

Interest-Rate Capping and the Security Prices of Bank Companies Listed on the Nairobi Securities Exchange, Kenya

Raude John O. Messo^{1,*}, Charles Yugi Tibbs¹, John Byaruhanga²

¹Department of Finance and Accounting, School of Business and Economics,
Masinde Muliro University of Science and Technology, Kenya

²Department of Economics, School of Business and Economics,
Masinde Muliro University of Science and Technology, Kenya

*Corresponding author: johnmesso@yahoo.com

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Abstract Banks play an essential role in the creation of new capital in a country, help the growth process by collecting the savings of the individuals and lend them out to a business-people and manufacturers. Banks also play an essential role in the financial system and the economy by allocating funds from individuals with excess cash to borrowers in an efficient manner; thus, make the overall economy more efficient. In September 2016, the Kenyan government enacted a law capping interest to protect borrowers from the exorbitant interest rate. After the enactment of the interest-rate capping law, the share index of bank companies in the NSE N20 continued to decline. The decline is worrying and, of great concern to the investors and the economy as a whole, prompting the researcher to investigate the effect of interest-rate capping on the security prices of the bank companies listed on the NSE, Kenya. The study was guided by the Signaling Theory, the Efficient Market Hypothesis, and the Market Expectation Theory. The study collected data using a questionnaire and schedules from 11 banks listed on the NSE, Kenya, used the event study methodology, and analyzed data using the ANOVA technique. The study revealed a p-value of 0.003 and concluded that interest-rate capping significantly affected the security prices of banks companies listed on the NSE, Kenya, at a 5 percent significant level. The study recommends further research to carried on specific companies that were affected by the decline in security prices. Also, future research should be on companies on other security exchange; finally, the regulators to compel the bank companies to date all their records and financial statement.

Keywords: *interest-rate capping, security prices*

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1. Introduction

Banks play an essential role in the creation of new capital in a country and thus help the growth process by collecting the savings of the individuals and lend them out to a business-people and manufacturers. Besides, banks play an essential role in the financial system and the economy by allocating funds from individuals who have excess cash (savers) to borrowers in an efficient manner thus, make the overall economy more efficient. Accessibility of banks, according to Bekaert, Harvey, and Lundblad [1], has a positive impact on growth, productivity, and poverty reduction. Bank loans facilitate commerce. In return, banks earn interest as their primary source of income determined by market forces.

However, in September 2016, the Kenyan government enacted a law capping interest to protect borrowers from

the exorbitant interest rate that the banks were charging, thus making the cost of credit to be high. According to the Central Bank of Kenya [2], the law capping interest rates was enacted following concerns raised by Kenyans regarding the high cost of credit in Kenya. Miller [3] states that interest rate caps may be a useful mechanism for providing short-term credit to a strategic industry or for supporting a sector until it is sustainable by itself. The law became operational on September 14, 2016.

Coyle [4] defines interest-rate cap as a series of borrowers' options that set a maximum interest-rate for medium-term floating-rate borrowing. The interest rate cap can be traced way back when Keynes wrote an open letter to President Roosevelt in 1933 to reduce the interest rate on long-term Government Bonds to 2.5 percent or less with favorable repercussions on the whole bond market. Keynes's call to reduce interest rates was followed by Romania's enactment of interest rate ceilings by-law in 1938. A study by World Bank Group [5] shows that 40

percent of countries that are inside the World Bank regions-imposed interest rate caps on loans.

Whereas capping interest was to protect borrowers from the exorbitant interest rate that the banks were charging, thus making the cost of credit to be high, the problem was not solved, thus attracting the concerns of the Kenyans. The bank companies listed on the Nairobi Securities Exchange, according to NSE Handbook [6], continued to experience declines in share prices by 21 percent and 12 percent in 2016 and January 2017, respectively.

According to Boyes, [7], a decline in share price indicates that the market expectations are revised downward, and, few investors will want to buy the company's securities, and more will want to sell them. A decline in security price impacts negatively on the value of the firm. Uduak, Emmanuel, and Sunny [8] concluded that firm's value is a function of events and developments in the firm and the environment. As such, the decline in security prices is of great concern to investors, firms, and the economy as a whole, as it affects the firms' market capitalization, their total value, and the country's economy. A decline in security price implies that the value of the firms will fall. Pearce [9] observed that significant economic recovery was followed by an increase in security prices in the United States. A study by The Economic and Monetary Developments [10] found that higher equity prices provide an extra stimulus for households and firms that own shares, whether directly or indirectly. Therefore, the poor performance on the NSEs N20 raises the question; is continued declines in the NSE N20 share index a result of the Interest-rate cap?

This study answers the question by investigating the effect of Interest-rate capping on security prices of bank companies listed on the NSE, Kenya.

From a local perspective, Nganga, and Wanyoike [11] examined the effect of interest rate control on the stock market performance on the Nairobi Securities Exchange, Kenya. The study shows that event studies can be applied beyond standard corporate finance and, are according to Bhagat and Romano [12], among the most successful uses of econometrics in policy analysis. The Central Bank of Kenya [2], studied the Impact of Interest-Rate Capping on the Kenyan Economy in March 2018. The study found that the Banking industry remains resilient, and small banks experienced a significant decline in profitability in recent months.

