THE INFLUENCE OF CREDIT RISK ON STOCK RETURNS

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ABSTRACT

Pro-cyclicality of credit risk due to global systemic factors has precipitated unmatched volatilities of stock returns in the banking sectors leading huge losses for investors in the stock market. In Kenya, the trend of bank collapse due insider lending and spiraling non-performing loans continue to signal negative stock returns. The objective of this study was therefore to empirically examine the influence of credit risk on stock returns in commercial banks listed at Nairobi securities exchange. The study also sought to establish the moderating effect of bank size on the influence of credit risk on stock returns. The ratio of non-performing loans to gross loans and the ratio of loan loss provision were taken as independent variable with bank stock returns as dependent variable and bank size as a moderator variable. Annual secondary data was obtained for the period 2006-2015 with a purposive sample of 9 listed banks. Descriptive correlational research design was used. Generalized least square regression model established that ratio of non-performing loans (NPG) was negatively significant to stock returns while the ratio of loan loss provisions (LLG) was positively significant to stock returns at 5% level of significance. Bank size was found to have a positive moderating effect on the influence of credit risk on stock returns. Overall, the study concluded credit risk influences stock returns at Nairobi Securities Exchange.

Key Words- Credit risk, Stock returns, Non-performing loans, Loan loss Provisions, Bank Size

I. INTRODUCTION

Investors maximize wealth by making risk assessment and predictions based on the information available in the market. Earnings prospect forms major part of information and therefore determinants of earnings becomes element of focus for investors. Fundamental principles of risk returns tradeoff prescribes that investments with higher risk are associated with higher returns as reward premium for any extra risk undertaken (Cheng & Nasir, 2010). Banks and financial markets serve an intermediary role within which investors diversify and optimize their portfolio investments.

The significance of commercial banks to an economy is to link between funds surplus and deficit units. As banks intermediate, they face a series of financial risks which are detrimental to sustainability of a financial system in a country. Unmitigated financial risks in banks can be catastrophic to shareholder market value. The

adverse effects of financial risk to shareholder market value can be described by the loss of investment value experienced during global financial crisis. To estimate with precision the extent of risk to be undertaken to maximize value is crucial for sustainable banks, economy and investor wealth (Cheng & Nasir, 2010). Credit risk singles as the most sensitive risk determining and growth of investment value in commercial banks (Kargi, 2011).

Credit risk is defined as the risk of default; it refers to obligor's inability to meet his debt obligations (Der-Fen, 2005). The risk of default in banks has been associated with high appetite for lending, excessive credit extension and poor credit management practices. Banks with higher levels of credit risk are prone to systematic risk. Due to adverse effects of credit risk during the financial crisis, the Bank of International Settlement (2011) adopted Basel III accords to regulate and reduce impact of credit risk on banks. Banks with credible credit risk management mechanism such as securitization programs do not have their stock prices adversely affected on announcement of huge loans (Greuning & Bratanovic, 2009). Mwaurah (2013) established that credit risk for commercial banks in Kenya is determined by both systemic and firm specific factors. Macroeconomic factors such as inflation, interest rates, exchange rates and growth domestic product form the external environmental factors affecting loan pricing and ability to pay of the obligors. Internal factors such as efficient credit management practices and balanced appetite for credit risk determine the asset quality held by banks.

Related studies measured credit risk as the ratio of non- performing loans to gross loans and the ratio of loan loss provision to gross loans. These measures are appropriate since they can be reliably surrogate as market based risk measurements in testing the influence of credit risk to stock returns (Der-Fen, 2005; Abu, Sajeda & Mustafa, 2015).

Non-performing loans (NPLs) refers to the state of loan obligations falling short of contractual provisions in a way that is detrimental to capital and earnings of a financial institution. Central Bank of Kenya classifies outstanding debt obligations according to the number of days the debt has fallen due. Normal classification describes debt obligations due for payment within 30 days; Watch classification are debt obligations due for payment past 30 days but less than 90 days; Sub-standard classification are loans due past 90 days but less than 180 days; Doubtful NPLs are loans due for settlement past 180 days but less than 360 days; Loss classification are NPLs due for settlement past one year (CBK Prudential guidelines, 2013).

Research findings established that deficient credit risk management techniques, insider lending and manager insatiable appetite for lending are the main contributors of high NPLs in banks. The impact of excessive credit risk on commercial banks can be well described by the effects of global financial meltdown on banks (Mileris, 2012). Poor credit policies and procedures contribute to poor bank asset quality, agency conflict and increased ligations between the bank and the customer. Due to high appetite for profits by banks, bank managers need to establish an optimal amount of interest income due on loans to tame the cyclical effects of systemic credit risk. (Kang & Kang 2009). Profitable banks have employed elaborate credit management strategies to optimize the benefits of lending and minimize the adverse effects of credit risk. Prudent banks lay clear credit risk structures, allocate responsibilities, outline disciplined credit process, enhance efficient communication and promote accountability.

