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Influence of Credit Risk on Performance of Commercial Banks in Kenya

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Abstract: **The main objective of the study was to determine the influence of credit risk on performance of commercial Banks in Kenya. The measures of credit risk for this research were capital adequacy, non-performing loans ratio, loans to total deposit ratio. Despite the banking sector stability and resilience in 2015, two non-systemic banks, were placed in receivership by the Central Bank of Kenya this was attributed to liquidity risk and failure to owner debt, lack of adequate provision for non-performing loans. Secondary data were used in the study. A population of 44 commercial banks in Kenya was used of which 2 were under receivership and one under statutory management. Panel data for 30 commercial banks that had data for 10 year period from 2006 to 2015 were obtained from the central bank of Kenya and banks website. Descriptive statistics, correlation analysis, and random and fixed effects regression were used using E-views software. The findings were credit risk had a negative relationship with performance hence managers should aim at reducing this risk to increase performance for commercial banks in Kenya.**

Keywords: **Credit Risk, Non-Performing Loans, Capital Adequacy.**

I. INTRODUCTION

Management of risk is not new to most financial institutions but recent development in business environment has brought it to the forefront of senior management concerns (Cooper, 2000). The economic crisis of 1980s forced the central bank governors of the G-10 countries to take proactive measures to safe guard financiak risk (BCBS, 2009). The capital committee introduced capital requirements systems on the basel capital cord whose original focus was on credit risk with requirements for exposure to market risk.

There are forty four commercial banks in Kenya of which ten of them are registered on the Nairobi Securities Exchange (NSE) as per central bank of Kenya report 2014, of which 28 banks are locally owned and 14 are foreign owned (Muteti, 2014). Firms on NSE are regulated by the companies act cap 486 of the laws of Kenya. For banks also the central bank of Kenya act cap 491 oversees there licensing procedure. The CBK gets involved in order to protect the interest of the investors. (Central bank of Kenya report 2015). Other legislation guiding banks are the banking act chapter 488 1st Jan 2013, the constitution of Kenya 2010, the national payment system act 2011. The International Monetary Fund (2011) highlighted that banks failed in the 2007 financial crisis due to poor risk management and over reliance on short-term wholesale funding, which quickened the failure of a number of banks. Despite the banking sector stability and resilience in 2015, two non-systemic banks, Dubai Bank Limited and Imperial Bank Limited, were placed in receivership by the Central Bank of Kenya (CBK) in the second and third quarters of 2015 for Dubai bank this was attributed to financial risk thus liquidity risk and failure to owner debt for bank of Africa, lack of adequate provision for non-performing loans (CBK 2015).

1.1 Specific Objectives:

i) To establish the influence of credit risk on financial performance of commercial Banks in Kenya.

ii) To determine the influence of bank size as a control variable on financial performance of commercial banks in Kenya.

1.2 Research Hypotheses:

i) **H_{a1} :** Credit risk has significant influence on financial performance of banks in Kenya.

ii) **H_{a2} :**Bank size as a control variable has significant influence on financial performance of banks in Kenya

II. LITERATURE REVIEW

Banks loans are major source of credit risk other sources are interbank transactions, foreign exchange, trade financing, futures swaps, options, bonds and extension of commitment of guarantee BCBS (2000). The sound practices set by Basel 1 committee include establishing credit risk environment which the board of directors have the responsibility of periodically reviewing and implementing credit risk strategy approved by the board of directors then setting procedures for controlling, monitoring and measuring credit risk.

In bid to maintain adequate level of profitability, most banks take excessive risk but greater risk taking results in to insolvency. Major banking problems are related to low credit standard for borrowers and poor management of portfolio. Muhammed (2012) posits credit risk may lead to credit events such as bankruptcy, failure to meet obligation due. Owojori (2011) indicate that available statistics from liquidated banks show that inability to collect loans and advances given to customer related to managers was a major contribution to distress.

