DETERMINANTS OF FINANCIAL DISTRESS OF NEPALESE COMMERCIAL BANK

ASMITA KHANAL

Abstract

This study has examined the determinants of financial distress of Nepalese commercial bank. The descriptive and casual comparative research designs have been adopted for the study. The total population of this study was 26 commercial banks, where 16 commercial banks have taken as a sample through the simple random sampling. To measure the relationship between dependent and independent variable, panel regression model was applied. The regression results revealed that there is significant positive effect of liquidity ratio, reserve ratio, solvency ratio, return on assets, capital adequacy ratio on z-scores, except gross domestic product and Inflation which shows insignificant effect on z-scores. Among all the variables, liquidity and solvency ratio is found to be the most important factor for determining financial distress.

Key Words: ROA, Bank, Z-scores, Liquidity, Reserve, Solvency ratio, CAR and Inflation

1. INTRODUCTION

Financial stress is an early symptom of bankruptcy. When a firm faces temporary liquidity problems and difficulties that make it impossible to fulfill its obligations to creditors on time and in full, financial distress is often used to describe the company's financial condition in a disparaging way (Gordon, 1971). Every institution is said to be in financial problems when it is in default. Financial distress occurs when one party takes out a loan but is unable to pay it back with interest (Khurshid, 2013). Reducing financial suffering might increased financial performance (Meher & Getaneh, 2019). Alshatti (2015) studied the impact of liquidity management on the financial performance of Jordanian commercial banks. The capital adequacy ratio has no bearing on bank profitability, claims the report.

Sahut and Mili (2011) reported that management inefficiency had a major impact on the financial distress of the Nigerian banking system. The study rejected the impact of

assets quality, which was identified as a crucial element in bank difficulty and the collapse of the EU commercial banking system. According to Shahu (2019), financial distress is a state in which a company is experiencing operational, managerial, and financial issues. The cause of this financial difficulty could be anything, including these companies' falling or consistently poor profit margins, cash flows, financial leverage, or liquidity.

In light of the substantial development potential and trading volumes of the Nepalese capital market in 2010, it is crucial to assess these financial distress prediction models using data from Nepalese firms (Shahu, 2019).The goal of this study is to identify the factors that contribute to the financial difficulties of Nepalese commercial banks.

2. LITERATURE REVIEW

The words failure, insolvency, default, and bankruptcy have replaced the term "bank distress". Look at the factors that lead to financial hardship, which are crucial for both investors and financial institutions, suggest by Khurshid (2013). This study examines the factors that led non -financial companies listed on the Karachi Stock Exchange to experience financial trouble between 2003 and 2010. Based on the z-score model, financial hardship in enterprises was determined. There were identified determinants such as current ratio, profitability, efficiency, solvency, and leverage. The results demonstrate that efficiency is favorably correlated while current ratio, profitability, solvency, and leverage are adversely correlated.

Chancharat (2008) asserts that the more earnings are confirmed, the more liquid the funds become. Negative earnings have an impact on how the company runs, which causes financial turmoil. Three metrics can be used to determine profitability: return on equity (ROE), earnings before interest (EBIT) margin, and return on assets (ROA). According to Tesfamariam's (2014) research findings, profitability and financial difficulties are positively correlated. Lkpesu (2019) came to a similar conclusion, while studies by Thim, Choong, and Nee (2011) showed that profitability has a negative impact on financial distress. Similar to this, Campbell, Hilscher and Szilagyi (2011) found an adverse relationship between profitability and financial difficulty.

According to study by Baimwera and Murinki (2014), liquidity had little to no impact on business financial hardship. According to Fekadu (2016), companies with significant levels of liquidity are less likely to go through financial hardship. The

study also demonstrated that banks' financial performance suffered significantly from an increase in financial distress.

The liquidity has a considerable beneficial impact on the Z-score, which indicates a lower likelihood of firm distress (Shahu, 2019). Similar to this, profitability and size also have a positive and significant impact on z-scores, with higher z-scores indicating a lower likelihood of bankruptcy and higher profitability and larger sizes implying higher z-scores. Similar to this, a company with better profitability has a stronger financial position and a lower risk of bankruptcy and leverage & book to market ratio have little bearing on distress risk. The lack of significance may indicate that the change in debt and book to market ratio has no impact on the distress risk.

Liquidity ratio, capital adequacy ratio, credit to deposit ratio, and spread rate all have a positive impact on return on assets and z-score, according to research by Sah and Pradhan (2022). This study aims to investigate how financial stress affects the performance of Nepalese commercial banks. The study's secondary data base includes 216 observations from 27 commercial banks during the years of 2012 and 2020. On the other hand, loan loss provision, leverage ratio, and credit risk ratio have a negative impact on return on assets and z-score. This analysis found that the loan loss provision ratio, followed by the leverage ratio and credit risk, is the factor that most strongly predicts changes in the return on assets. Similar to this, the study found that the capital adequacy ratio, followed by the credit to deposit ratio and the liquidity ratio, is the key factor in determining the z-score for Nepalese commercial banks.