Loan loss provisioning is the policy where banks recognize and provide in their books an estimated proportion of reserves for loss of a loan portfolio before the actual default materialize. It is a direct charge from bank earnings used to protect bank capital when the loss on default crystalizes (Beatty and Liao, 2009). Central bank prudential guidelines require banks to provide for general provisions at 1% of total loan portfolio with specific provision pegged on outstanding loans classified as non-performing loans beyond normal classification. Specific provisions on non-performing loans classified under watch classification are provided at 3% of outstanding non-performing loans between 30 to 90 days, sub-standard classification loss provision is provided at 20% of outstanding non- performing loans between 90 to 180 days, doubtful and loss classification are provided at 100% of total loans and interest overdue beyond 180 days. The increasing level of loan loss reserves may indicate a doubtful quality of bank assets. Similarly, increasing level could also denote eminent economic downtime or more appetite by the management to venture into risky lending. Investors interested in bank stocks monitor the trends on bank loss provisions to make buy, sell or hold investment decisions (Dugan, 2009). Aggregate credit risk index in Kenya has been on the increase indicating that commercial banks are sitting over

an impending tragedy on revenue streams due to overreliance on interest income from loans. The banking industry in Kenya has experienced an increase in general and special provision due to high NPLs. This trend is likely to affect dividends to shareholders as a result of reduced earnings. The regulation on interest capping to Kenyan banks provoked banks in tightening credit standards resulting to contracted supply for credit in the third quarter 2016. Overall non-performing loans increased in 8 economic sectors and reduced in 4 economic sectors (CBK Credit Officer Survey, 2016).

The enactment of law on interest rate capping in Kenya led investors in the stock market to lose $2.4 billion on banks stock as the news on regulation hit the Nairobi Securities Exchange (NSE, 2016). The news on the interest capping resulted to mixed misfortune to investors at Nairobi Securities Exchange. Traditionally banking stocks in Kenya have been on high demand in the past due to high dividends and remarkable performance of the Kenyan financial sector. However, the law on interest rate capping and emerging effects of global financial risk on bank stocks is reversing the trend resulting to drop in bank stock prices (CBK, 2015).

1.1 Statement of the problem

The banking industry in Kenya has been experiencing increasing non-performance in asset quality resulting to three banks being place under receivership and one bank under liquidation during the year 2015. Stocks in the banking sector dipped due to systemic effects arising from increased credit risks and associated financial risks The Kenya government and Central Bank of Kenya in September, 2016 enacted a law to cap interest rate on loans at 4% above the Central Bank Rate in a bid to reduce the cost of borrowing. Implementation of the new law remains a puzzle as banks claim that law does not accommodate the risk of default. Since enactment of the law on interest capping the volume of credit has reduced slowing economy growth and constraining liquidity in the stock market (CBK Credit Officer Survey, 2016).

Empirical studies on the influence of credit risk on stock returns of commercial banks and the effect of bank size on relationship between credit risk and stock returns are yet to provide a substantial causal link. Findings still exhibit a series of mixed reactions. Reasonable conclusion from few empirical literature establish that credit risk influences stock returns (Naser et al., 2011; Li & Sandeep, 2007; Mehri, 2015; Kang & Kang, 2009; Muhammad, et al., 2015, Nurazi & Evans, 2005).

Lack of studies on the influence of credit risks on stock returns in Kenya and mixed reactions and inconclusive findings from the previous empirical studies forms the motivation of this study. The findings of this study provide more clarity on influence of credit risk on stock returns in Kenya and the moderating effect of bank size on the influence of credit risk on stock returns at Nairobi Securities Exchange. The findings of the study will be helpful to investors, risk managers, speculators and the government. The study answers the question of whether there exists an influence of credit risk on stock returns in the Kenya.

II.   LITERATURE REVIEW

2.1 Modern Portfolio Theory

Modern Portfolio Theory (MPT) is a finance theory developed in 1950 by Nobel Prize winner Harry Markowitz. According to MPT theory, an optimal investment decision is one that maximizes the expected return for a given level of risk, or an investment decision that minimizes risk for a given expected return over a specified portfolio. MPT described an investment principle of diversification where a collection of individual risky assets yields a portfolio with overall discounted risk over a specified expected return (Markowitz, 1952).

Markowitz (1952) indicated that returns of stocks and bonds move in opposite directions, but a combination of both yields a portfolio with overall lower risk for a given return. He also observed that a portfolio constituted by positively correlated assets result to lower risk. Kang and Kang (2009) conducted a study on the impact of individual firm credit spread and stock returns. They argued that the theoretical puzzle of the higher risk the higher the returns holds only for stable financial periods. The notion of negative effect of on returns due to increased risk applies to periods of financial distress. Banks manager's builds loan portfolio based on different sectors of the economy which constitute an uncorrelated credit risk loan portfolio. This combined diversified risk

based on varied sectors yields an overall impact of reduced credit risk due to a loan portfolio. This analogy proves that the MPT theory remains relevant in sustainability and significance of banking to investors and the economy with regards to lending business.