1.1. Statement of Problem

Banks play an essential role in the creation of new capital in a country and thus help the growth process by collecting the savings of the individuals and lend them out to a business- people and manufacturers. Besides, banks play an essential role in the financial system and the economy by allocating funds from individuals who have excess cash (savers) to borrowers in an efficient manner thus making the overall economy more efficient. Accessibility of banks, according to Bekaert, Harvey, and Lundblad [1], has a positive impact on growth, productivity, and poverty reduction. Bank loans facilitate commerce. In return, banks earn interest as their primary source of income determined by market forces. Besides, enacting a law capping interest, the Kenya government

intended to protect borrowers from the exorbitant interest rate that the banks were charging. The exorbitant interest charged by the banks made the cost of credit to be high and the overall economy inefficient. Thus, interest capping was intended to increase the accessibility of banks, growth, productivity, and reduce poverty. Central Bank of Kenya [2] found that the banking industry remains resilient, and small banks experienced a significant decline in profitability in recent months. Besides, an examination of the NSE Handbook, [6], showed that bank companies in the NSE N20 share index declined by 21.14 percent in the year 2016 and a further 12.4 percent in January 2017. The decline in security prices was a worrying trend and, of great concern to the investors, the government and the economy as a whole, as the decline in profitability and share prices impact negatively on the value of the firms, the industrialization and economic development of the country.

While there have been studies on Interest-rate capping and the Security Prices, most have focused on rising stock prices. For example, Dolley [13], Dellavigna and La Ferrara [14], and Nganga and Wanyoike [11], not much had been done to address the issue of declining security prices. This study, therefore, hopes to contribute to a possible solution to this problem by utilizing data from NSE, Kenya, and applying event study methodology to investigate the effect of Interest-rate capping on the Security Prices of bank companies listed on the NSE, Kenya.

1.2. Objective of the Study

The study investigated the effect of Interest-rate capping Announcement on the Security Prices of bank companies listed on the NSE, Kenya.

1.3. Research Hypotheses

The study formulated a null hypothesis that:

H_0 : Interest-rate capping Announcements did not significantly affect the Security Prices of bank companies listed on the NSE, Kenya.

1.4. The Scope of the Study

The study covered the Interest-rate capping Announcement and applied the event study methodology. It was restricted to bank companies listed on the NSE, Kenya, that were operational at the time of the Interest rate capping enactment. The study was carried out in Kenya.

1.5. The Significance of the Study

This study provides empirical data on the Interest-rate capping and the Security Prices of bank companies listed on the NSE, Kenya. This information is essential given that other comparable studies were carried when the performances of the security prices of the bank companies were not on the decline. This study will be of significance to the following groups of people, namely: first, the players in financial institutions and securities markets, brokers, financial analysts, economists, and investors, by

guiding the activities of the market and providing a better understanding of how to optimize returns under such circumstances. Two, to the Policymakers: Capital Markets Authorities, Securities Exchanges, Central Banks, and other financial regulatory agencies. The findings of this study will enable these authorities/agencies to evaluate and assess the current status and provide means for meaningful reviews, designing and formulating policies to regulate and control trading activities on the financial markets. Finally, to the knowledge: the researchers, the scholars, and the learners to complement the existing studies in this area of the study and to provide reference data in conducting new studies and testing the validity of other studies. The findings will also serve as a cross-reference that would give a background or an overview of future studies, contribute to knowledge, and strengthen the foundation for further research.

1.6. Limitations of the Study

This study overcame these limitations by conducting telephone follow-ups and used the internet [49] to obtain data on non-response to questionnaires and the missing data. Besides, this study used a reasonable event period of twenty days before and after the announcement date to remove noise and minimize confounding events problem. Finally, this study used the ANOVA technique to analyze data, thus, fixing the violation of normality and homogeneity assumptions. According to Lund and Lund [15], ANOVA is a robust test against normality and homogeneity assumptions. It tolerates violations of its normality and homogeneity assumptions.

1.7. Assumptions to the Study

This study made the following assumptions: one, the cofounding events were removed; two, the required documents and records were available; Three, this study achieved a 100 percent response by collecting data and information through questionnaires, telephone follow-up, and the internet. The study further assumed the instrument used elicited reliable responses leading to accurate data collection. Finally, the respondents fully understood the questions asked and provided honest expressions of their knowledge.

2. Literature Review

2.1. Introduction

This chapter presents the literature review base for the study. Thus, theories and empirical studies on interest-rate capping and the security prices are discussed.

2.2. Theoretical Review

This section discusses theories on interest-rate capping and security prices. Besides, this section presents empirical findings from studies on Interest-rate capping and securities performance. Thus, the Signaling Theory, the Efficient Market Hypothesis, and the Market Expectation Theory are discussed.

2.2.1. Signaling Theory

This study was guided by the Signaling Theory proposed by Modigliani and Miller [16]. Signaling Theory is a theory that explains the relationship between an event and changes in security prices/performance. Thus, according to Signaling Theory, changes in prices upon an event signals the prospects of the company. The prospects may be positive or negative. Positive prospects result from positive announcements, while negative prospects result from negative announcements. Signaling Theory is therefore vital in this study since an Interest-rate capping announcement is an event, and an event, according to Kim, [17], is a happening lasting a finite duration during which some object changes its properties. This study examined the effects of Interest-rate capping announcement on the security prices upon enactment Interest-rate capping into law by the Kenyan Parliament in September 2016.

