Credit Risk Management and Shareholder Value Creation: With Special Reference to Listed Commercial Banks in Sri Lanka

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Abstract

The main aim of this study is to investigate the effect of credit risk management on the shareholder value in listed commercial banks in Sri Lanka. The research has used only the secondary data for the purpose of analysis and the sources of data include the annual reports of selected quoted public banks. This study employed return on shares to measure the shareholder value while non-performing ratio, Capital adequacy ratio and Loans to deposits ratio have been used as the indicators of the credit risk management of the banks. Regression models were employed to do the empirical analysis and focuses on the descriptions of the output obtained from the SPSS. The findings reveal that credit risk management has a significant effect on shareholder value in all eight banks. Among the three credit risk management indicators, NPLR has the most significant effect on the return on shares. Through the results of the study it can be concluded that null hypothesis can be rejected since there is a significant relationship between credit risk management and shareholder value.

Keywords: *Credit Risk Management, Shareholder Value, Non-Performing Loan Ratio, Capital Adequacy Ratio, Loans to Deposits Ratio*

1. Introduction

Main function of a bank is to accept deposits and make loans, and then a profit will be earned through the difference in the interest paid and interest charged to depositors and borrowers respectively. This process is also known as financial intermediation by banks taking in funds from customers / depositors and lending them to borrowers.

After accepting the deposits from the customers, their next task is to invest those deposits in a safety way. Majority of the collected deposits will be transmitted to people in need of funds through micro lending, mortgages, small and long term loan, auto finance facility, etc. Due to the mention credit operations banks are exposed to credit risks. Fredrick O. (2012) defines credit risk as the potential that a bank borrower or counterparty will fail to meet its obligation in accordance with agreed terms.

Various banking crisis confronted by banks have led to more concentrate on credit risk management practices since it is very crucial for banks in order to maximize the share holders' wealth. Shareholder wealth maximization is the chief objective of the firms and that is the main objective of the financial management as well. Credit risk management practices were arisen with the banking crisis encountered by the banks in the world. US Subprime mortgage crisis is one of the major crisis occurred in 2007 to 2008, etc.

As mentioned above, most of the financial institutions have faced with lots of difficulties in the world due to the credit risk. Credit risk is the "risk of loss of principal or loss of a financial reward stemming from a borrowers' failure to repay a loan or otherwise to meet a contractual obligation". Hence it is very much critical for a bank to manage the credit risk effectively since it is essential to the long term success of any banking organizations. For most of the banks, loans are the major source for the credit risk. Other than the loans banks are facing for credit risk through various financial instruments such as foreign exchange transaction, financial future, swaps, and bonds and etc. Due to the above risks mentioned, banks are more paying their attention on "to identify, measure, monitor and control credit risk and also they are maintaining adequate capital against the risks"

2. Research Question

The background of the research and formulated problem statements led to have the following research question.

"How does credit risk management affect the shareholders' value creation of listed commercial banks in Sri Lanka?"

3. Objectives of the Study

   i.   To ascertain whether credit risk management does have an effect on shareholder's' value.

   ii. To investigate the impact of non-performing loans on shareholders' value.

iii.   To investigate the impact of loan loss provisions on banks' shareholders' value.

iv.   To investigate the impact of capital adequacy ratio on banks' shareholders' value.

4. Literature Review

As per the study done on credit risk management and profitability in commercial banks in Sweden by Hosna et al., (2009), defines credit risk has been defined as the risk of loss due to an obligator's non-payment of an obligation in terms of a loan or other lines of credit. In this study it further elaborates credit is the major sources of income in commercial banks and credit risk management affects the profitability of the banks. Providing credit is the core of banking operation, thereby banks are paying their deep attention on credit risk management.

The researcher further defines credit risk as the risk associated with the loans. Obviously credit risk is the most significant risk among other risks since its size of potential losses are high. Further credit risk can be divided into main three categories; default risk, exposure risk and recovery risk.