Muhammad (2012) researched on credit risk and performance of performance of Nigerian banks for the years 2004 to 2008 found a negative relationship between credit risk and performance. This is consistent with Peter and Peter (2006) their study on Australian State housing authorities found a negative relationship between credit risk and performance. Similar research by Hamed, Sanaz and Hadi (2013) on effects of credit risk indicator on share-holders value of commercial banks in Iran showed negative effects of capital adequacy and level of doubtful debts to total loans on share-holders value. Kolapo , Ayeni and Oke (2012) studied credit risk and commercial banks in Nigeria using panel model approach for a period of 11 years. In their research the proxies for credit risk had a positive correlation with performance. This finding concludes that Nigerian banks should enhance their capacity on credit analysis and on loan administration. This is similar to Khizer, Muhammad and Shama (2011) who found the ratio of non-performing loans to total loans to be positive and significant at 1% level of significance to performance. Abdullah (2013) found banks in Nigeria for the years 2006 to 2010 showed that credit risk is had a negative influence on performance this is in agreement with (Sacket & Shaffer, 2006).

Harison and Joseph (2012) in their research credit risk and profitability of selected rural banks in Ghana the independent variable were capital adequacy and non-performing loans as proxies for credit risk and return on assets measured performance. Panel data was used for the period 2006 to 2010. The findings showed that non-performing loans was positive to performance and it was significant at 1%. This is inconsistent to Oyewole (2010) who researched on credit risk management and bank performance in Nigeria using panel data for 5 years from 2005 to 2009 the result showed negative correlation between non-performing loan ratio, loan loss provision, loan to deposit ratio and all measures of performance which included return on equity, return on assets and profit after tax. This is similar to research by Olawale, Tomola, Ayodele and Ademola (2015) whose results on impact of credit risk on banks' performance in Nigeria where a panel estimation of six banks from 2000 to 2013 was done using the random effect model framework established a significantly negative relationship between credit risk and bank profitability. This implies that bank increased exposure to credit risk reduces profits.

For Pakistan banking sector Asad, Syed, Wasim and Rana (2014) researched on credit risk exposure and performance for five year period to 2010 using fixed effects regression analysis showed loans and advances to deposit ratio and loan loss provision to non-performing loans had a significant negative relationship to performance. Similar studies have shown significant negative relationship between non-performing loans ratio and performance (Abdelrahim, 2013, Boahene, Dasah & Agyei, 2012) but inconsistent to (Li & Zou 2014) whose results were Non-performing loans to Gross loans as proxies of credit risk had positive effects on the financial performance. Aman and Zaman (2010) researched on impact of privatization on the credit risk and performance of Pakistani banks Using Error correction model and ensuring data stationarity the findings were that capital adequacy ratio is statistical significant and positively related to performance of banks.

Conceptual frame work

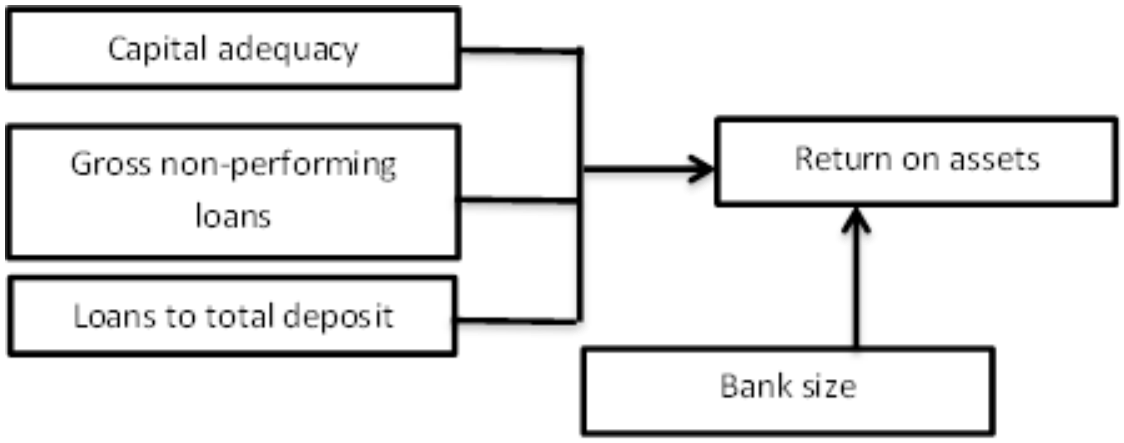

Fig 1

3.1 Research Design:

Research design is the arrangement of conditions from collection to analysis of data in a way that will aim to combine relevance of research purpose with economic implication. It is the logical manner by which elements of research are compared and analysed so as to interpret the data (Upagade & Shende, 2012).