The Signaling Theory was formulated way back in 1961 when Modigliani and Miller [16] argued that the earnings of a firm convey positive prospects when the firm increases dividends. Modigliani and Miller [16] announcement was followed by Stephen Ross's argument in 1977 that in an inefficient market, payment of dividends could be used to signal important information to the market by the management, which is only known to them. Increased dividend signals an expected high profit in the future, making share prices to rise. Further, Ross argued that dividend decisions were essential and that firms that paid higher dividend had a higher value of the firm. Earlier in 1973, Ross Watts [18] studied the information content of dividends and concluded that dividends contain no information. Three years later, Pettit [19] carried a similar study, which concluded in favor of the Signaling theory. Pettit [19], argued that the difference between reported earnings and real long-term earnings power was significant enough, for dividends to be able to provide information about future earnings. Aharony and Swary [20] analyzed quarterly dividend and earnings announcements and concluded that dividends and earnings were strong support for the signaling theory. Werner [21] tested Dividend Signaling Theory in an Indonesian Capital Market using a quantitative approach method of path analysis from 1995 to 2005. The study found that the signaling theory was still relevant in influencing the movement of the share price.

The Signaling Theory has, successfully been used to signal prospects of companies upon dividend and earnings announcements, for example, Shireen and Kavita [22] and Sanjay and BijoyKumar [23]. However, no studies show that the Signaling Theory has ever been used to signal future performances of security prices upon Interest-rate capping announcement. This study therefore finds the Signaling Theory to be useful in signaling future performances of security prices of bank companies listed on the NSE, Kenya.

Under the Fifth Schedule of the Capital Markets Securities in Kenya [24], public companies listed on the securities exchange are required to disclose to their stakeholders, the public, and the shareholders particular information about their earnings. In compliance, all companies listed on the NSE, Kenya periodically declare to their shareholders and the public the progress of their earnings in the form of public announcements.

However, whereas this study was guided by the Signaling Theory proposed by Modigliani and Miller [16], this study critiques Modigliani and Miller's hypothesis [16] on the Signaling Theory that dividend reduction conveys information about future earnings. The study also critiques the Gordon's [25] Dividend Irrelevance Model, which states that the dividend is expected to grow when earnings are retained. Dividend Signaling Theory discussion is that the announcement of an increase in dividend payout is taken positively in the market to build a positive image of the company regarding the growth prospects and stability in the future and vice-versa. Therefore, for bank companies, interest-rate capping announcement is expected to generate bad and negative expectations to the investors while providing a positive expectation to investors in other sectors of the economy.

The findings of Modigliani and Miller [16], Ross [26], Aharony and Swary [20], Pettit [19], and Gordon's [25] Model give contradicting arguments about the Dividend Signaling Theory. Their studies indicate that the theory has not adequately dealt with other events such as the interest-rate capping announcements and their effects on the security prices. Modigliani and Miller's [16] hypothesis and Gordon's [25] Model may be true for their models; however, they may not be true in general and for the assumptions put forward since earnings and dividend announcements are based on a firm's profits and dividend policies. Thus, as stated in Gordon's [25] Dividend Irrelevance Model, the dividend is expected to grow when profits are retained, and the retained profits are invested in viable projects. Further, earnings and dividend announcements are part of many announcements made by a company. Therefore, the Signaling Theory covers other events also such as interest-rate capping announcements.

The Signaling Theory is important in this study since interest rate capping announcement like earnings and dividend announcements are events and therefore provides explanations on the relationship between an event and changes in security prices/performance. In addition, the Signaling Theory gives a signal and an in-depth understanding of the behavior of banks' security prices upon interest-rate capping announcements by the Government.

2.2.2. Efficient Market Hypothesis

The Efficient Market Hypothesis is a finance theory that, according to Thune [27], explains how and why active investors cannot beat the market. The event study is founded on the principle of the Efficient Market Hypothesis. Regnault [28] argues that in an Efficient Market, security prices at all times fully reflect all available information. An investor cannot, therefore, outperform the security market because prices follow a random walk. The Efficient Market Hypothesis was developed by Fama in the 1960s from the earlier theoretical developments of Regnault [28], who argued that prices could only change when there is new information in the market.

According to the Efficient Market Hypothesis, security price has an intrinsic value obtained by calculating the present values of streams of the expected firm's future cash flows. The price reflects all available information about the firm's current and future performance.

The security prices follow a random walk; hence, investors can only earn normal returns, determined by market models. The reliable indicator of market efficiency is the speed at which new information from an unexpected event is reflected in the price of the security.

A recent study by Alexandra [29] on a review of specialized literature and empirical research examined the growing body of empirical research on the efficient market hypothesis. The study concluded that testing for market efficiency is difficult, and because of changes in market/economic conditions, a new theoretical model should be developed to take into consideration all changes. It was, therefore, essential to continue the empirical studies to decide if capital markets are or are not informationally efficient.

2.2.3. Market Expectation Theory

The Market Expectation Theory is used in understanding the behavior of securities prices upon a company making public Announcements of events. Market Expectation Theory, according to Aswath [30], postulates that it is the "Surprise" and not the magnitude of change that matters, measured relative to expectations. When a company makes a public announcement, the markets will react to the "news" in the announcement relative to expectations. The Market Expectation Theory has rarely been used. Recent studies that have used the Market Expectation Theory include Raude and Tibbs [31] and Raude and Byaruhanga [32]. Raude and Tibbs [31] studied Profit Warning Announcement and the Security Prices of companies listed on the Nairobi Securities Exchange, Kenya while, Raude and Byaruhanga [32] studied Earnings Announcements and the Performance of securities of companies listed on the Nairobi Securities Exchange, Kenya.