2.2 Agency Theory

This refers to the relationship that exists between firm owner and individuals given authority by the owners of the firm to direct and control the capital and earnings to the owner's benefits and interest. It describes the link between the shareholders and the managers of an entity assuming managers possess professional skills and the do not own shares of the entity (Jensen & Meckling, 1976). Agency conflict is a major contributor of increased credit risk in banking industry. The relationship between credit risk and agency conflict contributed to global financial crisis and the collapse of the investment firms such as Bear Stearns and Lehman brothers. Agency problem can be controlled by large institutions through internal mechanism within firms and market disciple amongst industry players (Donnellan & Rutledge (2016). Bank managers need to control risk on behalf of shareholders. Credit risk forms the most crucial risk in financial institutions and if monitored through internal and external checks it will influence the shareholder value positively.

2.3 Loanable funds Theory

Loanable fund theory explains the premium charged and the real cost of borrowing. It contends that the cost of credit is determined by the equilibrium of demand and supply of loanable funds. The theory categorizes consumers of credit to be government, consumers, domestic and foreign business while supplies of credit as saving units and banks. It describes determination long term interest under perfect market leaving short term interest rate to be determined by central banks monetary policy (Mc Gibany & Nourzad, 2007). In Kenya, the law on capping of the interest rates on borrowed funds sparked controversy whether cost of loanable fund should be a factor of market forces or government regulation. According to Central Bank of Kenya, the aftermath of interest capping indicated a decline in supply of loanable funds from banks with claim that the capped interest rates does not factor the premium on default risk. This constrained the flow of liquidity in the economy. This stands as a recipe to trigger re-emergence of related financial risk such as liquidity, capital and market risks (CBK Credit Officer Survey, 2016).

2.4 Conceptual Framework

The conceptual framework describes credit risk as the main independent variable supported by the ratio of non-performing loans and loan loss provision as sub variables. Bank size is the moderator variable in the model while the stock return is the dependent variable.

Bank Size
- Log of Asset Base

Credit Risk
- Non-performing loans/Gross Loans
- Loan Loss Provisions/Gross Loans

- Stock Returns

Independent Variables   **Moderating Variable**   **Dependent Variable**
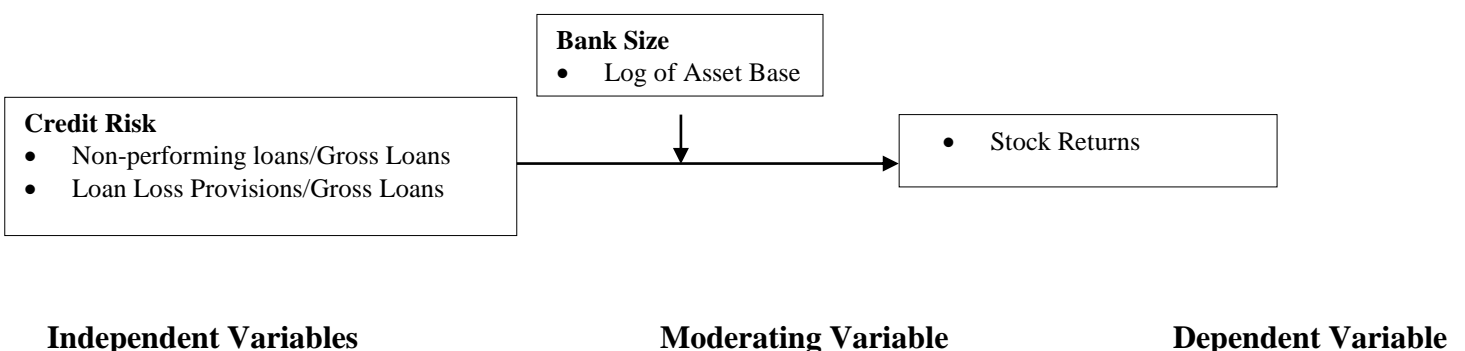
Figure 2.1: Conceptual Framework

2.4.1 Non Performing Loans

Non-performing loans (NPLs) refers to the state of loan obligations falling short of contractual provisions in a way that is detrimental to capital and earnings of a financial institution. In line with empirical studies on credit risk, this study measured credit risk as the ratio of non-performing loans to gross loans (Der-Fen, 2005; Kolapo, Ayeni & Oke, 2012; Abu, Sajeda & Mustafa, 2015; Michael, William & Gary, 2001).

