International Journal of Business and Management Invention (IJBMI)
ISSN (Online): 2319 – 8028, ISSN (Print): 2319 – 801X
www.ijbmi.org || Volume 8 Issue 04 Series. I || April 2019 || PP 30-38

Empirical Analysis of Financial Distress of Selected Public Sector Undertakings in India

Richard Paul.V[1]., and Kalyani. B[2]
Corresponding Author: Richard Paul.V

ABSTRACT: *The poor performance of Public Sector Enterprises (PSEs) in the 1980smade reform increasingly urgent in the context of the broader strategyof liberalization of the economy to deal with the perceived weaknessesof India's development strategy in general and PSEs in particular.As a result India's GDP growth remained low averaging only 3.5 % between 1950 and 1980, in the first 3 decades after independence with per capita GDP growing at only 1.3% on average.The present study is an attempt to determine the financially distress in select public sector undertakings in India.The analyses performed were based on a group of 15 financial ratios observed from a sample of 15 companies operating in select public sector undertakings in India. The secondary data collected from various journals, reports and websites. The data analysis applies with the help of SPSS. The identification of the failed companies according of company and their total debt ratio is an essential pre-requisite for the selection of non-failed companies. Besides the company are classified 7 distress companies and 8 non-distress companies based on the total debt ratio. The present paper is to apply the cubic trend analysis method to estimate the financial distress through the ratio analysis. The model is represented by the following variables: net cash, total assets, total debt, sales, net worth, net income, long term liability, current assets, current liability, working capital, cash flow from operating Activities, cash flow from financial activities, total external source, dividend and cash flow in investment activities. It is resulted that the distress and non-distress companies' trend value estimated through the cubic trend method. The f value represented that the 1% level of significant of ration to select public sector undertakings*

Date of Submission: 29-03-2019 Date of acceptance: 09-04-2019

I. INTRODUCTION

Central Public Sector Enterprises (CPSEs) play a significant role in the growth of the Indian economy. They are also affected by the overall growth in the economy. Provisional estimate of GDP at current prices in 2015-16 was Rs.135.76 lakh crores as against the GDP of Rs.124.88 lakh crores (revised figure) for the year 2014-15 recording a growth rate of 8.71% during the period. The Public Sector Undertakings (PSUs) are considered as major instruments of state intervention in economic activities in the developing economies.The ongoing financial and economic crisis has shown that companies financial distress remains difficult to prevent. In this paper is to examine the trend using the internal factor like ratio analysis to find the financial distress of the public sectorundertakings. Public sector is assumed the strategic importance in nation building. Since then public sector enterprises or undertakings have been treated as the back bone of Indian economy and were involved in various industrial activities like manufacturing and producing various products, raw materials and offering numerous other services for the benefit of the citizens of India. The government is also able to earn revenue as a result of profitable functioning of these companies. Importance of such organizations is almost indescribable and to honor such contributions, the Government of India has conferred special status to some of theseindustrial organizations, so that they can charter their path of progress towards growth and prosperity.

The objective of this study is to identify those companiesthat have financial problems based on the informationcontained on their financial statements. With this regard,it is considered that a company has financial problemswhen it has a high probability of becoming financiallydistressed in the short term. To do this, we applied thestatistical inference to a group of 15 financial ratios observedfrom a sample of 15companiesin public sector undertaking in India.

[1]Director, i/c UGC-HRDC, and Assistant Professor, Department of Commerce, Bharathiar University, Coimbatore, TamilNadu. e-mail: richardpaulv@gmail.com
[2] Ph.D., Research Scholar, Part-time, Category-B., Research and Development, Bharathiar University, Coimbatore, Tamil Nadu.

II. REVIEW OF LITERATURE

Beaver (1966) was the initial researchers to use univariate analysis to point out that financial distress. He claimed that by using cash-flow to total-debt ratio or likelihood ratio, one can forecast failure before five years. Trieschmann et al; (1973) expended multiple discriminant analysis to discover financial distress risk associated with insurance companies. The model developed was able to classify correctly 49 out of 50 firms included in the study. One financially healthy firm was assorted as being distress while two of the distress firms were classified as belonging to the financially healthy group.Platt et al; (2002) analysed automotive supplier industry and suggested that the early warning model successfully discriminated between distressed firms and healthy firms. They claimed that model should include all firms within a population; otherwise it could result in choice-based sample bias.John (1993) employs Tobin's q ratio (equal to market value/replacement cost) as a proxy for the loss of going-concern value in asset sales and premature liquidations associated with financial distress. He strongly opines that there is positive relationship between corporate liquidity and financial distress costs. However, the relationship between corporate leverage and financial distress costs is established to be negative.