3. RESEARCH METHODOLOGY

The current study examines determinants of financial distress of commercial bank in Nepal, measured through the Altman Z-score, where liquidity ratio, reserve ratio, return on assets, solvency ratio, gross domestic product, Inflation and capital adequacy ratio are independent variables.

The research is based on quantitative analysis in which the data is collected from secondary sources. The total population of this study was 26 commercial banks, where data was collected from 16 banks of 10 years period ranging from fiscal year 2012 to 2021. Sample was chosen through simple random sampling (lottery system). This study follows descriptive research design. To measure the relationship between dependent and independent variable, panel regression model was applied.

Research Framework

Independent Variables   Dependent Variables
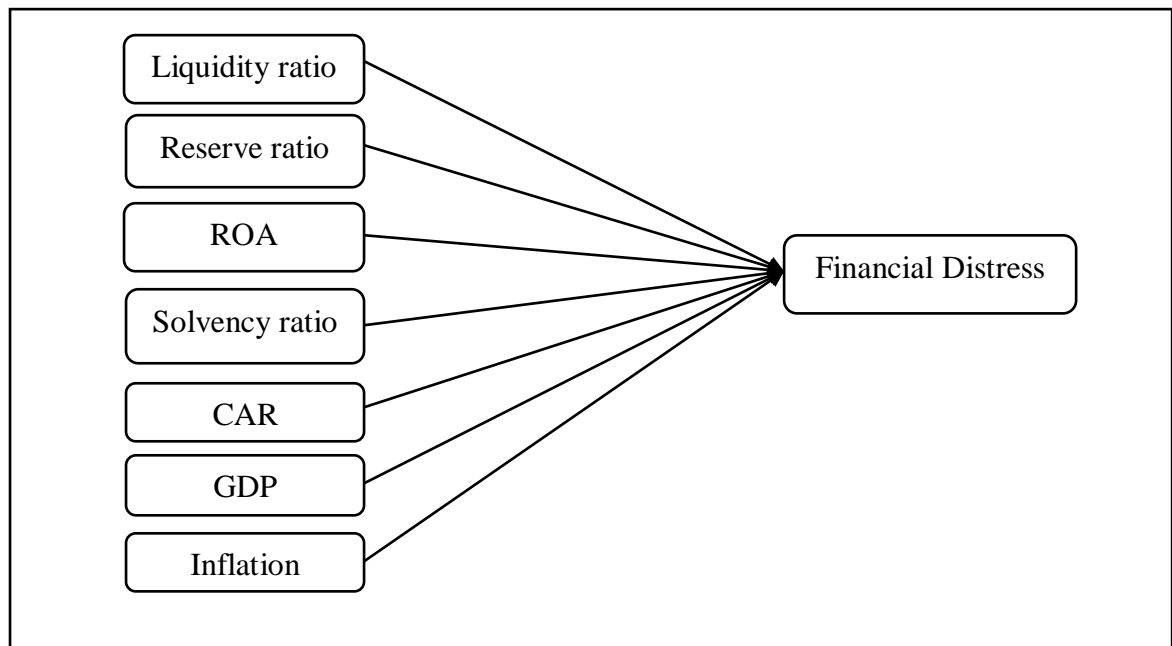
Note: Research Framework

The model

$$Z = \beta_0 + \beta_1 LR + \beta_{02} RR + \beta_3 ROA + \beta_4 SR + \beta_5 CAR + \beta_6 GDP + \beta_7 I + \varepsilon \dots \quad (1)$$

Where,

LR= Liquidity ratio (Working Capital/ Total Assets)

RR = Reserve ratio (Reserve maintained with Central bank/ Bank deposit)

ROA = Return on assets (Net income/ Average total assets)

SR = Solvency ratio (Total debt/ Total shareholder's equity)

CAR = Capital Adequacy ratio

GDP = Gross Domestic Product

I = Inflation

β_0 = Constant Term

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 \& \beta_7$ = Intercept of respective independent variables

ε= Error term

Financial Distress

Dependent variable in this study is the Financial Distress, Financial Distress is a condition when the company is experiencing financial difficulties, and the dependent variable is influenced by four independent variables. To measure the dependent variable, Altman Z-score has been using.

Liquidity Ratio

The term "liquidity" describes a bank's capacity to fulfill both its short-term commitments and its own lending commitments. Low liquidity endangers the bank's capacity to remain solvent, whereas high liquidity endangers the bank's ability to make a profit. Liquidity and profitability must therefore be traded off (Gautam, 2020).