A research philosophy relate to belief on how phenomenon is gathered, analysed and used. It is linked to epistemiology which is relationship between the researcher and what is known to be true, and ontology referring to what is believed to be true. The research philosophy that was adopted for this research is that pursued by positivists who believe reality is stable and hence can be observed from an objective viewpoint positivists argue that a phenomena can be isolated and observations can be duplicated (Creswell, 2006).

The study adopted mixed research design which comprised descriptive survey research design and correlational research design which assumes world view and several world views (Creswell, 2006). Sekaran and Bougie (2011) argue that descriptive survey design helps one to understand the characteristics of a group in a given situation and assists in systematic thinking about aspects of a given situation

3.2 Target Population:

Mugenda and Mugenda (2003) refer to population as an entire group of individuals and objects having a common observable characteristic. Zikmund *et al.*, (2010), Kothari (2004), all concur that population is all items in any field of inquiry or 'universe'. The financial statements were obtained from the central bank of Kenya website and individual banks website. There are 44 commercial in Kenya as per 2015 central bank report. The banks were supposed to have published accounts for ten years that is from 2006 to 2015. Central Bank of Kenya is the major licensing institution of commercial banks and mortgage finance institutions in Kenya and hence was used as an authoritative source for banking sector information.

3.3 Sampling and Sample Size:

According to Kombo and Tromp (2009) it is a finite part of a statistical population whose properties are studied in order to gain generalized information representing the whole universe. It enables one to draw conclusion generalized to the population of interest (Sekaran & Bougie, 2011). Lavrakas (2008) defines a sample in a survey research context as a subset of elements or objects drawn from a larger population. Kombo and Tromp (2009) describe a sample as a collection of representative units chosen from the universe. For this research all the 44 commercial banks were included on condition that they have published accounts for the years 2006 to 2015.

3.4 Data Collection Procedures:

Secondary data was collected from banks website and the Central Bank of Kenya where financial statements were used. Ratios were computed and used during analysis. The study covered 44 commercial Banks licensed by the Central Bank of Kenya. The commercial banks that were used in the study are those that have published accounts for the 10 year period from 2006 to 2015 and were in operation by close of business of 31st December 2015

Table: 3. 1 Operationalisation and Measurement of Study Variables

Variable	Name of Variable	Operationalisation	Measurement
Dependent variables	Financial Performance of commercial banks	Return on assets (ROA).	Net profit after tax/ total assets
	Credit risk	i. Non-performing loan to Total loan and advances	The higher the ratio the higher risk
		i. Total loan to total deposit ratio	
		i. Capital adequacy	
Control variable	Size of firm	Total assets	Natural logarithms of total assets

3.5 Data Analysis and Presentation:

Data analysis involved both descriptive and inferential statistics where model specification estimation and rationale of variables was done. The data was tested for normality and transformed into natural logarithm before regression undertaken as illustrated below.

A. Descriptive Statistics:

Descriptive statistics were used to determine the statistical properties of the model in order to select the proper functional form of the model, statistical analysis technique was used and mean, standard deviation, standard errors, maximum and minimum values of the variables overtime were calculated for secondary data using E-views software. Correlation analysis was used to check which variables were highly correlated so as to avoid the problem of multi-collinearity which is a common problem in time series data. For primary data percentages were calculated for the likert responses.

B. Model Specification and Rationale of Variables:

This study adopted a panel data regression where Ordinary Least Squares (OLS) method was used. The data included time series and cross-sectional data that were pooled into a panel data set. This was estimated using panel data regression. Multiple regressions were conducted and the data converted to their natural logs to deal with the problem of large numbers and eliminate heteroscedasticity. The reason to stationarize data was to obtain a meaningful sample mean, variance which can show future behaviour if series is stationary. But if series is consistently increasing then will underestimate the mean (Jaroslava & Martin 2005).