By using regression model to do the empirical analysis, it has been concluded that credit risk management has effect on profitability in all four banks. Among the two credit risk management indicators which are capital adequacy ratio and non-performing loan ratio (NPLR), it is mentioned that there is a significant effect for NPLR than capital adequacy ratio (CAR) on profitability (ROE). Normally loans become non-performing after being default for three months and NPL is a probability of loss that requires provision and also it indicates the efficiency of credit risk management in a bank. Then Less the ratio means more effective the credit risk management.

The other independent variable been used in the study is Capital adequacy ratio. Mainly measurement of the credit risk can be divided in to three main losses such as Expected loss, unexpected loss and Loss given default. Because of above losses, bank need to maintain certain level of capital for their day to day operations. And also

banks should be able to maintain a balance between risk and rewards of holding capital.

Total loans and advance ratio to total deposits is the third variable in the thesis. As Aghababaei et al., (2013) explain, total loans and advance ratio is a better indicator to measure the credit risks which effects on shareholder value.

As per the Journal article of Aghababaei et al., (2013), has investigated the effect of credit risk indicator's on shareholder's value of commercial banks in IRAN by using six listed commercial banks from 2005 to 2010. In this study, researchers have used ROE (net profit before tax to the equity) as the shareholder value indicator but as per the researcher Arif, et al., (2012) explains, proper indicator to measure the shareholder value is both the Return on equity and market return on shares.

As per the journal article of credit risk and shareholders' value in a developing economy: Evidence from Pakistani banking system, Ahmed Arif et al., (2012) examines the role of credit risk in value creation process in banking system of Pakistan. (The study analyses how the accounting return on equity and market return on shares can be affected by loan loss provision, advances and capital adequacy ratio). Objective of this study is to measure the impact of credit risk on Shareholder's wealth, which is measured by Return on equity and Return on shares. Shareholders are interested to have their share price goes up and also the overall return on equity.

Under the first model in which ROE has been used as the dependent variable, the result shows that the Loan loss provision and advances have negatively affected to the ROE. By the same time Capital adequacy ratio is positively associated with the ROE. Under the second model, it shows that Loan loss provision and advances have a positive association with the ROS. The study further reveals that banks which are having large advances in their portfolio are successful in getting preference of investors in the stock market. As per the researcher, investors perceive that banks with high advances in their portfolio are more capable to generate value for them. It further elaborates that large advances also show the strength and size of the bank.

Study has assessed credit risk management practices in Ghana commercial bank limited, for the period 2000-2010. In this research, Tettah (2012), attempted to assess the extent to which the implementation of various credit risk management strategies by the bank has reduced the amount of non-performing loans. As per the study, effective credit risk management practices reduce the risk of customer default and help commercial banks remain competitive in the credit market that will ultimately add a value to shareholder's wealth.

5. Methodology

Based on quantitative method, regression model has been used to analyse the data collected from the annual reports since 2009 to 2015 of the sample listed banks. Through the regression output conducted, will interpret the results and answer to the research question. The analysis will be a descriptive approach since evaluation will be done based on the regression output. The research quantifies the data and generalizes the results from the sample to the population of interest while testing the hypothesis generated with relate to the objective of the study.

The population consists of all the commercial banks in Sri Lanka and the focused population is listed commercial banks in CSE. The research concern is the entire listed commercial banks in Sri Lanka except Union bank of Colombo and Amana bank due to the unavailability of sufficient information throughout the research period since both banks have commenced their operations in 2010. Therefore the sample includes seven listed commercial banks excluding Union bank of Colombo and Amana bank. The sample is selected based on the availability of the information. Since the study focus on shareholder value measurement, in order to obtain the market return on shares, bank should be listed in CSE.