2.4.2 Loan Loss Provisions

Loan loss provision refers to capital, earnings or reserves set aside to safeguard the bank from eventual loss in the event of loan defaults (Floro, 2010). Loan provisions are classified into general and specific provision. General provisioning entails the act of determining the likely amount of loss an aggregate loan portfolio may incur. Specific provisions entail setting aside a proportion of funds from already classified loan portfolio. The ratio of loan loss provisions to gross loans has been used measure credit risk in this study imitating various empirical studies (Der-Fen, 2005; Kolapo, Ayeni & Oke, 2012; Abu, Sajeda & Mustafa, 2015; Michael, William & Gary, 2001; Floro, 2010).

2.4.3 Bank Size.

Similar to most studies on financial risk and stock returns, this study employed banks size as a moderator variable measured by the log of asset base. Empirical literature denotes that large banks can diversify their asset portfolio resulting to an overall discounted risk exposure compared to smaller banks. The effect of bank size on the influence of credit risk on returns remains is a puzzle as evidenced during the 1997-1998 global financial crisis where large banks were negatively affected by the turmoil compared to small banks. Based on these varied developments in the global financial sector, this study pursued to test the effect of bank size on the influence of credit risk on stock returns for listed banks in Kenya (Sobia et al., 2015; Floro, 2010; Shariat & Khosvari, 2008).

2.4.4 Bank Stock Returns

Stock return is the change in capital or wealth due to an investment. The changes could occur due to cash flows such as earnings, dividends or interest or due to negative or positive changes in prices (Mehri, 2015). To determine stock returns the study used following formula applied by Purnamasari et al. (2012) and Predescu and Stancu (2011) in calculating the stock returns:

Equation 2.1: Equation Formula on Determination of Stock Returns

$$R_{i,t} = \ln\left(\frac{P_t + Div}{P_{t-1}}\right)$$

Where, $R_{i,t}$ denote the continuously compounded individual bank stock returns at time t. P_t is the Stock price at the end of the period, P_{t-1} is the stock price at the end of the previous period and Div is the cash dividend received during the period. In this study stock return was computed annually from 2006 to 2015. Logarithmic returns are preferable because they are tractable when handling many sub periods for a long horizon. They are also statistical and conform to normal distribution (Mouna & Anis, 2015).

2.5 Empirical Review

Naser et al. (2011) conducted an empirical study to establish the effect of credit and exchange risk on stock returns conditional volatility of banks in Australia using asymmetrical and symmetrical GARCH models. The result of the research found out that there exist meaningful association between credit risk and market risk with stock return volatility. The findings of the study also established that financial risk helps to predict a stock return which is helpful to investors and regulators. Felix and Claudine (2008) carried out a study on the relationship between bank performance and credit risk management. They measured credit risk using the ratio of

non-performing loans to gross loans. Their study established that the ratio non-performing loan is inversely related to profitability.

Hatfield and Lancaster (2000) examined an empirical paper to find out the stock market response to announcements of loan loss reserve. They investigated a sample of 121 banks relating to loan loss provision announcements between 1983 and1992. Their study established that abnormal stock returns was significantly negative before the event date, but significantly positive after the event but noted that the stock market behavior to loan provisions also depended on loan category and loan period.

Li and Sandeep (2007) conducted an empirical study on loan loss provisions by banks in Hong Kong and Singapore. The study established that unexpected loan loss provisions are positively related with bank stock returns and future cash flows. The study found that and managers use excess profits to build up capital provisions to build appetite of higher credit risk. This signals positive bank performance to investors and possibility of increased interest income on loans due to increased appetite for lending. The relationship between loss provisions and bank returns were found stable and positive outside Asian financial crisis period. This study supported the findings of Kanagaretnam, Lobo, and Mathieu (2004) on earnings management variability an evidence of loan loss provisions.

Domikowsky, Duellman, Bronemann and Pfingsten (2014) examined the pro-cyclicality of loan loss provisioning based on expected loss in Germany. The study established that banks adopt a forward looking provisioning mechanism to enable them undertake credit risk in anticipation of higher non-performing loans. Loan loss provisioning was also found to help banks in tax shielding. Proactive loan loss provisions due to cyclical economic tendencies lead to stable incomes during depressed economic times.

Kithinji (2010) conducted a study on credit risk management on profitability of commercial banks in Kenya. The study covered the period 2004 to 2008 focusing on the amount of credit, level of non-performing loans and profitability. The study found that profitability of commercial banks is not influenced by the amount of gross loans and non-preforming loans. The study findings implied that there could other factors that impact on bank profitability. Steiger (2010) examined the influence of stock options and credit risk on stock returns. The study used tradable credit derivatives of credit default swaps and interest rates to measure credit risk. The study established high explanatory power between credit default swaps and stock returns.