The Market Expectation Theory suggests that investors and market participants have forecast information about the performances of the companies. Any information outside the forecasted results will trigger a reaction. Thus, Raude and Byaruhanga [32] define Market Expectation Theory is a "theory that suggests that investors and market participants project the company's overall anticipated performance/outcome at a particular moment in time, based on the market, economic, political, and environmental factors."

Boyes [7] argues that the expected future economic earnings of the company will reflect the current shareholders' value. Thus, the price of a security is determined by the market expectations (buyers and sellers) of the future firm's performance. If there are no changes, and the expectation is determined, the security price will not change. The revision of expectations causes a rise or fall in price. According to Boyes [7], the market value of a firm is its book value, plus the present values of cash flows expected to be received in the future.

$$P_0 = CBV + PV[EP] \quad (1)$$

Where P_0 = current security price and $PV[EP]$ = the present value of economic cash flows expected in the future. Boye [7] model shows that the market value is in direct relationship with the expectation of the future net income.

Thus, when announced earnings are above the market expectations, the security prices will rise, and when announced earnings are below the market expectations, the security prices will fall.

Therefore, security prices will rise when the announcement exceeds the market expectations and decline when the announcement is below the market expectation. The unexpected announcement will trigger a surprise.

Thus, according to Aswath [30], making a public announcement that is below the market expectation may be seen as delivering bad news while making an announcement that is above the market expectation might be providing positive information. In support, Bajkowski [33] states that positive earnings surprises occur when reported earnings are above the expected earnings, while negative earnings surprises occur when reported earnings are below the expected earnings. Brown [34] argues that one of the hardest lessons to learn in the market is the expectations rather than reality. According to Brown [34], results can see a stock trading lower if those results were below expectations. Similarly, a poor set of results could see a stock trading higher if they were not as bad as the market was expecting.

Rude and Byaruhanga [32] argues that one of the obstacles of the Market Expectation Theory is to determine the market expectation.

2.3. Interest Rate Capping Announcement

Interest Rate Capping is a mechanism for regulating all interest charged through introducing ceilings by interest charging institutions such as banks and non-bank financial institutions. Interest Rate Capping is, therefore, a form of control tool for consumer protection. In Kenya, the law capping interest was enacted to protect borrowers from the exorbitant interest rate that the banks were charging, thus making the cost of credit to be high. According to the Central Bank of Kenya [2], concerns raised by the Kenyan public regarding the high cost of credit in Kenya led to the enactment of a law capping interest rates. The law became operational on September 14, 2016.

Recent studies on Interest Rate Capping include Central

Bank of Kenya [2], Nyakio, [35], Nganga and Wanyoike [11] and Amarasinghe, [36]. The Central Bank of Kenya [2], studied the Impact of Interest Rate Capping on the Kenyan Economy in March 2018. The study found that the Banking industry remains resilient, and small banks experienced a significant decline in profitability in recent months. Nyakio, [35], studied Effect of Interest Rates Capping by the Central Bank of Kenya on the Banks listed on the Nairobi Securities Exchange on eleven banks using observational survey and collected data using checklists. Inferential statistics were used to study the correlations between the various variables. The study found significant market reactions to Interest Rate Capping.

Others are: Nganga and Wanyoike [11], studied the effect of interest rate control on the stock market performance on the Nairobi Securities Exchange, Kenya, using secondary data from 2012 to 2017, collected from 61 companies using census and employing descriptive statistics and regression analysis methodology. The study found that interest rate control negatively affected the stock market performance in Kenya. Similarly, Amarasinghe, [36], examined the causal relationship between stock price and the interest rate on the Colombo Stock Exchange, from January 2007 to December 2013 using monthly data and Causality Test and a regression methodology. The result of the regression showed that interest rate is a significant factor for stock return changes, and the interest rate has a significant negative relationship with ASPI.

Nganga and Wanyoike [11] studied the interest rate control on the Stock Market Performance on the Nairobi Securities. This study used descriptive statistics and regression analysis methodology and secondary data. The study found that Interest rate control had a negative effect on stock market performance in Kenya. This study critiques Nganga and Wanyoike [11] on the ground that it did not use primary data. The Central Bank of Kenya [2] studied the Impact of Interest Rate Capping on the Kenyan Economy in 2018. The finding of the study, among others, is that the Banking industry remains resilient, and small banks experienced a significant decline in profitability in recent months. The Central Bank of Kenya [2] study did not use an event study.

Table 1. Summary of Literature on the Interest Rate Capping Announcements

Author	Title	Methodology	Findings	Gap
Nganga, and Wanyoike, [11]	The Effect of Interest Rate Control on the Stock Market Performance on the Nairobi Securities Exchange, Kenya	Descriptive statistics and regression analysis methodology	Interest rate control had a negative effect on stock market performance in Kenya	The study used Secondary data instead of Primary data or both Primary and Secondary data
The Central Bank of Kenya [2]	Impact of Interest Rate Capping on the Kenyan Economy	Not stated	The Banking industry remains resilient, and small banks experienced a significant decline in profitability in recent months	The study does not state the methodology used, two, the study is silent on the behavior of the security prices and three, the study period was short, and three, the study was still in the draft stage.
Amarasinghe, [36]	causal relationship between stock price and the interest rate on the Colombo Stock Exchange	Monthly data and Causality Test and a regression methodology.	Interest rate is a significant factor for stock return changes, and the interest rate has a significant negative relationship with ASPI	Amarasinghe, [36]'s study is on interest rate and not on Interest-rate capping. The study did not use Event Study Methodology.