Earning Performance

Profitability or earning power maintains a financial institution's good health. Different metrics of profitability exist. Commonly used profitability metrics include return on assets, return on equity, interest-spread ratio, earnings-spread ratio, gross margin, operating profit margin, and net profit margin (Hamal & Adhikari, 2020).

Solvency Ratio

Research conducted by Negoro & Wakan (2022), where the solvency of the company does not affect the financial distress of the company. However, this study is not in line with the result of Trung, Thanh, Phuong, & Lan (2022) which state that an increase in solvency increases the risk of financial distress.

Capital Adequacy Ratio (CAR)

How successfully financial institutions can respond to shocks to their balance sheets is ultimately determined by their capital adequacy ratio (Hamal & Adhikari, 2020). It safeguards the bank from going bankrupt and upholds the depositors' faith in the institution. While a weak capital base results in too many faults, sound capital allows the bank to optimize profits (Kleff & Weber, 2008).

GDP

Result from the study by Inekwe, Jin and Valenzuela (2018) show that financial distress is strongly related to the growth of US GDP and of its investments and exports components. The results reveal the importance of firms and their investment decisions on macroeconomic outcomes. They also highlight the importance of financial distress prediction models in understanding mainstream macro-economic outcomes.

Inflation

According to Rohiman and Damayanti (2019), inflation can occur due to pressure from the supply side (cost push inflation), from the supply side (demand pull inflation), and from inflation expectations. Inflation will have an effect on economic activity, the prosperity of individuals and society. High inflation results in weakening economic development and can reduce the real income of people with fixed income. This is supported by previous research conducted by Nikodemus and Oktasari (2021), which shows that inflation has a negative effect on financial distress.

Hypothesis

H_1 : There is significant effect of liquidity ratio on financial distress.

H_2 : There is significant effect of reserve ratio on financial distress.

H_3 : There is significant effect of ROA on financial distress.

H_4 : There is significant effect of CAR on financial distress.

H_5 : There is significant effect of solvency ratio on financial distress.

H_6 : There is significant effect of GDP ratio on financial distress.

H_7 : There is significant effect of inflation ratio on financial distress.

4. PRESENTATION AND ANALYSIS OF DATA

Descriptive Statistics

Descriptive statistics of selected variables are analyzed in this part. This section basically deals with the data behavior towards the central tendency. The descriptive

statistics of the dependent and independent variables are summarized in the following table:

Table 1: *Descriptive data summary of variables*

	Z	LR	RR	ROA	SR	CAR	I	GDP
Mean	4.1341	3.1791	2.3853	1.6364	3.6503	11.75	6.5920	4.3805
Median	4.0989	3.1698	1.6614	1.5890	3.61124	11.19	6.7200	4.4600
Maximum	5.3824	3.8931	7.4394	3.5713	5.5087	27.99	9.4600	8.9800
Minimum	3.4671	2.7023	0.1701	0.0395	1.6945	7.68	3.6300	-2.370
Std.Dev	0.3225	0.2200	1.7312	0.5628	0.6019	2.7716	2.2131	3.1889
Observations	160	160	160	160	160	160	160	160

Source: Author's calculation from E views 12 SV

The table shows the mean, median, minimum, maximum value with standard deviation. Average liquidity ranges from minimum 2.702371% to maximum 3.893167% leading to the average 3.1791%. RR ranges from minimum 0.170146% to maximum 7.43944% leading to the average 2.3853%. Similarly, ROA ranges from minimum 0.03955% to maximum 3.571322% with an average 1.6364%. Solvency ratio ranges from minimum 1.6945% to maximum 5.50877%, the average value is 3.6503%. CAR ranges from minimum 7.68% to maximum 27.99%, the average value is 11.74%. Likewise, GDP ranges from minimum -2.37% to maximum 8.98% leading to the average 4.380%. Inflation ranges from minimum 3.63% to maximum 9.46%, the average value 6.59%.Similarly, Z-score (Z) ranges from minimum 3.4671% to maximum 5.3824% with mean 4.134%. Similarly, mean value of z-score shows that on an average z-score is> 2.99 which means overall financial institutions are in good position and safe from financial problem.

Correlation Coefficient Analysis

In this section, we present the correlation coefficients between the four accounting ratio and z-score and also correlation between explanatory variables to show the direction and the strength of the relationship between any pair of explanatory variables as well as the explained variables by using correlation matrix.