6. Conceptual Framework

Credit Risk Management   **Shareholder Value**
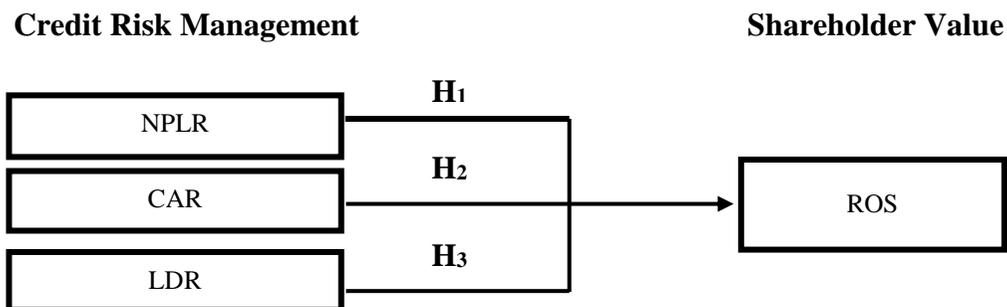
Multiple regression analysis has been used in the study in which the relation of one dependent variable and multiple independent variables exist. The regression outputs will be obtained by using SPSS. Through the studies of earlier research and the journal articles, market return on shares has been used as the indicator for the shareholder value and Non-performing loan ratio, Capital adequacy ratio and Loan loss provision have been used as the independent variables, hence multiple regression model with three independent variables are included in the model

6.1.Dependent Variable

ROS: Shareholder value indicator - Market return on shares is an important indicator to measure the value of the shareholders on credit risk management. This return has been calculated using daily stock prices.

P_0 = Initial stock price, P_1 = Ending stock price,

D = Dividends

$$\text{Total Stock return} = \frac{(P_1 - P_0) + D}{P_0}$$

In the stock return formula it shows the appreciation in the price plus dividends paid, divided by its original price of the stock. The main income source of a

stock is dividend and the amount increase in value. The above portion of the equation shows the how much the value has increased.

6.2.   Independent Variable

Three independent variables have been used namely non-performing loan ratio, Capital adequacy ratio and total given loans and advances to total deposits ratio, since these are the most appropriate indicators of credit risk which effect on shareholder value of banks.

NPLR: Problem loans, impaired loans, doubtful claims and loan allowances are also known as NPLR. Using the data of annual reports, ratios will be calculated. As per Hosna et al., (2009), definitions are similar in all ratios of NPL. In order to calculate this ratio, data can be extracted from notes of the financial statements in the loan section.

$$\textbf{NPLR} = \frac{\text{Non-performing loan}}{\text{Total Loans}}$$

CAR: This is the regulatory capital requirement of the bank. This figure can be taken from the annual reports directly. It is useful to study how the adoption of Basel accords can influence on credit risk management and its effect on shareholders' value in all listed commercial banks in Sri Lanka. CAR mainly helps banks to manage credit risk and give the capability for the financial institutions in order to bear the shocks if occurred by the credit risk.

A per the researchers Charles and Kenneth (2013), elaborate this is the regulatory authorities use to determine the optimum amount of money (equity, retained earnings, and other reserves) that a bank must have to take certain levels of risk.

$$\mathbf{CAR} = \frac{\text{Tier 1 + Tier 11}}{\text{Risk weighted assets}} * 100\%$$

LDR **-** Total loans to deposits ratio has been taken as the variable of the study since it can be measured whether LDR has an effect for the shareholder value creation.

Total loans and advances to deposits ratio = $\dfrac{\text{Total loans and advances}}{\text{Total deposits}}$

When there is an increase in this ratio, it shows that the bank has to face for higher level of credit risk and vice versa. As per the researcher Charles and Keneth (2013) emphasize this is a facility granted to a bank customer that allows the customer make use of banks funds which must be repaid with interest at an agreed period.

6.3.Model of the Study

$$Y = a + ß_1X_1 + ß_2X_2 + ß_3X_3 + \mu$$

ROS = a + β_1 Non performing loan ratio + β_2 Capital adequacy ratio + β3 Loans and Advances to deposits ratio + μ

6.4.Hypotheses of the Study

H_0**:** Credit risk management does not effect on Market return on shares

H_1**:** NPLR do effects on Market return on shares

H_2**:** CAR does effects on Market return on shares

H_3**:** LDR do effects on Market return on shares

7. Data Analysis and Results

SPSS software has been used to analyse the data. Market return on shares has been used as the dependent variable since ROS is the best indicator to measure the value of shareholders and it has been used in previous findings as well.