3. Research Methodology

3.1. Introduction

This chapter discusses the methodology used in this study. Thus, discuss the Philosophical Perspective, Research Design, Target Population, Sample Size, Sampling Procedure, Data Collection, and Data Analysis are discussed.

3.2. Philosophical Perspective

Crotty [37] defines research philosophy as a system of beliefs and assumptions about knowledge development. It is the exercise the researcher is doing when carrying out research. Research philosophy is assumptions about human knowledge, the realities a researcher encounter in research, and the extent and ways a researcher's values influence the research process.

This study was anchored on a positivism research philosophy founded by Auguste Comte [38]. According to Crotty [37], the term positivism refers to the importance of what is 'given' that is 'posited.' Crotty [37] defines Positivism as a philosophical stance of the natural scientist, which entails working with an observable social reality to produce law-like generalizations. Since the study used quantifiable data and statistical analytical techniques in the data analysis, positivism research philosophy was appropriate to achieve its objectives. Macionis and Gerber [39] state that Positivism is a philosophical theory in which particular knowledge is based on natural phenomena, properties, and relations.

3.3. Research Design

This study used a Descriptive Survey Research Design and a Causal Research Design. A Descriptive Survey Research Design, according to Trochim [40], provides the glue that holds the research projects together. Also, it is used to structure the research, show parts of the research project, the samples or groups, measurement, treatments or programs, and methods of assignment work together to try to address the central research questions". Descriptive Survey Research Design was appropriate to this study since it reported summary data of central tendency and dispersion, namely: the mean and the deviation from the mean and variation percentage. Causal Design, on the other hand, provided a relationship between the independent and dependent variables. According to Copper and Schindler (2006), the casual design is used to determine the cause-effect relationship that exists among variables, thus explaining how the independent variables produce a change in the dependent variable.

3.4. Target Population

This study targeted 11 bank companies listed on the NSE, Kenya that met the requirements of the study. The requirements were; a bank company to be studied must have had its securities traded on the NSE, Kenya, for a whole year uninterrupted. Two, the bank company must have had its securities traded on the NSE, Kenya, at the time of Interest rate capping Announcement.

3.5. Census

Since the target population was small in this study, the study used census.

3.6. Data Collection Instruments and Procedures

Primary data was collected from 11 listed banks listed on the Nairobi Securities Exchange, Kenya, using a questionnaire. Collaborating information was obtained by examining records documents and held by the company. The questionnaire consisted of 12 questions divided into six parts; 'A,' 'B,' 'C,' 'D' 'E.' and 'F.' Part A of the questionnaire consisted of four questions on the general information of the company That provided the study with the general information of the background of the company. Part B of the questionnaire consisted of questions seeking to collect data on the Interest-rate capping Announcements of the company and the date of the Announcement. This section provided this study with the dates of the announcements. Part C and D of the questionnaire consisted of questions seeking to collect data on the Performance of Security Prices. This section provided this study with data on the prices of securities. Part E of the questionnaire consisted of questions seeking to collect data on the Firm's factor of the company. This section provided data on the Market share and the Age the company has been operational to the time of the study. Finally, Part F consists of questions on the securities held by the company, and the effect of the Announcement on the securities. This section provided the study with information about the type of securities held by the company during the study period. The information was used to collaborate with the finding of the study.

Secondary data was collected using schedules. Part A of the schedule consisted of general information of the company, while Part B consisted of information relating to Security Prices. This section provided the study with pre-event, Event, and post-event data on the Performance of the Security prices.

3.7. Data Collection Procedure

Data was collected using a questionnaire followed by the research assistants visiting the companies to collect the filled questionnaires. Where the company was unable to fill the questionnaires or part thereof, the research assistant assisted. This study triangulated the data in the questionnaires using data collected using schedules, and interviews. The researcher then collected data on the movement of security prices using schedules. In addition, the researcher used the internet online electronic platform to collect missing data, corporate actions, and to collaborate data on the questionnaires. Data collection problems were minimized using the internet to obtain data, validity checks, quality checks, and testing the assumptions.

3.8. Validity and Reliability of Research Instruments

The instrument for primary data collection was subjected to Karl Pearson's Product Moment correlation coefficient formula below.

$$r = \frac{n \sum XY - \sum X \sum Y}{\sqrt{\left(n \sum X^2 - (\sum X)^2 \right) \left(n \sum Y^2 - (\sum Y)^2 \right)}} \quad (2)$$

Where: r = reliability coefficient

n = number of respondents

X = total score of the test administration

Y = total score of the retest administration

Reliability was expressed as a coefficient with values between zero and one, where zero indicates no reliability, and one indicates perfect reliability. The reliability test revealed a coefficient of 0.8, implying strong reliability.

Secondary data was not validated since they are already published. Instead, the study validated data by checking the consistency of the datasets and by evaluating: the data provider's purpose, the data collector, time when the data was collected, how the data was collected, the type of data collected and whether the data relates to the area of study. Besides, the researcher made a judgment of a good fit between the research objectives and the dataset. According to Sunjoo and Erika [41], a sound conceptualization of the research questions and a good fit between the research questions and the dataset are prerequisites to yielding valuable results.