Kargi (2011) investigated the effects of credit risk on profitability of Nigerian banks for the period 2004-2008 which was analyzed using regression techniques. The study concluded that increase in loans and advances, deposits and non-performing loans exposes banks to distress and illiquidity risk. The ratio of loans to advance and non-performing loans inversely influenced banks profitability. These findings inferred that credit risk management has a significant influence on profitability of Nigerian banks.

Khalid (2012) examined the impact of asset quality on Profitability of Private Banks in India over the period 2006-2011. The study established that asset quality and operating performance are positively correlated. Aghababaei et al. (2013) investigated the effects of credit risk indicators on shareholders' value of commercial banks listed in Tehran Stock Exchange- Iran. The study covered 6 years from 2005 to 2010 and concluded that credit risk indicators have a significance influence on shareholder value. Da Silva (2014) conducted an empirical investigation on the impact of sovereign credit risk measured by credit default swaps on the stock market measured by the stock prices. The objective of the study was to establish the correlation of credit default swap spread and stock prices. Although granger causality assessment indicated a close link between stock markets and severing credit risk; the study conclusion found out that deterioration of sovereign debt quality or increase in credit default swaps does not indicate sensitivity of the stock prices. Findings also indicated that the lead and lag relationship between sovereign debt and stock market are pronounced during stable periods.

Janssen (2012) examined the impact of credit risk on stock returns at the German, French and Dutch stock markets for the period 2004-2012. The objective of the study was to ascertain whether systematic risk embedded on the credit spread affects stock returns. The study found out that there is no significant relationship between excess returns on stocks and credit spreads.

Kang and Kang (2009) conducted a study on the impact of individual firm credit spread and stock returns. They argued that higher risk lead to reduced returns occurs only during periods of financial distress. Otherwise, the

Modern Portfolio Theory of the higher risk the higher returns hold for stable financial periods. The study emphasized that the fundamentals of risk and returns tradeoff must apply under perfect market conditions where investors undertaking any incremental risk must compensated with a risk premium.

Lucky and Nwosi (2015) investigated the relationship between asset quality and profitability of quoted commercial banks in Nigeria for the period 1980-2013. The study variables of asset quality and profitability was represented by the CAMELS criteria: Non-performing loans to total loans, non-performing loans to total customer deposit, loan loss provision to total loans and loan loss provisions to total assets. The study established that non-performing loans to total loans and non-performing loans to customer total deposit had a positive relationship with return on investments. Loan loss provision to total loans and loan loss provisions to total assets had an inverse relationship with return on investments. The study concluded the existence of a significant relationship between the asset quality and profitability of commercial banks.

Million, Matewos and Sujata (2015) investigated the impact of credit risk on profitability of commercial banks in Ethiopia for 12 year period (2003-2004). The study concluded that credit risk indicators: Loan Loss provisions, non-performing loans and capital adequacy have a significant impact on profitability of commercial banks in Ethiopia. Abu et al. (2015) undertook an empirical study to establish how credit risk affects bank profitability in Bangladesh for the period 2003 to 2013. Credit risk was measured using the ratio of Non-Performing Loans to Gross Loans (NPLGL), ratio of loan loss reserve to gross loans (LLRGL), ratio of Loan Loss Reserve to Non-Preforming Loans (LLRNPL) and Capital Adequacy Ratio (CAR). Profitability indicators used included return on asset (ROA) and Return on Equity (ROE). Their findings established a negative significant effect of NPLGL and LLRGL on all profitability parameters and a significant negative effect of CAR on ROE concluding that credit risk affects banking profitability in Bangladesh.

Muhammad, Masdar, Abdul and Zakaria (2015) conducted a study to establish the effect of bank ownership, non-performing loans and loan to deposit ratio. The study determined that given that bank ownership was not significant to bank profitability, risk measures of loan to deposit ratio and non-performing loans directly influenced return on equity and stock price index. Nurazi & Evans (2005) conducted a study to establish the impact of CAMEL ratios on bank stock returns. The study established that Capital Adequacy Ratio positively affect bank stock returns, while the Non-Performing Loans ratio and Loans to Deposit Ratio depict negative association with bank return in Indonesian banking sector.