Unit Root Test:

In classical unit root tests for financial risk such as Dickey and Fuller (1979) is criticized due to low power of the test in small samples. This thesis employs multiple panel unit root tests that can be arranged in groups by cross section dependence or independence homogenous, or heterogeneous unit roots that are defined by (Levin Lin & Chu. 2002, Im, Pesaran & Shin 2003, Maddala & Wu, 1999, Phillips-Perron 2000). Individual unit root has limited powers hence the probability of rejecting null hypothesis when it's false is present. Common unit root process Levin, Lin and Chu panel unit root test was used and for individual unit root process the thesis used three type of panel unit root tests, Im, Pesaran and Shin panel unit root test, ADF-Fisher chi-square test and the Phillips-Perron -Fisher Chi square panel unit root test. When the persistent parameters free move across section then this type of unit is called individual unit root process

Regression Equation of ROA without size of firm

$$Ln\_ROA_{it}=\alpha+ +\beta_1 Ln\_CR_1+\beta_3 Ln\_CR_2+\beta_4\ Ln\_CR_3 + \mu_{it} \quad (3.1)$$

Regression Equation of ROA with size of firm as a control variable

$$Ln\_ROA_{it}=\alpha+ +\beta_1 Ln\_CR_1+\beta_2 Ln\_CR_2+\beta_3\, Ln\_CR_3+ \beta_4 Ln\_TA + \mu_{it}$$

Where;

CR_1 = measures of credit risk which were Loans to total deposits for period 2006-2015

CR_2 = Capital adequacy for period 2006-2015

CR_3 = Gross non-performing loans for period 2006-2015

TA_{it} = Total assets which is a measure of size of bank for period 2006-2015

ROA_{it} = Return on assets for period 2006-2015

ROE_{it} = Return on equity for period 2006-2015

$\beta_1, \beta_2, \beta_3, \beta_4,$ regression coefficient

4.1 Response Rate:

There are 44 commercial banks in Kenya as per CBK 2015 report of which two banks were under receivership that is Chase bank limited and imperial bank hence they did not present financial statement for publication for the year, Charter House bank was under statutory management hence did not publish their financial statements for the year. For this research 30 banks were used thus those that had financial statements for 10 year period 2006 to 2015 giving a response rate of 68 %.

4.2 Correlation Results:

Table 1: Correlation of ROA with Independent Variables

	LN_ROA
LN_ROA	1.000000
LN_CR1	-0.115749
LN_CR2	0.029424
LN_CR3	-0.246890

Notations;

ROA - Return on assets

CR1 - Loans to total deposits ratio

CR2 - Capital adequacy

CR3 - Gross non-performing loans ratio

LN_ - Natural log of Assets

From table 1 above Ln_CR2, had weak positive correlations with Ln_ROA with coefficients of 0.29, while Ln_TA had medium positive correlation with Ln_ROA with a coefficient of 0.51. This therefore means that capital adequacy; have a weak positive correlation with return on assets. Ln-CR1, Ln_CR3, had weak negative correlations with Ln_ROA with correlation coefficients of -0.12, and -0.25 respectively meaning that loans to deposit, and gross non-performing loans, have weak negative correlations with return on assets. The correlation results indicate that there is no multicolinearity among independent variable and the dependent variable as the correlations are below 0.9 (Ahmed & Ahmed 2012).

4.3 Descriptive Statistics for Secondary Data:

Table 2: Descriptive Statistics Table

	LN_ROA	**LN_CR1**	**LN_CR2**	**LN_CR3**	**LN_TA**
Mean	1.04	-0.40	3.16	-2.61	23.88
Median	1.18	-0.33	3.07	-2.76	23.55
Maximum	2.34	0.72	4.27	-1.55	26.87
Minimum	-2.30	-3.02	2.24	-3.12	20.31
Std. Dev.	0.65	0.44	0.42	0.45	1.40
Skewness	-1.10	-2.71	0.56	2.09	0.22
Kurtosis	5.02	16.65	2.61	3.50	1.87
Jarque Bera	106.37	2571.5	16.72	59.81	17.53
Probabilit	0.00	0.00	0.00	0.00	0.00
Sum	296.60	-115.5	903.6	-747.	6829.4
Sum Sq. Dev.	121.40	55.69	49.21	58.65	558.95
Observations	286	286	286	286	286

From the table 2 above, the natural logarithms of return on assets and return on equity had a mean of 1.04 and 2.93 while there standard deviations were 0.65 and 0.73 respectively. The measures of credit risk which were Loans to total deposits, Capital adequacy, and gross non-performing loans there natural logarithms had a mean of -0.4, 3.16, and -2.61 with a standard deviation of 0.44, 0.42 and -1.55 respectively. Size of the bank measured by the natural logarithm of total assets had a mean of 23.88 and the standard deviation was 1.4. The mean value of return on assets (DROA) and return on equity (DROE) are significantly positive, thus commercial bank in Kenya are enjoying a healthy profitability.

