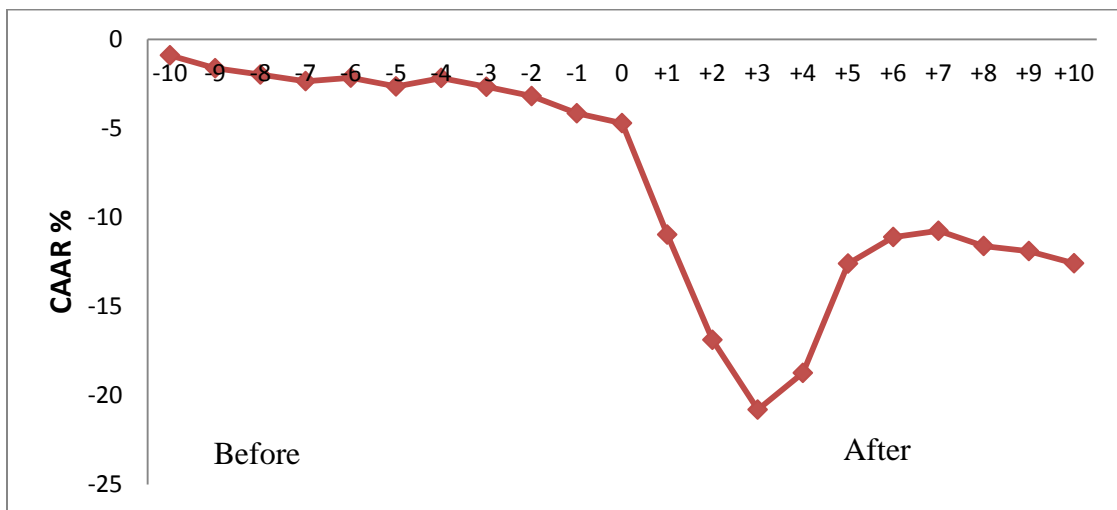


Source: research findings

From figure 4.1 above, the AAR fluctuated between -0.96% and 0.48% from day -10 to day -1, that is, they were very close to zero and somehow stable for the period before the announcement date. Immediately after the announcement date, there was a sharp downward surge in AAR to -6.26% on day +1. This is in agreement with the EMH proposition that stock prices react instantaneously to the arrival of new market information. This was followed by a slight upward movement to -5.91% on day +2 and a further upward trend to -3.92% on day +3. There was then a positive upward trend from day +4 to day +7, during which more positive fluctuations were observed with a peak of 6.14% on day 5. This implies that any suspicions by investors were eliminated leading to an increase in share prices as reflected by the positive abnormal returns. The positive fluctuations were followed by further negative fluctuations, which were very close to zero between days +8 and +10, during which period the curve appeared to stabilize.

The fluctuations between negative and positive AAR appeared to be in line with the Random Walk Theory. There was an indication of more of a random walk of stock prices and no relationship between stock prices before and after the announcement. Investor behavior also appeared to be in play as evidenced by the movement in stock prices as depicted in the AAR curve.

Figure 4.2: Graphical representation of CAAR for 10th August to 7th September 2016



Source: research findings

From figure 4.2 above, the CAAR were negative before the announcement date, during which period the curve continued to generally smoothly slope downwards up to the announcement date (day 0) when they stood at -4.7%. Immediately after the announcement, there was a sharp downward surge in CAAR to -10.97% on day +1. This confirms that the market received announcement of the IRCR as bad news. The downward trend continued up to day +3 when CAAR stood at -20.80%, after which there was a slight upward movement to -18.73% on day +4.

This was followed by further negative fluctuations between -12.59% and -10.76% from day +5 to day +10, during which the CAAR curve appeared to stabilize. It is worth noting that the fluctuations in CAAR followed the same trend as the AAR and that the CAAR remained negative throughout the study period, but were more negative after the announcement.

4.3 Inferential Statistics

SPSS software (version 21) was used in this study to run the paired t-test of significance for both the AAR and CAAR for the period before and after the announcement date and the following are the findings.