III.   METHODOLODY

The study employed correlational research design to describe the relationships that exist between variables. Target population comprised of all 43 commercial banks licensed by the Central Bank of Kenya as at 31st December 2015 with an accessible population of 11 commercial banks licensed by CBK and listed at Nairobi Securities Exchange. The study assumed purposive sampling technique to come up with a sample that best represent the population (Lavrakas (2008). The sample comprised of 9 commercial banks listed in Nairobi Securities Exchange between years 2006 to 2015. They included Barclay, CFC Stanbic, Diamond Trust, Equity, Housing Finance, Kenya Commercial Bank, National Bank of Kenya, National Industrial Credit Bank (NIC) and Standard Chartered. The study dropped the effects of corporate events such as mergers and acquisitions and rights issues around the announcement dates with an event window of ±10 days. This is because corporate events contain temporary effects on stock returns which are not related to financial risk (Shah and Arora, 2014). The study employed annual secondary data for ten years for the period 2006 to 2015. Data from Nairobi securities exchange was used to calculate the stock returns for the listed banks while banking survey manual and financial institution reports were be used to give credit risk indicative ratios. Econometric techniques were used to describe the influence of credit risk on stock returns of commercial banks listed in Kenya. The data was first be subjected to diagnostic test of normality using Jarque-Bera test, Breusch-Godfrey test was used to test autocorrelation between the errors where acceptance of the null hypothesis for zero autocorrelation was deemed appropriate. Stationary test of the time series data was examined through Augmented Dickey Fuller test. R statistical software was applied for regression analysis. T-test was used to administer for significance of the ratio of non-performing loans and loan loss provision on stock returns of commercial banks listed in Kenya. The combined significance of sub

variables of credit risk was used to determine the overall influence of credit risk on stock returns. The model is as described below

$$R_{it} = \acute{\alpha}_0 - \beta_1 \, NPG_{it} + \beta_2 \, LLG_{it} + \beta_3 \, BSIZE_{it} + \beta_4 \, (NPG*BSIZE) - \beta_5 \, (LLG*BSIZE) + \varepsilon_{it}$$

Where:

R_{it} = Stock Returns
NPG = Ratio of Non-Performing Loans to Gross Loans
LLG = Ratio of Loan Loss Provisions to Gross Loans
BSIZE = Bank Size denoted as log of asset base
NPG*BSIZE = Interaction term between ratio of non-performing loans and bank size denoting moderating effect of the moderator variable
LLG*BSIZE = Interaction term between ratio of loan loss provisions and bank size denoting moderating effect of the moderator variable
ε =Error term and $\acute{\alpha}$ = constant
β=coefficient of independent variables

IV. DATA ANALYSIS AND DISCUSSIONS

4.1 Descriptive Results

Table 4.1 provide the summary of descriptive statistics of the sample showing mean, standard deviation, minimum, maximum, skewness, kurtosis and Jarque-Bera of the independent variables, moderator variable and the dependent variable. The results show that a 10 years investment in the banking stocks obtained an average stock return of 6.34% with a deviation of 3.52%. The portfolio at risk averaged 6.4% in ten years slightly below the industry bench mark of 7% with a deviation of 3%. Banks cushioned themselves against implications of credit risk during the year 2006 to 2015 by increasing the ratio of loan loss provision to gross loans (LLG) by 5.39% with an average bank size of ksh 14.3 billion (ZS).

Table 4.1 Descriptive Statistics

Descriptives	Rt	npg	llg	zs
Mean	0.0634	0.0640	0.0540	14.3824
Median	0.1572	0.0600	0.0378	14.4512
Maximum	0.4929	0.1410	0.1669	15.1060
Minimum	-0.5957	0.0367	0.0293	13.4810
Std. Dev.	0.3520	0.0307	0.0420	0.5359
Skewness	-0.6147	1.6298	2.1846	-0.2838
Kurtosis	2.2231	5.0699	6.5096	1.9374
Jarque-Bera	0.8812	6.2125	13.0867	0.6047
Probability	0.6436	0.0448	0.0014	0.7391
Observations	10	10	10	10

4.2 Diagnostic Test

Normality Test was examined using Jarque Bera test. The test obtained a p-value of above 5% level of significance of 0.643643 and 0.739093 for stock return and bank size respectively, indicating normal distribution of the variables. The ratio of non-performing loans and the ratio of loan loss provision held p-values below 5% level of significance of 0.044768 and 0.00144 respectively indicating non-normal distribution of the variable. The

study addresses non-normality by the use generalized least square model (GLS). The results of the test are shown in table 4.1. To test for stationarity, the study used Augmented Dickey Fuller test. Results in table 4.2 shows stock returns and the ratio of loan loss provision had ADF t-statistic greater than ADF critical value indicating existence of unit root. We therefore accept null hypothesis that the variables are non-stationary. The ratio of non-performing loans show ADT t-statistic lower than ADF critical value which implied unit root does not exist and therefore we reject null hypothesis and conclude the variable is stationary at order at order 1. Stationarity was determined at a point where t-statistic was lower than the critical value at 5% significance level.

Table 4.2. ADF Test

Variable	Test at Levels	ADF Test			
		order	T-Statistic	Critical Value at 5%	P-Value
Returns	z.lag.1 & Intercept	0	-3.5048	-1.95	0.008022
Non-Performing Loans	z.lag.1 &Intercept	1	0.0636	-1.95	0.67880
Loan loss Provisions	z.lag.1 & Intercept	3	-3.5347	-1.95	0.02483

Autocorrelation test was done using Breusch Godfrey test. The test was ideal for running autocorrelation test since it accommodates lag of residuals at higher orders compared to Durbin Watson which incorporates lag of residuals only at order 1. Table 4.3 show result of the test with a p-value of 0.2086 which is higher than 0.05 level of significance signifying that we accept the null hypothesis that autocorrelation does not exist.

