Financial Health of Selected Private Sector Banks using Altman Z-Score -Comparative Analysis

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ABSTRACT

Under service sector, along with public sector banks, private sector banks are also playing a significant role in Indian economy. Against the background of many scams and financial crisis recent years, there is an immense need to analyze the financial soundness of the leading private sector banks also in order to measure the solvency of the private sector banks .This study aims to examine the financial solvency and stability of four selected private sector banks Altman Z score during the period 2011-12 to 2015-16 .The results concluded that all four selected banks are in sound health and far away from bankruptcy. Further it is also clear from the study that the Altman Z score value of all banks considered for this study are in Safe Zone since the Z score is greater than 2.6. Federal Bank occupied the top position with 9.084,whereas City Union Bank(8.946) , Axis Bank (7.924) and HDFC Bank(7.48) have represented the second, third and fourth positions in their credit worthiness.

Keywords

Private Sector Banks, Altman's Z Score, Working Capital, Creditworthiness Total Assets, Bankruptcy, Financial Health

INTRODUCTION

The private sector banks play a Parallel role to the public sector banks in the Indian economy and indirectly they are motivating the public sector banks by offering a healthy competition to them. The private sector banks are offering high degree of professional management, creating healthy competition, encouraging Foreign Investment and helping to access foreign capital markets and to develop innovation and achieve expertise. The private sector banks are providing a healthy competition on general efficiency levels in the banking system. The private sector banks are always trying to innovate new products avenues (new schemes, services, etc.) and make the industries to achieve expertise in their respective fields by offering quality service and guidance. Therefore they occupied an important role in Indian banking sector.

Academic researchers from all over the world have been developing a gigantic number of corporate failure prediction models, based on various types of modelling techniques. Financial failure may take the form of bankruptcy or insolvency. Bankruptcy refers to a condition where the total liabilities exceed the fair value of assets. Financial statements are normally used to gauge the performance of the firm and its management. The financial statements commonly used are profit and loss statement, balance sheet and cash flow statements. From the financial statements, various ratios can be calculated to assess the current performance and future prospects of the concerned firm

The Altman Z-score is the output of a credit-strength test that gauges a publicly traded manufacturing company's likelihood of bankruptcy. This Z score value is useful when these banks demand loans from the RBI or any other funding agency. The Altman Z score is based on five financial ratios that can be calculated from data found on a company's annual 10K report. It uses profitability, leverage, liquidity, solvency and activity to predict whether a company has a high degree of probability of being insolvency.

Since1985 onwards, the Z-scores gained wide acceptance by auditors, management accountants, courts, and database systems used for loan evaluation at global level. This formula has been used in a variety of contexts and countries, although it was designed originally for publicly held manufacturing companies with assets of more than $1 million. Later variations by Altman were designed to be applicable to privately held companies and non-manufacturing companies.

Z score for private companies or non-manufacturing industries is estimated as follows:

Z-SCORE BANKRUPTCY MODEL

$Z = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$

X_1= Working Capital / Total Assets

X_2 = Retained earnings / Total Assets

X_3 = Earnings before interest and taxes / Total assets

X_4 = Book value of equity / Total Liabilities

Zones of discriminations based on score values

Z> 2.6 – The Company is considered in SAFE Zone

1.1 <Z< 2.6 – GREY Zone

Z< 1.1 – DISTRESS Zone

REVIEW OF LITERATURE

In this context, some studies are briefly reviewed as follows:

V. Sundararajanetal. (2002) in their report exclusively in Chapter III focuses on the definition and interpretation of indicators of the current health of the banking system, primarily derived by aggregating indicators of the health of individual banks. Indicators of specific sectors and markets that can have an impact on financial system stability specifically, nonbank financial intermediaries (NBFIs), the corporate sector, households, and real estate markets are discussed by the authors in Chapter IV. Chapter V looks at stress testing as a key component of macro prudential analysis.