Table 2: *Correlation Matrix of Variables*

Correlation Probability	Z	LR	RR	ROA	SR	CAR	GDP	I
LGZ	1.00000							

LGLR	0.63975	1.00000						
	(0.000)	------						
R	0.54109	0.30675	1.0000					
	(0.000)	(0.0001)	--------					
ROA	0.53835	0.11150	0.53213	1.0000				
	(0.000)	(0.1604)	(0.000)	------				
LGSOL	0.907934	0.36511	0.34364	0.4684	1.0000			
	(0.000)	(0.000)	(0.000)	(0.000)	------			
CAR	0.09878	0.02952	-0.0019	0.17123	0.0680	1.0000		
	(0.2140)	(0.7109)	(0.9807)	(0.0304)	(0.3924)	-------		
GDP	0.05386	-0.1099	0.0882	0.2048	0.09955	0.1907	1.000	
	(0.4987)	(0.1664)	(0.2671)	(0.0094)	(0.2104)	(0.015)	-----	
Inflation	0.26811	0.4616	0.2440	-0.0329	0.10625	-0.349	-0.30	1.000
	(0.0006)	(0.000)	(0.0019)	(0.6795)	(0.1811)	(0.000)	(0.00)	-------

Source: Author's calculation from E-views 12 SV

Above table shows the Pearson correlation analysis between Altman's z-score and four accounting variables. There is positive and insignificant relationship between capital adequacy ratio, GDP and z-score. Similarly, relation between liquidity ratio and z-score are also positive and significant. Likewise, return on assets also has positive and significant relation with z-score. It means increase in return on assets leads to increase in z-score value which help to reduce the possibility of bankruptcy. Reserve ratio, Inflation and solvency ratio also has positive and significant relation with z-score. Liquidity ratio, reserve ratio, roa, solvency ratio is similar to the findings of Darmawan and Supriyanto (2018).

Lagrange Multiplier (LM Test)

First, common effect regression is run. Then, Lagrange multiplier test is conducted,

Breusch-Pagan (BP) test were conducted to find out which method is appropriate for the study.

Table 3: *Breusch-Pagan Langrange Multiplier Test*

	Cross Section	Time	Both
Breusch Pagan	0.289283	25.99769	26.28697
Prob.	(0.5907)	(0.0000)	(0.0000)

Source: E-views 12 SV Result

Breusch-Pagan Langrange Multiplier test is used to select a suitable model for Panel data analysis. The null hypothesis for Breusch Pagan test is that Pool OLS is better than random and fixed effect model. Here we can see that P-value is 0.5907 which is greater than 0.05 due to which null hypothesis is accepted. It means that Pooled OLS method is appropriate for this study.

Regression Analysis

The purpose of using the regression model is to estimate the effect of independent variable on the dependent variable.

The regression result is estimated using regression equation:

$$Z = \beta_0 + \beta_1 LR + \beta_{02} RR + \beta_3 ROA + \beta_4 SR + \beta_5 CAR + \beta_6 GDP + \beta_7 I + \varepsilon \dots \quad (1)$$

Table 4: *Regression Result (Z dependent variable)*

Variable	Coefficients	Std.error	t-statistic	Prob
LR	0.464249	0.024376	19.04497	0.0000
RR	0.028052	0.003134	8.951583	0.0000
ROA	0.054960	0.010077	5.451583	0.0000
SR	0.370783	0.008640	42.91319	0.0000
CAR	0.004308	0.001718	2.507695	0.0132
GDP	-0.001318	0.001447	-0.911275	0.3636
I	0.003471	0.002498	1.389346	0.1668
C (Constant)	1.080193	0.067719	15.95101	0.000
Model Summary				
R- squared	0.973238	F-statistic	789.6660	
Adjusted R-squared	0.972005	Prob	0.0000	

Source: Author's calculation from E-views 12 SV

Above table shows regression results of regression equation, where the beta coefficients of all independent variables except GDP and Inflation are positive and significant effect with probability value 0.0000 which is less than 0.05, whereas GDP and Inflation shows insignificant effect with z-score with a value 0.3636 and 0.1668 respectively, which is greater than 0.05. The F-value the model is 789.660 with probability value 0.0000 which is less than 0.05, which shows that overall model is statistically significant. Liquidity ratio and solvency ratio has the highest positive beta coefficient which, implies that if there is 1% change in the liquidity and solvency ratio, z-score will be increased by 0.464% and 0.370% respectively.

Similarly, coefficient of determination (R^2) is 97.32%, which means 97.32% of variation in dependent variables would explain by given independent variables and rest is explained by other variables.

Based on findings, the following regression model has been developed:

$$Z = 1.08 + 0.4624LR + 0.028RR + 0.054ROA + 0.370SR + 0.004CAR - 0.0013GDP + 0.0034I.$$

5. SUMMARY AND CONCLUSION

This study reveals, all the independent variable has positive and significant effect with z-score, except GDP and Inflation, which shows the insignificant effect with z-score. Liquidity and solvency ratio was the major factor that determines the financial distress because they had the highest beta coefficient. On the other hand, GDP being the least factor that determine the financial distress. Liquidity ratio, reserve ratio, roa, solvency ratio and car need to focus in order to reduce financial distress.

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