4.3.1 Test of significance of AAR for 10th August to 7th September 2016

Findings of paired t-test of significance calculated are as follows:-

Table 4.1: Paired Samples Statistics of AAR

	Mean	N	Std. Deviation	Std. Error Mean	
Pair 1	AAR Before	.416060	10	.4522390	.1430105
	AAR After	-.786910	10	3.7824438	1.1961138

Source: research findings

Table 4.1 indicates that the AAR mean for the period after the announcement date was -0.79% and the AAR mean for the period before the announcement date -0.42%. This means that the AAR mean slightly increased negatively after the announcement date. Both the AAR means before and after the announcement were negative.

Table 4.2: Paired Samples Test of AAR

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 AAR Before AAR After	.3709	3.5316	1.1168	-2.1555	2.8972	.332	9	.747

Source: research findings

The paired t-test statistic was calculated at 5% level of significance. The p-value (0.747) is greater than the significance level of 5% implying that the difference in daily AAR means before and after the announcement was not significant hence the acceptance of the null hypothesis that announcement of the IRCR has no effect on stock prices.

4.3.2 Test of Significance of CAAR for 10th August to 7th September 2016

Findings of paired t-test of significance of CAAR computed are as follows:-

Table 4.3: Paired Samples Statistics of CAAR

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 CAAR Before	-2.390630	10	.8806145	.2784747
CAAR After	-13.793080	10	3.6306126	1.1481005

Source: research findings

Table 4.3 indicates that the CAAR mean was negative for both the periods before and after the announcement. Post announcement CAAR mean was -13.79%, that is, more than five times more negative than the pre-announcement CAAR mean of -2.39%.

Table 4.4: Paired Samples Test of CAAR

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 CAAR Before CAAR After	11.4025	3.8880	1.2295	8.6212	14.1837	9.2749	9	.000

Source: research findings

The paired t-test statistic was calculated at 5% level of significance. The p-value (.000) is less than the significance level of 5%, meaning that the CAAR means before and after the announcement were significantly different. Hence the rejection of the null hypothesis that announcement of the IRCR has no effect on stock prices and adoption of the alternative hypothesis that announcement of the IRCR has an effect on stock prices. This implies that cumulatively, announcement of the IRCR had a significant effect on stock prices.

4.4 Discussion of Findings

Observation from the CAAR graph showed that the cumulative average abnormal returns before the announcement date were negative and continued to gradually negatively increase up to the event date. However, after the announcement, there was a sharp downward surge which continued for 3 days, after which there was another sharp upsurge for 2 days before stabilization. Throughout the study period, the CAAR remained negative but were more negative after the announcement.

From the analysis done, the CAAR means for the period before and after the announcement were negative; although they were more negative after than before the announcement date. This is an indication that the announcement of the IRCR had a cumulative significant negative effect on stock returns and hence stock prices. This is also supported by the test of significance.

From the paired t-test of significance, the null hypothesis that announcement of the IRCR has no effect on stock prices of commercial banks listed at the NSE is rejected and the alternative hypothesis that announcement of the IRCR has an effect on stock prices is adopted. The t-test showed that stock prices in the period before and after the announcement were significantly negatively different.

The findings are in agreement with the study by Dann and James (1982) that removal of maximum interest rates on deposits of stock owned Savings and Loans Associations had a negative effect on stock prices. Odongo (2013) found out that the stock market in Kenya reacted negatively to the announcement of increased capital adequacy regulations.

The findings are in contradiction with the study by Smirlock (1984) that removal of interest rate ceilings had no effect on bank stock returns. The findings also contradict Michaely (1991) that implementation of the 1986 Tax Reforms Act had no effect on the ex-dividend stock price behavior.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter focuses on the key findings and conclusions based on the data analysis in chapter four. It also presents the limitations of the study and suggestions for further research.

5.2 Summary of Findings

The study objective was to establish whether announcement of the IRCR had an effect on stock prices of commercial banks listed at the NSE. Secondary data was collected from the NSE database on the nine commercial banks listed at the NSE and continuously trading during the study period. The data collected comprised of daily opening and closing stock prices and the NSE 25 Share Index. Expected daily returns for each security were subtracted from the actual daily returns to obtain the abnormal returns. The AAR and CAAR were then derived from the resulting abnormal returns. The AAR and CAAR were then plotted on graphs to show the trend over the event period. Paired t-tests for both AAR and CAAR were then calculated at 5% significance level.