Majundar and Rehman (2011) made an attempt to analyse the financial performance of selected pharmaceutical companies in Bangladesh using the financial ratios and Altman's Z score model. This study concluded that the profitability, liquidity and solvency position of the pharmaceuticals are not in sound position and it is also observed that most of the pharmaceutical companies have lower level position of bankruptcy.

Maheswara Reddy(2011)attempted in his study to predict the financial health of two selected pharma companies, Aurobindo Datong bio pharmacy limited and Ranbaxy laboratories limited for a period of five years i.e., from 2005-06 to 2009-10 using modified Altman's model. The findings of the study concluded that the overall financial health of both companies was good.

Dheenadhyalan (2008) applied Zscore to predict the corporate failure of steel authority of India Limited (SAIL).The estimated value of Z score of SAIL indicated a rising trend during the entire study period and concluded that the financial health of the company was satisfactory.

Khannadhasan (2007) estimated the financial health of Wendt India Co limited by using the Z score model and concluded that the overall financial health of the company was good.

Roli Pradhan (2014) explains that for both the lenders and investors whose returns are based on solvency estimates. The terms of credit have gone a U turn from the traditional times to the modern scenario today. This study estimated the Z score value for three public sector banks namely OBC, Punjab National Bank and SBI during the period 2000-09. The usage of back propagation neural network is to forecast the internal parameters of Z score and then use these internal parameters to forecast the Z score value up to 2020. The analysis concludes that the Z score value of Oriental Bank of Commerce is the highest amongst the mentioned three banks. The priority lending must be done in the order OBC, PNB and then SBI. It is also clear that the status of banks has improved from 2011 onwards and the scenario has been progressive and stable.

Parul Chotalia (2014) financial solvency and stability are paramount substance for profit motive manufacturing and service sector the banking sector as service sector organisations plays a crucial role in development of the economy against the background of financial crisis and scams. This study makes an attempt to examine the financial health of selected six private sector banks during 2998 march to 2012 march using Altman Z score model. The findings of the study conclude that the private sector banks are in grey zone as per the Z score criteria and it also warns that there is possibility of financial distress in some private sector banks.

R Shanmugam and Mahalakshmi (2015) attempted to determine the extent to which Altman's Z-Score model well predicts corporate sickness among Indian companies. The study has taken a sample of 30 companies, which were declared sick by Board for Industrial and Financial Reconstruction and 30 non-sick companies in India during the period 2007 to 2011. The results of the study concluded that Altman's Z score model does not fully predicted the sickness among Indian companies.

Rohini Sajjan (2016) made an attempt to apply the Altman's Z-Score Model to understand the likelihood of Bankruptcy of selected firms for past 5 years from 2011 to 2015 which are listed in BSE & NSE. Companies are selected from manufacturing & non-manufacturing sector for this study. The study concludes that none of the companies completely belongs to Safe Zone except for few years. It also concludes that Most of the firms considered for this study are in Distress Zone.

All the above studies are made to estimate the financial soundness of public companies or manufacturing industries and some of them are focussed on private companies or non-manufacturing industries. However from the above illustration, it is evident that the studies on private sector banks have been made till the year 2012.

Against this backdrop, the present study is focussed on the following objectives:

- To analyse the financial performance of the selected private sector banks,
- To compare the financial stability and profitability of the selected banks and to predict the financial health and soundness of selected private sector banks

RESEARCH METHODOLOGY

The present study has taken the four private sector banks namely, City Union Bank (CUB), Federal Bank, Axis Bank and HDFC Bank. The period of study under consideration is five years i.e., from 2011-12 to 2015-16.The basic data for this study is drawn from the annual reports of the selected banks from 2011-12 to 2015-16 and two websites viz., www.investopedia.com and www.encyclopediaofcredit.com.

This study has applied Altman Zscore model for all the years considered for this study and the average score of the four private sector banks during the study period.

DATA ANALYSIS

The data analysis and interpretation of results are discussed below.