Three statistical methods were used to test normality, skewness measure the asymmetry to of the distribution while kurtosis measure the flatness or peakedness of the distribution. A distribution is considered normal if the values of skewness and kurtosis are equal to zero. Monte-carlo simulations indicate that skewness of value smaller than 2 and kurtosis value smaller than 7 should be considered normal. Skewness of value 2.0 to 3.0 and kurtosis values 7.0 to 21.0 are considered as non-normal. Skewness of value greater than 3and kurtosis greater than 21 is considered extremely non-normal (Tabor, 2011). From the table above skewness ranges from -2.71 to 2.09 and kurtosis has a range 2.61 to 16.65 indicating the data is extremely non-normal. Applying the Jarque-Bera test of normality, the value is less than 0.01, which is significant hence a strong support for the hypothesis that the returns and the independent variables do not have normal distribution.

Table 3: Unit Root Tests

VARIABLES	Levin, Lin & Chu Stat (Prob.)	Im, Pesaran & Shin (Prob.)	Augmented Dickie-Fuller (ADF) (Prob.)	Phillips-Perron (Prob.)	Integration Level
LN_ROA	-17.3650** (0.0000)	-5.61010** (0.0000)	128.228** (0.0000)	136.681** (0.0000)	I(0)
LN_CR1	-4.02930** (0.0000)	-0.5939* (0.0230)	77.1283** (0.0074)	102.392** (0.0005)	I(0)
LN_CR2	-5.40747** (0.0000)	-1.62754* (0.0018)	79.7851* (0.0047)	97.4201** (0.0016)	I(0)
LN_CR3	-22.1682** (0.0000)	-12.4345** (0.0000)	257.304** (0.0000)	230.622** (0.0000)	I(0)
LN_TA	-6.52055** (0.0000)	1.53162 (0.9372)	67.6310 (0.2329)	76.5499 (0.0735)	I(0)

Notation;
D - First difference * sig at 5% level, ** sig at 1% level
Values in parenthesis are probability values.

Panel Unit Root Test:

In this research evaluation of stationarity of the variables in the model, unit root test most was applicable for unbalanced panels. Stationary means the variance mean, and autocorrelation of a variable does not change with time. From the table 3 above p-value in parentheses, ** and * denote rejection of null hypothesis at 1% and 5 % significance respectively. All panel unit root tests have null hypothesis tests of non-stationary financial risk. It can be seen that the probability of Levin, Lin and Chu statistic for all the variables has a value < 0.01 which is significant at 1% level of significance hence using Levin, Lin and Chu test rejects the null of unit root this shows that the variables are stationery and has no unit root. Im, Pesaran and Shin unit root test, Augmented Dickie-Fuller ADF-Fisher Chi-square, Phillips-Perron-Fisher Chi square, were also implemented most confirm stationary data**.** Both failed to reject natural logarithm total assets (Ln_TA) at both 1% and 5% level respectively. Due to presence of unit root as shown by the above data, first difference treatment was implemented on the data to be used in this thesis as illustrated table 4.

Table 4: Unit Root Tests for First Difference

VARIABLES	Levin, Lin & Chu Stat (Prob.)	Im, Pesaran & Shin (Prob.)	Augmented Dickie-Fuller (ADF) (Prob.)	Phillips-Perron (Prob.)	Integration Level
DROA	-18.9620** (0.0000)	-8.10319** (0.0000)	182.205** (0.0000)	258.141** (0.0000)	I(1)
DCR1	-22.8310** (0.0000)	-10.0962** (0.0000)	213.608** (0.0000)	243.812** (0.0000)	I(1)
DCR2	-17.5899** (0.0000)	-7.66382** (0.0000)	181.554** (0.0000)	237.962** (0.0000)	I(1)

DCR3	-13.6184** (0.0000)	-4.40128** (0.0000)	120.003** (0.0000)	120.003** (0.0000)	I(1)
DTA	-19.9461** (0.000)	-7.68182** (0.0000)	173.821** (0.0000)	202.289** (0.0000)	I(1)

Notation;

D - First difference * sig at 5% level, ** sig at 1% level

Values in parenthesis are probability values.