An examination of the model summary in conjunction with the ANOVA table, there is a 33.3% dependency of dependent variable on the independent variables indicated through the R^2. The remaining 66.7% will not be explained, because the remaining part of the variance in Return on shares is related to other variables which are not explained in this study. This fact can be proved through the results of the simple regression analysis conducted separately with each independent variable. This results show that NPLR has 26.7% predicting ability of ROS while loans to deposits ratio hold 6.8% and CAR hold only 1.8% predicting ability. Among all the variables NPLR and loans to deposits ratio more reliably predicts ROS.

The explanatory power of the return on shares will be 29.9% when more variables add to the model with the existing three variables named non-performing loan ratio, loans to deposits ratio and capital adequacy ratio indicated through adjusted R^2. Adjusted R^2 29.9%, helps to avoid the overestimation effect of adding more variables to the model. Therefore, adjusted R^2 considers as more accurate value even though R^2 is differing by merely 4%.

How in practically there are more related variables which explain the return on shares other than the credit risk management indicators in a bank. In this study since the researcher is interested to find out how the credit risk management practices effect on shareholders' value in the bank, NPLR, LDR and CAR have been used as the most appropriate variables for the study through a proper analysis of literatures. The model created by the researcher is significant at the 1% level of significance with 99% confidence level. In addition to the above analysis, Durbin Watson test also carried out to check the auto correlation among the independent variable. Since the Durbin Watson value is close to two it reflects that there is no auto correlation between

independent variables. As per the model run by the researcher, Durbin Watson value is 1.947.

Table 01: Coefficients

		Unstandardized Coefficients		t	Sig.
		B	SE	B	Std. Error
1	(Constant)	7.326	1.612	4.544	.000
	Non-performing loan ratio	-25.968	5.331	-4.871	.000
	Capital adequacy ratio	-9.085	10.289	-.883	.381
	Loans to Deposits ratio	.502	.209	2.408	.019

Source: Survey Data, 2016

Table 02: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.577	.333	.299	2.63999	1.947

Source: Survey Data, 2016

Table 03: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	208.419	3	69.473	9.968	.000
	Residual	418.172	60	6.970		
	Total	626.591	63			

Source: Survey Data, 2016

NPLR beta coefficient is **-**25.968 which means that one unit increase in NPLR decreases ROS by 25.968 units while CAR and Loans to deposits ratio held constant.

The statistical significance of NPLR on ROS is **0.000** which is less than 0.01 which means that NPLR predicts effect on ROS with 99% probability.

By the same time Capital adequacy ratio has a negative beta coefficient of -9.085which indicates that one unit increase in CAR will result to decrease in ROS by 9.085units while NPLR and Loans to deposits ratio is held constant. CAR is the core measure of the bank's financial strength from a regulator's point of view. The statistical significance of CAR is 0.381 which is a sign of relatively low significance. It implies that CAR predicts ROS with 61.9% probability.

Finally by providing a contradict result of a positive beta coefficient of .502 it shows that there is a positive relationship between Loans to deposits ratio and the Return on shares. When other independent variables constant, when there is one unit increase in Loans to deposits ratio, it will lead to increase the Return on shares by .502 units. The statistical significance of Loans to Deposits ratio on ROS is **0.019** which is less than 0.05 which means that loans to deposits ratio predicts effect on ROS with 95% probability.

Table 04: Correlation Matrix

		Return on Shares	Non-performing loan ratio	Capital adequacy ratio	Loans to Deposits ratio
Return on Shares	Pearson Correlation	1	-.517(**)	.136	.262(*)
	Sig. (2-tailed)		.000	.286	.037
	N	64	64	64	64
Non-performing loan ratio	Pearson Correlation	-.517(**)	1	-.213	-.047
	Sig. (2-tailed)	.000		.092	.715
	N	64	64	64	64
Capital adequacy ratio	Pearson Correlation	.136	-.213	1	.457(**)
	Sig. (2-tailed)	.286	.092		.000
	N	64	64	64	64
Loans to Deposits ratio	Pearson Correlation	.262(*)	-.047	.457(**)	1
	Sig. (2-tailed)	.037	.715	.000	
	N	64	64	64	64

** Correlation is significant at the 0.01 level (2-tailed).

*   Correlation is significant at the 0.05 level (2-tailed).