3.9. Data Analysis and Presentation

Data were analyzed using the Analysis of Variance (ANOVA) technique and presented using tables and graphs. The six assumptions of ANOVA were checked before analyzing data by running Normality and Homogeneity of variances tests. Besides, the other four assumptions, namely, the dependent variables assumption, the independent variables assumption, the independence of observations, and no significant outliers' assumptions, were observed. The study then carried significance tests at 5 percent to infer the results and to draw conclusions.

The study used the Event Study Methodology by first identifying the exact dates of the announcements. The exercise was done by examining records, publications, and the financial statements of the companies and collaborated using internet online electronic platforms and information obtained from the respondents. Confounding events were then removed from the defined event, followed by composing an event list and retrieving assets. The event list included information on the company's name event date and the identifier. The company identifier was used to retrieve asset price data from the companies and identify the normal market reaction to the determined events. Thus, this study determined: the estimation window to 200 trading days ending 20 days before event day, the event day, and estimation window to 41 trading days (-20+20) and the post-event window to 200 days preceding the event window.

This study then computed the returns, the mean returns, the expected market mean returns using the CAPM model, and abnormal returns from the collected data. The study then ran significance tests to determine whether the announcements triggered reactions in the security prices. Thus p-value above .05 implies that the effect of the announcement was insignificant, while the p-value less than .05 means that the effect of the announcement was significant.

3.10. Abnormal Returns

Abnormal return is defined as the unexpected excess return brought about by a particular event. This study calculated abnormal returns using the following formula:

(i) Security return

$$R = \frac{P_1 - P_0}{P_0} \quad (3)$$

Where:

R is the return of company at time T

P_i is the actual price of company at time T₁

P₀ is the actual price of company at time T₀.

(ii) The Capital Asset Pricing Model

This study applied the Capital Asset Pricing Model (CAPM), formulated by Treynor [42] and [43], Sharpe [44], Lintner [45] and Mossin [46] to calculate the expected returns E[R]. This model was built on the earlier work of Harry Markowitz on diversification and modern portfolio theory. It is a two-factor model; security and market risks and benchmarked by the risk-free rate of return.

$$[R] = R_{ft}(1 - \beta_j) + \beta_j R_{mt} + \varepsilon_{jt} \quad (4)$$

Where:

E[R] is the return for security j during period t

R_{ft} is the risk-free rate of return during period t

β_j is the systematic risk of security j to the market

R_{mt} is the return on the market index during period t

ε_{jt} is the residual of the equation.

(iii) Standard Deviation

$$S(AR_i) = \hat{\sigma}_{AR_i} \sqrt{1 + \frac{1}{M_i} + \frac{(R_{m,\tau} - \bar{R}_{m,Est})^2}{\sum_{E_{st\min}}^{E_{st\max}} (R_{m,\tau} - \bar{R}_{m,Est})^2}} \quad (5)$$

Where:

R_{m,T} is the Market return at time T

R_{m,Est} is the Market return estimated

(iv) Abnormal Return

$$R_{AB} = R - E[R] \quad (6)$$

3.11. Observation of Ethical Standards

Resnick [47] argues that research ethics are essential since they: promote the aims of the research, support the values required for collaborative work, ensure that the public can trust research, and support important social and moral values. Thus, in compliance with ethical consideration, this study obtained consent from respondent and research participants, minimized the risk of harm to participants, protected the anonymity of the respondents, ensured confidentiality of the information obtained, avoided using deceptive practices, gave the respondents and the participants the right to withdraw from the research and finally, obtained a permit from

National Commission for Science, Technology and Innovation (NACOSTI) to collect data.

3.12. Descriptive Statistics

This study computed the means and the standard deviations of abnormal returns to describe the performance of the security prices.

Table 2. Descriptive Statistics on the Effects of Interest-rate capping Announcements on the Security Prices

Sector	Mean		Percentage Change	Standard deviation		
	Before	After		Before	After	Change
Bank	0.05	0.00	-100	0.17	0.09	0.08

Source: Researcher (2019).

Table 2 presents the results of the descriptive statistics on the effect of Interest-rate capping announcements on the security prices of banks listed on the NSE, Kenya. The results show mean = 0.05 (SD 0.17), before the announcement and zero (SD = 0.09) after the announcement. Representing a 100 percent decrease in the mean (SD = 47 percent).

4. Hypothesis Test

This study carried hypotheses test by running the homogeneity of variance, the normality assumption tests,

and the significance tests using the Levene statistic, the Histograms/Q-Q plots, and the ANOVA technique, respectively.

4.1. Test of Homogeneity of Variances

Table 3. Test of Homogeneity of Variances on the Effects of Interest-rate capping Announcements and the Security Prices of the Bank Sector

Sector	Levene Statistic	df1	df2	p-value
Bank	28.620	1	378	.087

Source: Researcher (2019).

Table 3 presents the results of the homogeneity of variances on the effect of Interest-rate capping Announcements on the Security Prices of the bank companies listed on the NSE, Kenya, using the Levene's test. The results show variances of the bank sector were equal, $F(1,378) = 28.620$, $p\text{-value} = .087$. Since the p-values are greater than the 0.05 level, the homogeneity assumptions are confirmed.