From the table 4.5 above after the first difference both Levin, Lin and Chu test (2002) and Phillips-Perron (2000) Im, Pesaran and Shin unit root test (2003), Augmented Dickie-Fuller ADF-Fisher Chi-square rejects the null of unit root this shows that all variables are stationery and has no unit root.

4.4 Regression Results for Secondary Data:

This section presents the results for multiple regression analysis the first being financial performances represented by return on assets and return on equity against financial risks together followed by second with size of the bank as a control variable. Random and fixed effects model was used. In this research the natural logarithms of the actual values of the variables to deal with the problem of large numbers and eliminate Heteroscedasticity were calculated using the e-views software

Hausman test:

The Hausman test statistic is a transformation of difference between the parameter estimates from fixed effects and random effects estimation that becomes asymptotically $\chi 2$ chi- square distributed under null hypothesis a Hausman test was used to determine whether to use the fixed effects or random effects model to address objectives of this study

Table 5: Correlated Random Effects - Hausman Test

	Return on assets (DROA)	Return on equity (DROE)
Chi-Sq. Statistic	7.965140	6.299273
Prob.	0.5377	0.7096

From the table 5 The Hausman test is distributed as chi-square with 1 degree of freedom. From the table Return on assets (DROA) show the probability of the cross section random effects is 0.5377 which is greater than 0.05 this shows that it's appropriate to adopt random affects model.

Table 6: Regression of ROA on Credit Risk Measures

Dependent Variable: DROA
Method: Panel EGLS (Cross-section random effects)
Date: 03/07/17 Time: 11:41
Sample (adjusted): 2007 2015
Periods included: 9
Cross-sections included: 30
Total panel (unbalanced) observations: 251
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCR1	0.008889	0.122157	0.072771	0.9420
DCR2	0.284456	0.153862	1.848774	0.0657
DCR3	-0.370670	0.119944	-3.090353	0.0022
C	-0.009918	0.035650	-0.278202	0.7811

Weighted Statistics

R-squared	0.058107	Mean dependent var	0.038635
Adjusted R-squared	0.046667	S.D. dependent var	0.496043

S.E. of regression	0.484330	Sum squared resid	57.94028
F-statistic	5.079304	Durbin-Watson stat	2.381078
Prob(F-statistic)	0.001981		
	Unweighted Statistics		
R-squared	0.058107	Mean dependent var	0.038635
Sum squared resid	57.94028	Durbin-Watson stat	2.381078

From the table 6 above the model is significant at 1% level as the probability value is less than 0.01. The Durbin- Watson value is 2.381078 indicating that there is no autocorrelation problem (Alsaeed, 2005). The Durbin-Watson value should be around 2, if the value of Durbin-Watson is below 1 then there is serial correlation. The value of R-squared was 0.0581 showing that credit risk indicators explain 5.8% variance in performance indicator return on assets.

Gross non-performing loans ratio (DCR3) as a measure of credit risk had a coefficient of -0.370670 with a probability of 0.0022 thus significant at 1% level (p value < 0.01) this shows that gross non-performing loans ratio had a negative relationship with return on assets as a measure of performance for commercial banks in Kenya. This means that when Gross non-performing loans ratio decrease by 0.3283%, Return on assets (DROA) will increase by 1%. Researchers whose research agree with this research found a negative relationship between non-performing loans ratio as a measure of credit risk and performance (Asad, Syed, Wasim & Rana 2014, Abdelrahim, 2013, Boahene, Dasah & Agyei, 2012) while others whose research contradicts this research found non-performing loans ratio had a positive and significant relationship to measures of performance (Li & Zou 2014, Harison & Joseph, 2012, Shaffer, 2012)

Loan to total deposit ratio (DCRI) and capital adequacy ratio (DCR2) had coefficients 0.0089 and 0.2845 respectively though not significant with performance proxy return on assets. The regression equation for credit risk proxies with return on assets (ROA) becomes