AAR fluctuated around the announcement date. AAR means before and after the announcement were not significantly different and the t-test supported the null hypothesis. This is an indication that investors did not stand to lose or gain based on daily AAR. CAAR means for the period before and after the announcement were both negative. The CAAR mean was less negative before the announcement and more negative after the announcement.

The paired t-test supported rejection of the null hypothesis and acceptance and adoption of the alternative hypothesis. This is an indication that investors received the announcement as bad news. Cumulatively, there was a significant negative effect on stock returns and hence prices.

5.3 Conclusion

The study found out that announcement of the IRCR has a significant negative effect on stock prices of commercial banks listed at the NSE. This implies that the announcement had implications for investors. They stood to lose based on the announcement and should therefore make investment decisions based on the announcement.

5.4 Recommendations

Based on the concerns raised by the banking sector stakeholders immediately after announcement of the IRCR, it is recommended that the government engages all the stakeholders in the formulation of new financial sector regulations, more so those that affect interest rates. Most of the stakeholders reacted by calling for a repeal of the Act that introduced interest rates capping. Stakeholder engagement will lead to smooth formulation and implementation of the new regulations.

More research on the effect of new financial sector regulations should be encouraged by policy makers and financial sector regulators so as to provide a forum for investor information and boost investor confidence when dealing with the NSE.

5.5 Limitations of the Study

The IRCR was enacted in Kenya for the first time after many unsuccessful attempts to have the law in place. No studies had been carried out locally on its effects.

The only studies carried out globally focused on removal of ceilings and not introduction of fresh interest rate caps as in the case of the IRCR; hence there was a limitation of precedence on which to base my research.

Time for carrying out the study, was limited because of a busy work schedule; data had to be reorganized and analyzed.

The study was only limited to a sample of nine banks. This sample was relatively small considering the fact that there are over 40 registered commercial banks in Kenya and thus it may not give the full picture of all the other omitted commercial banks and the banking sector as a whole.

The model used may lead to conflicting or even incorrect results. The event study method only relies on a particular period of time and may give different results depending on the event periods chosen by different researchers.

The study did not take into account other factors, for instance, dividend and other corporate announcements, which may have interfered with the analysis of the effect of the announcement on stock prices.

5.6 Recommendations for Further Research

The study found out that announcement of the IRCR had a significant negative effect on stock prices of commercial banks listed at the NSE.

The study did not look at how the other registered commercial banks not listed at the NSE and the other market sectors reacted to the announcement.

There is need for studies to be carried out on the other registered commercial banks and on the other market segments and comparisons carried out. A study can also be carried out on the stock market as a whole.

A study can also be carried out on the effect of the IRCR on stock returns and profitability of commercial banks, both listed and not listed at the NSE, the other market segments, and on the stock market as a whole.

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APPENDICES

APPENDIX I: COMMERCIAL BANKS LISTED AT THE NSE

1	Barclays Bank of Kenya Ltd
2	CFC Stanbic of Kenya Holdings Ltd
3	Diamond Trust Bank Kenya Ltd
4	Equity Group Holdings Ltd
5	Housing Finance Group Ltd
6	I&M Holdings Ltd
7	KCB Group Ltd ord.
8	National Bank of Kenya Ltd
9	NIC Bank Ltd
10	Standard chartered Bank Kenya Ltd
11	The Co-operative Bank of Kenya Ltd

Source: NSE (2016)

APPENDIX II: SAMPLED COMMERCIAL BANKS

1	Barclays Bank of Kenya Ltd
2	CFC Stanbic of Kenya Holdings Ltd
3	Equity Group Holdings Ltd
4	Housing Finance Group Ltd
5	KCB Group Ltd ord.
6	National Bank of Kenya Ltd
7	NIC Bank Ltd
8	Standard chartered Bank Kenya Ltd
9	The Co-operative Bank of Kenya Ltd

Source: NSE (2016)