4.2. Test for Normality

The results of the test for normality assumption on the effect of Interest-rate capping Announcements on the Security Prices of bank companies listed on the Nairobi Securities Exchange, Kenya are presented in Figure 1 and Figure 2. The Q-Q plot appears to be along the diagonal line, thus confirming normality assumption.

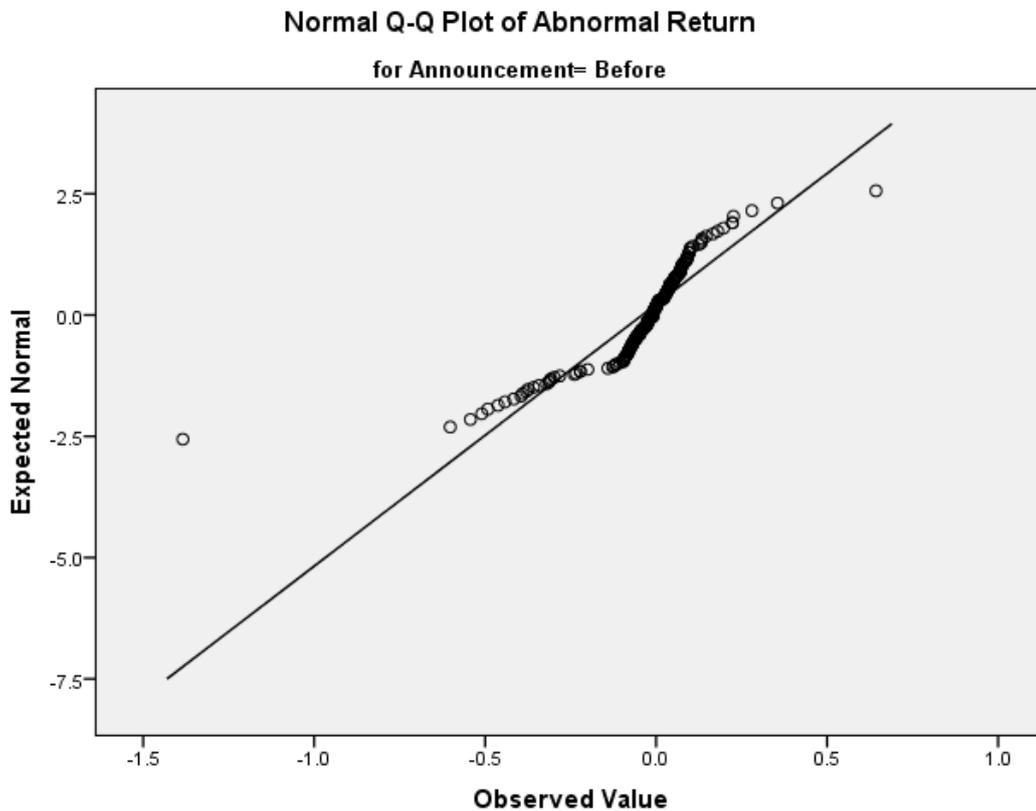


Figure 1. Normality Test on the Security Prices of the Bank Companies Listed on the NSE, Kenya before Interest-rate capping Announcement (Source: Researcher (2019))

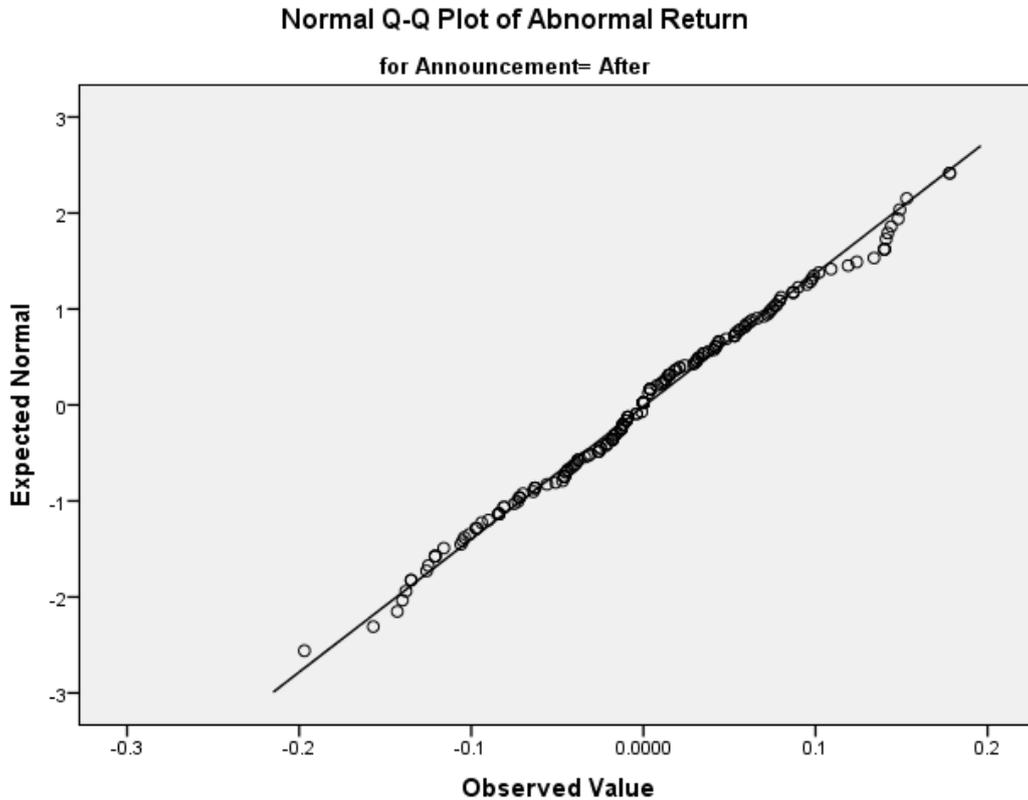


Figure 2. Normality Test on the Security Prices of the Bank Companies Listed on the NSE, Kenya after Interest-rate capping Announcement (Source: Researcher (2019))