$Y_{PER} = 0.0089 + 0.284\ DCR2 - 0.371DCR3 - 0.0099\ DCR3$

Regression with bank size as a control variable

Table 7: Regression of ROA on Credit Risk Measures

Dependent Variable: DROA
Method: Panel EGLS (Cross-section random effects)
Date: 05/22/17 Time: 21:24
Sample (adjusted): 2007 2015
Periods included: 9
Cross-sections included: 30
Total panel (unbalanced) observations: 251
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DCR1	0.002184	0.121752	0.017938	0.9857
DCR2	0.269062	0.153568	1.752063	0.0810
DCR3	-0.386338	0.119884	-3.222587	0.0014
DTA	-0.244634	0.154612	-1.582241	0.1149
C	0.027200	0.042560	0.639090	0.5234
	Effects Specification			
			S.D.	Rho
Cross-section random			0.000000	0.0000
Idiosyncratic random			0.493702	1.0000

Weighted Statistics			
R-squared	0.068027	Mean dependent var	0.038635
Adjusted R-squared	0.052873	S.D. dependent var	0.496043
S.E. of regression	0.482752	Sum squared resid	57.33008
F-statistic	4.489024	Durbin-Watson stat	2.374602
Prob(F-statistic)	0.001615		
Unweighted Statistics			
R-squared	0.068027	Mean dependent var	0.038635
Sum squared resid	57.33008	Durbin-Watson stat	2.374602

Gross non-performing loans ratio (DCR3) as a measure of credit risk had a coefficient of -0.386338 with a probability of 0.0014 thus significant at 1% level (p value < 0.01) this shows that gross non-performing loans ratio had a negative relationship with return on assets as a measure of performance for commercial banks in Kenya. It can be seen that Loan to total deposit ratio (DCRI), capital adequacy ratio (DCR2) and size of the bank are not significant this show that size of the bank has no control effects on performance and it's not significant.

III. CONCLUSION

Based on the empirical evidence, a number of logical conclusions can be made as follows. The negative relationship of credit risk with performance indicate the managers can increase performance by utilizing methods that adhere to credit policies of the firm like ensuring credit rules are documented, ensuring that collateral is physically present and insured coupled with strong monitoring of activities of debtors or customers before advancing credit. Further, it can be concluded that there exists a negative and significant relationship between credit risk and performance of commercial banks in Kenya. This means that credit risk was statistically significant in explaining performance of commercial banks in Kenya

IV. RECOMENDATION

Gross non-performing loans ratio the results of this research show that credit risk was negatively related to return on assets as a measure of performance. The Central Bank Prudential Guideline on Capital Adequacy requires banks to adhere to the prescribed capital adequacy prudential ratios. Bank managers should adopt policies to ensure debtors figure does not increase at a high rate than total capital as this increases credit risk. The managers can minimize credit risk by ensuring that the credit worthiness of would be borrowers is assessed together with the collateral which should be wholly ensured. Thus managers should be cautious when setting up credit policies that will not impact negatively of the bank's performance. They require understanding how credit policies affect the banks performance to be able to ensure proper utilization of banks deposits as improper management of credit risk will increase the non-performing loans this may result in to financial distress. The managers should have a committee that should oversee all activities of debtors of the bank and loan disbursement. Though at times increase in non-performing loans could be due to insecurity and adverse weather conditions. Central bank of Kenya for the purpose of policy should asses the attitudes of lending of banks by inspecting the degree of credit crunch considering the demand and supply of loans in the security markets. Increased competitiveness of the market by having various portfolios will stabilize the market.

REFERENCES

[1] Abdelrahim, K. (2013). Effectiveness of Credit Risk Management of Saudi Banks in the Light of Global Financial Crisis a Qualitative Study, *Journal Asian Transactions on Basic and Applied Sciences*, 3 (2), 73-91.

[2] Abdullahi, S. (2013). Efficacy of Credit Risk Management on the Performance of Banks in Nigeria. *Global Journal of Management and Business Research Administration and Management*, 13 (4), 1-7.

[3] Aman, Q., & Zaman, K.(2010). Credit Risk Performance of Private, State Owned and Foreign Banks on the Economy of Pakistan (Econometric Approach)", *International Research Journal of Finance and Economics*, 47-58.

