Research Paper Management

# Testing of Altman's Z - Score model, a Case Study of Dunlop India Ltd.

* Partha Ghosh

* Faculty, Department of Business Administration, George College of Management and Science, Kolkata

ABSTRACT

*Companies use financial ratios, especially to assess and evaluate the creditworthiness and risk of a firm. Z- Score is a good time tested method to assess the bankruptcy or insolvency risk of a firm. This paper attempts to study how much Z-score is viable in bankruptcy of the said company. The Altman's Z score model has been employed to investigate the risk of financial distress of Dunlop India Ltd., from 2007-08 to 2011-12.*

Keywords : Bankruptcy, Financial Distress, Z-Score, Creditworthiness

**INTRODUCTION:**

Financial distress is a tight cash situation in which a business cannot pay the owed amounts on the due date. When a firm is under financial distress, the situation sharply reduces its market value, and large customers may cancel their orders. The symptom of financial distress include erosion on net worth, negative operating results, factory layoff, dividend reductions and plummeting share prices. If prolonged, this situation can force the owning entity into bankruptcy or forced liquidation. It is compounded by the fact that bank and other financial institutions refuse to lend to those in serious distress. The chance of financial distress increases when a firm has high fixed costs and illiquid assets that are sensitive to economic downturns. Financial distress may ultimately force a company to insolvency. The present study focuses on the financial health of Dunlop India Ltd., which has directed to be wound up as per Calcutta high court order dated January 31, 2013.

**COMPANY SNAPSHOT:**

In the year 1926 Dunlop incorporated its business in India as Dunlop Rubber Company (India) Limited with an authorised capital of Rs.50 lakhs. In the year 1936 the company came up with their first tyre manufacturing plant in Asia on a 239 acre plot of land at Sahaganj, near Calcutta. The plant was manufacturing 300 varieties of tyres ranging from cycles to aircrafts. In the year of 2005 the company had confronted various problems and suspended operations at the company's Sahaganj factory. Then Ruia Group came into the picture and took control of the company. At this point the company had liabilities in excess of Rs.650Crores. A lock-out at the Sahaganj plant came into effect on October 8, 2011due to vandalism carried out by some workers and outside miscreants. On 31st December 2013 Calcutta high court order the ailing company to be wound up.

**OBJECTIVES OF THE STUDY:**

The study is being done with the following objectives:-

1) To examine the five key performance ratios of the company over the study period.

2) To find out the acceptance level of such ratios affecting on financial health of the company.

3) To measure the financial health of the company using Altman's Z-score model

**EXPERIMENTAL DETAILS:**

In view of the objective of the above study, exploratory research design is ideal in dealing with such situation so as to analyses and interpret the existing and available information through usage of secondary data. The secondary data consists of the annual reports of Dunlop India Ltd., ranging for the last 5 years (from 2007-08 to 2011-12). Various published books; various other reports like news papers and websites were also used for the purpose of study. The data collected for the study was analyzed logically with the help of following financial tools:

(i) Working Capital to Total Assets
(ii) Retained Earnings to Total Assets
(iii) EBIT to Total Assets
(iv) Market Value of Equity to Total Debts and
(v) Sales to Total Assets.

**MODEL APPLIED:**

Edward Altman developed a multivariate model for the purpose of predicting corporate failure by using multiple discriminate analyses. According to his model, failure firm means those firms which were legally bankrupt. Altman considers the five key performance ratios into single score which gives a petty good snapshot of corporate financial health, which has been applied in present study.

The final discriminate function is as follows:

$$Z = 1.2X1 + 1.4X2 + 3.3X3 + 0.66X4 + 0.999X5$$

Where,

$X_1$ = working capital/total assets, (stand for liquidity measure,)

$X_2$ = retained earnings/total assets, (stand for measure of reinvested earning)

$X_3$ = earnings before interest and taxes/total assets, (stand for profitability measure)

$X_4$ = market value equity/book value of total liabilities, (stand for Leverage measure)

$X_5$ = sales/total assets, (stand for Sales generating ability of the firm); and

Z = overall index.

Implications of Z –Score Value:

(i) Z < 1.81: indicates poor financial performance and the firm is considered into bankrupt class or sick class.
(ii) 1.81 > Z< 2.99: indicates grey area which is consisting of both bankrupt and non bankrupt firms.
(iii) Z > 2.99: indicates good financial performance and the firm is considered into non bankrupt or non sick class.

**ANALYSIS AND DISCUSSION:**
Solvency refers to the capacity of a firm to pay-off its long-term debts and accomplish long-term expansion and growth. Briefly stated, measures of solvency assess what would happen if all assets were sold and converted into cash for payment of obligations. It is not only useful just to calculate whether a company is solvent or insolvent but also the ability to anticipate or predict the prospect of future insolvency, before the worsening financial difficulties and the company becomes insolvent.

Financial distress arises when a firm is not able to meet its obligations. The firm's continuous failure to make payments to debt-holders may ultimately force a firm to insolvency. A number of financial ratios are calculated to predict bankruptcy. Five ratios have been computed in this respect and are shown in following Tables 1 to 5.