4.3. Significance Test

Table 4. Significance Test on the Effects of Interest-rate capping Announcements and the Security Prices of the Bank Companies Listed on the NSE, Kenya

Sector		Sum of Squares	df	Mean Square	F	p-value
Banking	Between Groups	.128	1	.128	9.246	.003
	Within Groups	5.240	378	.014		
	Total	5.368	379			

Source: Researcher (2019).

Table 4 presents the results of the significance test conducted using the ANOVA technique to compare the difference in group means on the Effect of Interest-rate capping Announcements on the Security Prices of the Banking companies listed on the NSE, Kenya. The results show $F(1,378) = 9.246$ and $p\text{-value} = .003$. Since the p -value is less than 0.05, the effect was significant at 5 percent level. Thus, the study rejected the null hypothesis.

The significance test results in this study contradict the finding of the unpublished study by Raude, Tibbs, and Byaruhanga [48] whose result was insignificant in the Banking, Insurance and other sectors (Agricultural, Commercial, Construction, and Allied, Energy and Petroleum and Manufacturing and Allied Companies). This study attributes the contradiction in the findings on the Insurance Companies. Whereas the bank companies were affected since the capping on the interests meant reduced income, the Insurance companies were not affected by the law. Similarly, banks revised their

conditions for borrowing by requiring the borrowers to insure their loans. The new requirement was a blessing to insurance companies. Statistical significance in this study is also attributed to the market being efficient in weak-form (Regnault [28]).

The finding in this study also contrasts the result of the Central Bank of Kenya's [2] study on the Impact of Interest-rate Capping on the Kenyan Economy in March 2018. The Central Bank of Kenya's [2] study found that the Banking industry remains resilient, and small banks experienced a significant decline in profitability in recent months. The topic of the Central Bank of Kenya's [2] study is not similar to the topic of this study; hence, different results. Nyakio, [35], studied Effect of Interest Rates Capping by the Banks listed on the Nairobi Securities Exchange. The study was carried on eleven banks using observational surveys and collected data using checklists. Inferential statistics were used to study the correlations between the various variables. The study found significant market reactions to Interest-rate capping, hence consistent with the finding of this study. Nganga and Wanyoike [11], studied the effect of Interest-rate control on the stock market performance on the Nairobi Securities Exchange, Kenya, using secondary data from 2012 to 2017, collected from 61 companies using census and employing descriptive statistics and regression analysis methodology. The study found that Interest rate control had a negative effect on stock market performance in Kenya. The contrast between Nganga and Wanyoike [11]'s research, and this study lies in the statistical techniques used (regression analysis vis a vis ANOVA in this study).

Besides, Nganga and Wanyoike's [11] research was on the performance of the NSE, Kenya, while this study is on the performance of the security prices of the companies listed on the NSE, Kenya. Finally, a part of the period of the study of Nganga and Wanyoike [11] the Interest-rate capping law had not been enacted by the parliament of Kenya. Amarasinghe, [36], examined the causal relationship between stock price and the interest rate on the Colombo Stock Exchange, from January 2007 to December 2013 using monthly data and Causality Test and a regression methodology. The result of the regression showed that interest rate was a significant factor for stock return changes, and the interest rate had a significant negative relationship with ASPI. Thus, the findings of Amarasinghe's [36]'s study agree with the results of this study save for the techniques used.

5. Conclusions

5.1. Introduction

This chapter summarizes the findings in this study. Based on the findings, conclusions are drawn, recommendations made, and suggestions are made on areas for further research.

5.2. Summary of the Findings

This study investigated the effects of Interest-rate capping on the Security Prices of bank companies listed on the Nairobi Securities Exchange, Kenya using event study methodology. The conceptual construct was Interest-rate capping Announcements as the independent variable, measured by the Security Prices as dependent variables. The study collected data from 11 companies listed on the Nairobi Securities Exchange, Kenya using questionnaire and schedules and analyzed using Mean, Standard deviation, and ANOVA techniques

The study results revealed a p-value of .003, implying the effect of Interest-rate capping Announcement on the Security Prices of bank companies listed on the Nairobi Securities Exchange, Kenya is statistically significant at 5 percent level.

5.3. Conclusions

Based on the findings of the study, the researcher concludes that Interest-rate capping Announcement did have effects on the security prices. This is demonstrated by significance tests yielding a p-value less than 0.05 (p-value=.003) at a 5 percent significant level.

5.4. Recommendations

This study recommends that future research should investigate specific companies that were affected by the decline in security prices. Further, future research should include companies listed on other security exchanges in order to generalize the findings. Finally, this study recommends that regulators enforce dating records as dating will provide the regulator, investors, the market players, researchers, scholars, and the public with the date

when the events occurred and the financial statements approved, thus easing identification of confounding events.

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