[4] Asad, A., Syed, H., Wasim A., & Rana, U. (2014). Credit Risk Exposure and Performance of Banking Sector of Pakistan. *Journal of Basic and Applied Scientific Research*. 4 (3), 240-245.

[5] BCBS, (2000). *Principles for the management of the management of credit risk* CH – 4002 Basel, Switzerland Bank for International Settlements. Retrieved from http://www.bis.org/publ/bcbs75.

[6] CBK (2015) Annual report.

[7] Dickey, D., Fuller, W., (1999). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica* 49, 1057–1072.

[8] Hamid, R., Sanaz A., & hadi, A. (2013). Effects of credit Risk indicators on shareholders' value of commercial banks in Iran. *International Research Journal of Applied and Basic Sciences*, 6 (8), 1143-1149.

[9] Harison, O., & Joseph, O. (2012). *Credit risk and profitability of selected rural banks in Ghana.* Catholic university of Ghana. Working paper no Retrieved from http://www.econrsa.org/system/files/workshops/papers/2012/

[10] Im, Pesaran, K. and Shin Y. (2003). Testing for unit roots in hetero- geneous panels. Journal of *Econometrics* 115, 53-74.

[11] Khizer, A., Muhammad, F., & Shama, S. (2011). Financial and Non-Financial Business Risk Perspectives empirical evidence from commercial Banks. *Journal of finance and economics*, 2 (6), 235-243.

[12] Kombo, D., & Tromp, D. (2009). *Proposal and Thesis Writing: An Introduction. Paulines Publications Africa*, Don Bosco Printing Press, Nairobi Kenya.

[13] Kothari, C. (2004). *Research Methodology: Methods & Techniques. (*2nd ed.). New age International Publishers, New Delhi, India.

[14] Lavrakas, P. (2008). Encyclopedia of Survey Research Methods. *Sage Publications*, 1, 784-785.

[15] Levin, A., Lin, C.,and Chu C. (2002). Unit root tests in panel data: Asymptotic and nite-sample properties. *Journal of Econometrics* 108, 1-24.

[16] Li, F., & Zou F. (2014). The impact of credit and liquidity risk management on the profitability of Deposit money banks in Nigeria. *International journal of economics, commerce and management*, 1, 23-33.

[17] Mugenda, O., & Mugenda, A. (2003). *Research Methods: Quantitative and Qualitative Approaches.* Nairobi: Acts Press.

[18] Muhammed E. (2012). Credit risk and the performance of Nigerian banks" interdisciplinary *Journal of contemporary research in business*, 2 (1), 32-39.

[19] Muteti, R. (2014). *Financial risk management and financial performance of commercial banks in Kenya*. (Unpublished Master thesis) School of Business, University of Nairobi.

[20] Olawale F., Tomola M., Ayodele J, & Ademola A.,(2015). Credit Risk and Bank Performance in Nigeria *IOSR Journal of Economics and Finance*, 6 (2), 21-28.

[21] Owojori A., Akintoye I., & Adidu F. (2011). "The challenge of risk management in Nigerian banks in the post consolidation era". *Journal of Accounting and Taxation*, 3 (2), 23-31.

[22] Oyewole, O. (2010). Credit risk management and bank performance in Nigeria. Conference paper, *Covenant University.*

[23] Peter, V., & Peter, R. (2006). "Risk Management Model an Empirical Assessment of the Risk of Default". *International Research Journal of Finance and Economics*. 1, 42-56.

[24] Phillips, P., & Perron, P., (1988). Testing for a unit root in time series regression. *Biometrika* 75, 335–346.

[25] Sackett, M., & Shaffer, S. (2006). "Substitutes versus complements among credit risk management tools". *Journal of Applied Financial Economics*, 16 (1), 1007-1017.

[26] Sekaran, U., & Bougie, R. (2011). *Research Methods for Business: A Skill Building Approach. (*5th ed.). Aggarwal printing press, Delhi.

[27] Zikmund, G., Babin, J., Carr, J. & Griffin, M.(2010). *Business Research Methods* 8th ed. South-Western, Cengage Learning, Natorp Boulevard mason.