APPENDIX III: DATA COLLECTION FORM

Company Name				
	Daily stock price		NSE 25 share index	
Day	Opening price	Closing price	opening price	Closing price
-10				
-9				
-8				
-7				
-6				
-5				
-4				
-3				
-2				
-1				
0				
+1				
+2				
+3				
+4				
+5				
+6				
+7				
+8				
+9				
+10				

APPENDIX IV: AR, AAR AND CAAR SCHEDULE

DAY	Barclays Bank Of Kenya	CfC stanbic of Kenya Holdings Ltd	Equity Group Holdings Ltd	Housing Finance Group Ltd	KCB Group Ltd Ord.	National Bank of Kenya Ltd	NIC Bank Ltd	Standard Chartered Bank Kenya Ltd	The Co-operative Bank of Kenya ltd	AAR	CAAR
-10	0.0419	-0.1225	-1.0891	-4.0024	-0.0756	-3.0550	-0.3304	-0.0439	0.5349	-0.9047	-0.9047
-9	0.3772	-2.5524	0.9982	-0.6803	-0.0553	-5.0924	-1.0773	0.9642	0.5701	-0.7276	-1.6322
-8	0.6792	-0.1294	1.4708	-4.7486	-0.0911	-0.7444	0.4125	-0.5546	0.5079	-0.3553	-1.9875
-7	-0.3275	-0.1295	0.1457	-2.1293	-0.0912	1.2513	-1.1625	-1.0378	0.1605	-0.3689	-2.3564
-6	1.0749	-0.1768	0.2520	0.5722	-0.1970	1.3869	-2.1667	0.6756	0.3241	0.1939	-2.1625
-5	-0.2139	1.1144	0.0751	-4.5085	0.6644	0.5983	-2.8895	-0.1046	0.8325	-0.4924	-2.6550
-4	0.3902	-0.7314	-0.3257	-0.1734	-0.0569	3.1837	2.1654	-0.0052	-0.1270	0.4800	-2.1750

-3	-1.4911	-0.7161	-0.7625	-0.8355	-0.7775	-1.4574	2.2095	0.0833	-0.7569	-0.5005	-2.6755
-2	-0.6255	-0.0606	-1.0438	0.0114	-0.7064	3.0077	-1.7859	-0.7189	-2.7708	-0.5214	-3.1969
-1	0.4918	-0.1461	-2.0740	-2.2845	0.6467	-0.0115	-3.0121	-0.1534	-2.1304	-0.9637	-4.1606
0	-1.5261	-0.1201	-0.4355	2.3845	0.6990	-6.5443	-0.4218	0.4525	0.5442	-0.5520	-4.7125
+1	-13.8778	-7.9763	-5.6645	-3.9060	-7.8665	-3.0211	-5.5527	-0.2386	-8.2238	-6.2586	-10.9711
+2	-7.3217	2.1273	-7.2799	-10.0346	-9.6086	1.3694	-8.2045	-5.9399	-8.2773	-5.9077	-16.8789
+3	-1.1066	-3.3032	-7.3296	-7.0067	-8.9937	-0.5967	1.0164	0.6624	-8.5947	-3.9169	-20.7958
+4	5.2526	1.9747	-4.1199	0.4734	4.0691	-0.2332	7.8372	0.0866	3.2085	2.0610	-18.7348
+5	9.2826	3.1130	6.4160	9.2937	8.4284	0.2684	8.6357	-0.1791	9.9799	6.1376	-12.5972
+6	-1.2220	1.1975	-1.4434	8.5748	-4.5515	1.2410	2.2730	-0.5082	7.8574	1.4910	-11.1062
+7	-1.1081	0.5561	-1.2392	8.1938	-0.0010	0.4607	-2.0665	0.6368	-2.3016	0.3479	-10.7584
+8	-2.2533	1.2530	1.3076	-3.3642	-0.8101	-6.1457	0.7924	4.5769	-3.0324	-0.8529	-11.6112
+9	-4.0860	1.1413	-1.6837	0.1582	-0.0801	2.0922	0.4311	-1.0584	0.5270	-0.2843	-11.8955
+10	-2.1074	-3.8738	0.2118	2.6409	1.8263	-3.1961	0.4339	-3.0956	0.9845	-0.6862	-12.5817