Source: Survey Data, 2016

That is the regression equation can be designed.

$$\text{Return on Shares}(Y) = 7.326 - 25.968\text{NPLR} - 9.085\text{CAR} + 0.502\text{LDR} + U_i$$

8. Testing of Hypotheses

The hypotheses below are operationalized as a basis for analysis and conclusion on the relationship between Return on shares and Credit risk management.

H0: Credit risk management does not effect on Market return on shares

H1: NPLR do effects on Market return on shares

H2: CAR does effects on Market return on shares

H3: LDR do effects on Market return on shares

9. Major Findings of the Study

The main aim of the study was "Identify the effect of Credit risk management on Shareholder Value. As per the findings of the researcher, roughly any one can have idea on the return on shares by analysing the credit risk management. According to the model used by the researcher, 33.3% of the behaviour will be explained through the NPLR, CAR and LDR.

10. Conclusion

As prescribed in the earlier chapter, it has been achieved the general objective which is to identify, whether credit risk management does have an effect on shareholder's' value.

The overall model of the study is significant at 1% which means it has 99% confidence that credit risk management does have an effect on shareholder value. Thus we can reject the null hypothesis and other alternative hypothesis can be accepted. Furthermore R^2 explains, which extent to credit risk management explains the shareholder value which will be discussed later in this chapter.

The specific objectives were:

  i.   To determine the extent to which non-performing loans affect to the shareholders' value

ii.   To investigate the impact of loans to deposits ratio on banks' shareholders' value.

iii.   To determine whether banks' capital adequacy contributes to banks' shareholders' value in Sri Lanka.

When determining the extent to which non-performing loans affect to the shareholder's value, firstly it was found that when non-performing loan ratio increases by one unit the return on shares will be decreased by 25.968 units. And also there is a negative relationship between NPLR and ROS as justified by the literature. It is a moderate negative relationship between NPLR and ROS as per the regression output. Normally there should be a negative relationship between NPLR and ROS. When non-performing loans are getting increasing, it will definitely lead to decrease the profitability of the bank. As per the researcher Hosna et al., (2009) it has been found out that there is a negative relationship between NPLR and ROE which is used as the indicator of profitability. It is obvious that when the profitability is decreasing, it will result in decrease the shareholders' return.

Next objective is to see the effect of CAR on ROS. When capital adequacy ratio increases by one unit, return on shares will also be decreased by 9.085 units. It was found that there is not a significant relationship between CAR and ROS. As per the researchers Hosna et al., (2009) also there is an insignificant relationship between CAR and ROS.

Achieving the final objective, it was analysed that when Loans to deposits ratio increase by one unit, return on shares will get increased by 0.502 units. And also there is a significant positive relationship between Loans to Deposits ratio and ROS. This indicates that investors perceive that banks with high advances in their portfolio are more capable to generate value for them.

This result obtained from the regression analysis show that there is an effect of credit risk on shareholder value on 33.3% possibility of NPLR, Loans to deposits ratio and CAR in predicting the variance in ROS. Especially NPLR and Loans to deposits ratio appears to be adding the most weight to that than the CAR.

The results of the analysis state that NPLR has a negative and significant effect on ROS which is justified the practical scenarios of the banks. When increasing more and more non-performing loans in a bank, it will lead to increase the credit risk of the bank. Ultimately it will affect to decrease the shareholder's return.

In the second scenario, CAR and ROS has a negative relationship which reflects that when increasing the capital retained in the bank for the sake of minimizing the credit risk, it will lead to have opportunity cost for the bank. If the bank invested that amount somewhere else they could have earned a return for that amount. Thus increasing capital adequacy ratio, ultimately led to decrease the shareholders' return.

In the third scenario, loans to deposits ratio and ROS has positive and significant relationship. Granting loans are the major asset as well as the major income source of a bank. When granting more and more loans, even though it led to increase the credit risk, it will increase the interest income of the bank. Ultimately it will lead to increase the shareholder value through increasing of income of the bank.

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