**● $X_1$, Liquidity measure (Working Capital/Total Assets):**
The working capital to total assets ratio appeared to be the best indicators of corporate sickness. It is a measure of the net liquid assets of the firm relative to the total capitalization. Working capital is defined as the difference between current assets and current liabilities. Liquidity and size characteristics are explicitly considered. Ordinarily, a firm experiencing consistent operating losses will have shrinking current assets in relation to total assets.

| Table -1 | Ratio of Working Capital and Total Assets | | |
|---|---|---|---|
| Year (1) | Working Capital (2) (Rs. in Crore ) | Total Assets (3) (Rs. in Crore ) | Ratio of WC to TA (4) = (2/3) |
| 2007-08 | 46.64 | 1,464.11 | 0.032 |
| 2008-09 | 38.95 | 1,312.47 | 0.030 |
| 2009-10 | 102.27 | 1,379.62 | 0.074 |
| 2010-11 | 86.48 | 1,417.38 | 0.061 |
| 2011-12 | 72.44 | 1,381.16 | 0.052 |
| Source: Compiled from the Annual Reports of Dunlop India Ltd. | | | |

**● $X_2$, Measure of re-invested earning (Retained Earnings/ Total Assets):**
Retained Earnings is the account which reports the total amount of reinvested earnings of a firm over its entire life. The account is also referred to as earned surplus. The age of a firm is implicitly considered in this ratio. For example, a relatively young firm will probably show a low RE/TA ratio because it has not had time to build up its cumulative profits. In addition, the RE/TA ratio measures the leverage of a firm. Those firms with high RE, relative to TA, have financed their assets through retention of profits and have not utilized as much debt.

| Table -2 | Ratio of Retained Earnings and Total Assets | | |
|---|---|---|---|
| Year (1) | Retained Earnings (2) (Rs. in Crore ) | Total Assets (3) (Rs. in Crore ) | Ratio of RE to TA (4) = (2/3) |
| 2007-08 | 1240.75 | 1,464.11 | 0.847 |
| 2008-09 | 1068.47 | 1,312.47 | 0.814 |
| 2009-10 | 1063.04 | 1,379.62 | 0.771 |
| 2010-11 | 1026.38 | 1,417.38 | 0.724 |
| 2011-12 | 976.95 | 1,381.16 | 0.707 |
| Source: Compiled from the Annual Reports of Dunlop India Ltd. | | | |

**FINDINGS:**
(1) The content of Working Capital to Total Assets had been low and varied between a minimum of 0.30 and a maximum of 0.74.
(2) The proportion of Retained Earnings mobilization to total assets presented decrease in trend during the period of study. The highest reinvested earnings were recorded during 2007-08 at 0.847.
(3) There is evidence that the content of EBIT to Total Assets stood negative during 2011-12, indicating the inability of the company to meet interest payment.
(4) The proportion of Market value of Equity to Total Liability recorded a mixed trend during the period of study and varied from 0.168 to 1.364.
(5) The Sales content to Total Assets presented stability except 2007-08 at 0.082 and 2011-12 at 0.014. As per Altman observation, a firm which has a very high turnover ratio can never fall sick.
(6) It can be seen from the table-7 that the value of Z-score had been less than1.81 during the initial years, i.e., 2007-08 and 2008-09. However, the Z-score increased to 2.205 in 2009-10 and the value kept going down and reached to 1.877 in the year 2010-11 and was 1.173 in the year 2011-12. This is an indication of poor financial performance.

**CONCLUTION:**
The key performance ratios of the company are not satisfactory for past few years. As a result the Z score of the firm was not falling in healthy zone during the study period. However during 2009-10 the company undertook necessary steps to come out from bankruptcy zone to grey area. Further from 2010-11 the Z score moving towards bankruptcy zone which may prove the company is not managing to get good returns out of the assets pool. Thus, in view of Z-score result the liquidation of the company may not be an unexpected outcome.

**REFERENCES**

1. Annual reports of Dunlop India Limited from 2007-08 to 2011-12. 2. Altman, Edward (1968). "Financial Ratios, Discriminate Analysis and the Prediction of Corporate Bankruptcy." The journal of Finance, Vol.23, No.4, pp. 589-609. 3. Gilson, Stuart C. (1989). "Management Turnover and Financial Distress." Journal of Financial Economics, Volume 25, No.6, pp.241-262. 4. http://www.indiainfoline.com/Markets/Company/Background/Stock-History/Dunlop-India- Ltd/509130 [Assessed on March 23, 2013] 5. http://economictimes.indiatimes.com/dunlop-india-ltd/profitandlose/companyid-13812.cms [Accessed on March 24, 2013] 6. http://www.moneycontrol.com/financials/dunlopindia/balance-sheet/DI15 [Accessed on March 21, 2013]. 7. Kapil S. (2011). "Financial Management." Dorling Kindersley (India) Pvt. Ltd., pp.120-136. 8. Kishore R.M. (2009). "Financial Management" Taxmann Publication (P) Ltd., pp.62-92. 9. Kulkarni M.V (2010). "Research methodology-illustration and cases" Everest Publishing House, first edition,pp.86-92. 10. Pandey I. M (2011). "Financial Management" Vikash Publishing House Pvt. Ltd., pp.581-610. 11. Reddy, C.V (2012). "Analysis of Liquidity, Profitability, Risk and Financial Distress: A case Study of Dr.Reddy's Laboratories Ltd." Indian Journal of Finance, Vol.6, No.12, pp.5-17. 12. Sharma V (2011). "Liquidity, Risk and Profitability Analysis: A Case Study of Maruti India Ltd." Search And Research, Volume-II, No.3, pp.80-84.