Table-1-Working Capital/Total Assets (Rs in crores) - X_1

Bank	**2011-12**	**2012-13**	**2013-14**	**2014-15**	**2015-16**	**Average**
City Union Bank	0.972	0.97	0.967	0.959	0.963	0.9662
Federal Bank	0.971	0.972	0.97	0.968	0.968	0.9698
Axis Bank	0.962	0.96	0.956	0.961	0.965	0.9608
HDFC Bank	0.882	0.906	0.91	0.94	0.994	0.9264

X_1= Working Capital /Total Assets

Table 1 shows that the liquidity position to total capitalization of four selected banks considered for this study. It is clear that the average working capital to total assets is high in Federal Bank and City Union Bank out of all selected banks and low in HDFC bank.

Table-2- Retained Earning/Total Assets (Rs in crores) - X_2

Bank	2011-12	2012-13	2013-14	2014-15	2015-16	Average
City Union Bank	0.066	0.069	0.079	0.095	0.096	0.081
Federal Bank	0.069	0.064	0.062	0.078	0.077	0.07
Axis Bank	0.078	0.096	0.098	0.095	0.1	0.0934
HDFC Bank	0.087	0.089	0.087	0.104	0.102	0.0938

X_2= Retained Earnings / Total Assets

Table 2 represents how much portion of total assets has been financed by retained earnings the higher the ratio, the greater the financial stability of the banks at times of low profitability period. Besides it indicates that the banks have been utilizing its own earnings as cheaper source of finance rather than debt finance. It is clear from Table 2 that only Federal Bank indicated the lowest ratio on average among the selected banks during the period under consideration. However HDFC Bank, Axis Bank and City Union Bank have shown higher ratios which represents the greater financial stability and the stable growth of the selected banks during the study period.

Table-3- Earning before Interest and Taxes /Total Assets (Rs in crores) - X_3

Bank	2011-12	2012-13	2013-14	2014-15	2015-16	Average
City Union Bank	0.012	0.011	0.011	0.01	0.014	0.0116
Federal Bank	0.01	0.008	0.005	0.007	0.009	0.0078
Axis Bank	0.007	0.088	0.01	0.011	0.013	0.0258
HDFC Bank	1.39	1.19	0.98	0.85	0.71	1.024

X_3= EBIT/ Total Assets

Table 3 represents the ratios of EBIT/Total Assets of the banks considered for this study. This ratio is considered as the true indicator since its represents the banks effective usage of its assets earnings before contractual obligations are met. If the banks' earnings in proportion to its assets is higher, its represents the more effective usage of its assets. From Table 3 it is clear that EBIT to Total Assets ratio of HDFC Bank have generated high earnings in proportion to assets, whereas the ratios of Axis Bank, Federal Bank, City Union Bank are very low which represents that these banks have low earnings in proportion to its assets. However the only HDFC bank's ratio shows satisfactory performance.

Table-4-Market Value of Equity/Book Value of Debt (Rs. in crores) - X_4

Bank	2011-12	2012-13	2013-14	2014-15	2015-16	Average
City union bank	2.225	2.346	2.171	2.14	1.914	2.159
Federal Bank	2.85	2.295	2.081	2.29	2.115	2.3262
Axis bank	1.448	1.374	1.216	0.15	0.907	1.019
HDFC Bank	1.39	1.19	0.98	0.85	0.71	1.024

X_4 = Market Value of Equity/ Book Value of Debt

This ratio represents the long term financial soundness of the banks having 1:1 equity debt mix is considered as quite good. Whereas excessive debt represents the danger of insolvency. Table 4 represents that Axis Bank and HDFC bank have shown almost 1:1 mix therefore these banks have shown satisfactory performance. However Federal Bank and City Union Bank have shown very significant performance.

Altman Z Score of the selected private sector banks and their comparative status during the study period.