Table 4.3   Breusch-Godfrey Test

Statistic	1.5808
P-value	0.2086

Pearson correlation test was done to confirm the degree of multi-collinearity between the variables. Table 4.4 revealed returns to be positively correlated to non-performing loan (npg) and the level of loan loss provision (llg) while bank size (bsize) was found negatively correlated to stock returns. The variables exhibited correlations coefficients of 0.099, 0.185 and -0.090 for npg, llg and bsize on stock returns (Rt) respectively. The test results implied absence of multi-collinearity among selected variables.

Table 4.4 Correlations Matrix

Correlations Parameter		Rt	npg	llg	bsize
Rt	Pearson Correlation	1.000			
npg	Pearson Correlation	0.099	1.000		
llg	Pearson Correlation	0.185	0.957	1.000	
bsize	Pearson Correlation	-0.090	-0.717	-0.793	1.000
	Observations	10.000	10.000	10.000	10.000

Lastly, we examined the errors terms for constant variance using Breusch-Pagan test at 5% level of significance. Test results shown in table 4.5 below indicate there was no enough evidence to reject the null hypothesis for presence of constant variance. The test results therefore implied that there was uniform variance in the error terms which is appropriate for the model.

Table 4.5   Breusch-Pagan Test

Statistic	4.4341
P-value	0.4887

4.3 Regression analysis, hypothesis testing and Discussions

The hypothesis testing result on the influence of credit risk on stock returns of commercial banks listed at Nairobi Securities Exchange is outlined in table 4.6. The regression was based on generalized least squares fit by maximum likelihood with a correlation structure of ARMA (3, 0) using R software. The model was found significant on all the variables net of the constant. Non-performing loans, loan loss provision and bank size significantly influenced stock returns at a p-value of 0.0136, 0.0279 and 0.0351 respectively at 5% level of significance. The moderator variable of bank size was also found to significant to affect the influence of non-performing loan and loans loss provision on stock returns with a p-value of 0.0149 and 0.0285 respectively.

Regression Model

Table 4.6:   Regressing NPG, LLG, BSIZE, NPG *BSIZE, LLG * BSIZE on R_{it}

Predictors	Dependent Variable : Stock Returns			
	Coefficient Value	Standard Error(S.E)	t-value	p-value
npg	-879.467	236.1141	-3.7248	0.0136
llg	2781.6773	907.0454	3.06675	0.0279
bsize	0.3683	0.1284	2.86773	0.0351
npg:bsize	66.2183	18.1926	3.63984	0.0149
llg:bsize	-209.5827	68.7706	-3.0476	0.0285

4.3.1 The influence of non-performing loans ratio on stock returns

Hypothesis testing results indicated that the ratio of non-performing loans to gross loans negatively and significantly affect stock returns. The results met the expectation of the study and conform to the basics of Modern Portfolio Theory that excessive risk eventually decreases returns on investments. The results were related to Nurazi & Evans (2005), Muhammad, et al (2015), Naser et al. (2011) and Kang & Kang (2009). However, the direction of influence was contrary to the study of Li and Zou (2014) which found credit risk positively related to stock returns while Janssen (2012) found credit risk to be insignificant to stock returns.

4.3.2 The influence of loan loss provisions ratio on stock returns

Regression result on the influence loan loss provision on stock returns confirmed a positive significant relationship. This result related to the findings of Li and Sandeep (2007), Hatfield and Lancaster (2000), Kanagaretnam, et al (2004) and Domikowsky, et al. (2014). The findings were contrary to observations of Hatfield and Lancaster (2000) who asserted that abnormal stock returns was significantly negative before the event date.

4.3.3 The moderating effect of bank size on the influence of credit risk on stock returns

Hypothesis testing result on effect of bank size as a control and moderator variable on stock returns revealed a positive and significant relationship. The regression result indicated that bank size bears a significant effect in influencing the effect of credit risk on stock returns. The findings were related to the study of Fafri et al. (2009), El Mehdi (2014). However, the finding contradicted with findings of Aga, et al. (2013) who observed that company size is primary cause of variability on shareholder value.