Table-5 - Z Score and Ranks of Selected Banks during the study period

Bank	2011-12	R	2012- 13	R	2013- 14	R	2014- 15	R	2015- 16	R	Average	R
CUB	9.01	2	9.12	1	8.95	1	8.9	2	8.73	2	8.946	2
Federal Bank	9.66	1	9.05	2	8.78	2	9.1	1	8.88	1	9.084	1
Axis Bank	8.13	3	8.11	3	7.94	3	7.8	3	7.69	3	7.924	3
HDFC Bank	7.6	4	7.56	4	7.37	4	7.5	4	7.38	4	7.48	4

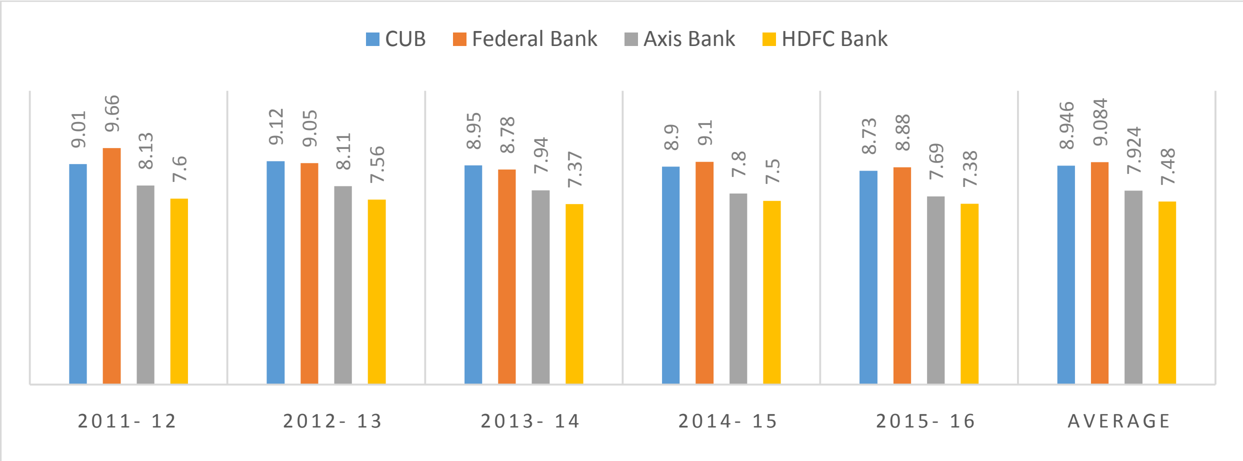

Figure1-Z Score of selected private sector Banks-Comparative Scenario

Z – Score Value of the Selected Banks

The Z score value of all banks considered for this study is represented in table 5 and Figure1 using the following formulae:

Z = 6.56 $\mathbf{X_1}$+3.26$\mathbf{X_2}$+6.72 $\mathbf{X_3}$+1.05 $\mathbf{X_4}$, Z score values are estimated

As shown in Table 5 the Z score value of Federal Bank occupied the top position with 9.084 but City union bank(8.946) Axis Bank (7.924) and HDFC Bank 7.48) have represented the second third and fourth positions in their credit worthiness.

Thus the results of the Altman Z Score model for all the selected private sector banks considered for this study are higher than 2.6 therefore it can be inferred that all the banks are in Safe Zone based on the estimated score values, however the financial health of is HDFC bank is in the least position compared to other three banks during the study period.

CONCLUSION

It can be concluded that all four private sector banks considered for this study viz., City Union Bank, Federal Bank, Axis Bank and HDFC bank are showing sound financial health since the Z score values are more than 2.6, therefore it is concluded that all these banks are in Safe Zone.

In spite of the good score values, the investors and the depositors should not only relay on this Z score model. In the year of rapidly changing competitive environment, many other factors like political, economic, social, technological, business, international and legal environments also influence the financial performance of the banks. In spite of these limitations Z score is regarded as a useful tool to provide a quick analysis of a specified bank compared to its competitors.

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