4.3.4 Influence of credit risk on stock returns

To determine the influence of credit risk on stock returns, the study through GLS model regressed predictor variables: non-performing loans (**npg**), loan loss provisions (**llg**) and bank size (bsize) on stock returns (**R_{it}**). The study results on table 4.6 indicated all variable were significant on stock returns leading to an overall conclusion of study that credit risk significantly influences stock returns. Coefficients of non-performing loan and moderating factor of bank size and loan provision in the model carried a negative sign while coefficient value of loan loss provisions indicated a positive effect on stock returns. The model coefficient signifies the rate of change of the dependent variable for every 1 unit change on the explanatory variable ceteris paribus. Stock returns (**R_{it}**) decreases by -879.467 (-) for every increase in 1 unit non-performing loans ratio. Comparable illustrations can be deduced with other coefficient values. The resultant model can hence be stated as:

$$R_{it} = -1 - 879.47\ NPG_{it} + 2781.67\ LLG_{it} + 0.37\ BSIZE_{it} + 66.22\ (NPG*BSIZE) - 209.58\ (LLG*BSIZE)$$

V. CONCLUSION

The study concluded that the ratio of non-performing loans to gross loans holds a negative significant effect on stock returns. The results indicated that investors consider non-performing loans a critical source of information in their investment decisions. Banks with high levels non-performing loans are occasioned with reduced profits which affects dividend and demand for stocks at the stock market. Market discipline and disclosure on the state of credit risk in banks enable investors to prospect on buy, sell or hold investment decisions depending with their investment strategies.

The ratio of loan loss reserve to gross loans was concluded to positively influence stock returns. This signifies that banks with high returns provide for more loan loss provisions to enhance a greater appetite for credit risk in future. This is usually a strategy employed by large banks to gain advantage on tax shields. The result shows that investors in the stock market consider high provisions as a safeguard for their investments. High loan reserves act as a cushion for banks venturing into risky lending which translate to high profitability and consequently increased capital gains and dividends.

The study concluded that bank size is a critical factor used by investors when considering the affects credit risk on stock returns. Overall result shows that big banks categorized by the size of assets are able to accommodate a higher risk appetite which comes with higher returns. Investors at Nairobi securities Exchange prefer placing their fortune in large banks because they are resilient to credit risk and other related financial risk. Investment in large banks is found favorable since they diversify their portfolio and therefore reduce their overall risk on investment.

The study concluded that credit risk influences stock returns of commercial banks listed in Kenya. The findings conformed to empirical evidence according to Janssen (2012); Naser et al. (2011) and Domikowsky, et al. (2014). Investors in banking stocks in Kenya consider credit risk a valuable factor in making decision to maximize their investments.

1.1 Recommendations
The following recommendations and policy implications can be deduced. The study shows that the ratio of non-performing loans have a significant effect on stock returns. In light of this conclusion, bank top magament should profile the risk of borrowers and define the optimal level of lending appetite. Central bank of Kenya should undertake to regulate and inspect top loans advanced by banks and established the scope of insider lending. Similarly, Capital market authority should enhance transparency and disclosure policy to safeguard investors with regards to portfolio at risk, ratio of loans to deposit and disclosure on insider lending. Investors need monitor of the the levels of non perfoming loans against reductions in stock returns. Investors should also monitor signals of increasing credit risk to make prompt decision on either sell, buy or hold. On policy implication, central bank of kenya through risk and prudential guidlines could adjust the recommended benchmarck threshhold ratio of loan to deposit, loan size distribution and the ratio of non-performing loans to gross loans.

On second objective, the study concluded that loan loss provisions influences on stock returns. The study recommends, bank managemnet to provide adequate provisons to take care of bad loans without affectng the going concern of the bank. Adequate provisions encourage banks to advance credit to untaped risky segments. Central bank of Kenya need provide an oversight role to ensure banks are complying with regulated standards of general and specific provions, this will enhance investor confidence and increase returns on investments. The study will benefit investors on buy or sell decisions, speculation or hedging options on bank stocks. Based on the findings, Central Bank of Kenya could make adjustment on credit risk capital to cater for counter party risk.

The objective on moderating effect of bank size on the influence of credit risk on stock returns, established that size is a factor of risk. Big banks are tolerant to risk and therefore for large banks, manager should avoid over diversification. Central banks of Kenya to safeguared critical big banks in the economy through constant monitoring. Policy makers through an act of parliament to consider increasing absolute amount of core capital held by bank to safeguard the economy from adverse impact of too big banks to fall.

5.2 Areas for further research

Due to innovations in global financial enviroment, the measure of credit risk in will keep on changing. In the light of growth of the financial markets in Kenya, the study recommends a further research on influence of credit risk on stock returns measuring the extend of credit risk at derivative market. A study of influence of credit spreads on stock returns can be explorred. A comparative study of credit risk on stock returns between Kenya and other other emerging market could be pursued. Due to recent changes in regulatory framework by the government of Kenya on interest rates caping and percolation law on determination of credit risk in banks, an event estudy can be pursued to further this study. As far as the knowledge of the resercher is concerned, this is a pioneer study in Kenya as previous studies have only foused on the effect of credit risk on financial performance. The study focused on holistic approach on influence credit risk on stock returns on listed commercial banks in Kenya.

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