III. METHODOLOGY

This study is based on secondary data. The secondary data was collected from journals, reports, financial accounting standards and accounting journals and financial and cash flow ratios are collected from www.moneycontrol.com. The selected public sector undertaking companies are listed in Bombay Stock Exchange (BSE) Mumbai. Referring the database, the available paired samples of non-distressed and distressed companies belonging to the Indian public sectorundertakings companies that fulfill the set criteria of total debt size and company, have been chosen in this study. The sampling technique, used in the study is Survey Sampling. The total debt size of the company varies to be large in publicly held corporations. Therefore, the study takes in to account small and medium Companies, where the probability of failure is more than in large debt companies. The study has evidence over its statement as large companies are established and financially strong in spite of challenges, but small companies once hit the financial crisis find themselves difficult to restart. Strictlyanalyzing, the influences drawnfrom this study apply only to companies that are registered, listed and has registered number in www.moneycontrol.com database. Thesimilarity of asset size is more among small and medium companies than large companies.

The descriptive analysis also used to find the analysis of the distress and non-distress companies. The correlation analysis also applied for the present study. Public sector undertakings in Indian companies, with the selected factors are analysed by polynomial trend equation to study the forecasted trend pattern. To study the pattern of the selected financial parameters during the study period, the polynomial trend equation, namely, cubic trend equation of the form, $Y= bo + b_1 t + b_2 t^2 + b_3 t^3$, where bi's (i=1,2 & 3) are trend coefficients and bo = constant, is fitted, $t_i = i^{th}$ year (i=1,2,…….,10) and the results are presented below. The F-values indicate the overall significance of the trend equation fitted. The R^2 the coefficients of determination indicate extent the trend coefficients to the extent to which they are able to explain the variations of the dependent variables under study.

The study period paved from 2007-08 to 2016-17 financial year. The companies are classified in two groups namely distressed and non-distressed with cluster companies. The table 1.1 presented the cluster of the companies selected for the present study.

Table 1.1

Classification of Industry

Distress Companies	**Type of company**	**Non-distress Companies**	**Type of company**
Bharat Electronic Limited	Electronic	Mahanagar Telephone Nigam Limited	Communication
National Aluminum Company Limited	Aluminium	Hindustan Petroleum Corporation Limited	Petrol
National Mineral Development Corporation	Mineral	Neyveli Lignite Corporation	Coal
Bharat Earth Mover Limited	heavy equipment	Oil India Limited	Oil
Chennai Petroleum Corporation	Petrol	Power Finance Corporation	Finance
Hindustan Copper	Copper	Power Grid Corporation of India Limited	Power
Shipping Corporation India	Transport	Rural Electrification Corporation	Electric
		Mangalore Refinery and Petrochemicals	Chemical

The table 1.2 classifies fifteencompanies and fifteen financial variables. The financial variable can be classified in cash flow and financial ratios.included in the regression model to fit. The companies has been coded that x1 to x15 for use of analysis.

Table 1.2

Classifications of Variables

Companies	**Ratios**		**Variables**	
BEL	X1	Net Cash	Financial	NC/TD
NALCO	X2	Total Assets	Financial/Cash flow	NI/S
NMDC	X3	Total Debt	Financial	NI/TA
BEML	X4	Sales	Financial/Cash flow	CL/TA
CPC	X5	Net Worth	Financial	CL+LTL/TA
HC	X6	Net Income	Financial/Cash flow	CF/TA
SCI	X7	Long Term Liability	Financial	WC/TA
MTNL	X8	Current Assets	Financial	CFFA/CL
HPCL	X9	Current Liability	Financial	CA/CL
NLC	X10	Working Capital	Financial	NW/S
OLC	X11	Cash flow from operating Activities	Cash flow	CF/TA
PFC	X12	Cash flow from Financial Activities	Cash flow	CF/NI
PGCIL	X13	Total External Source	Cash flow	CF/NC
REC	X14	Dividend	Cash flow	CF/TA
MFP	X15	Cash Flow in Investment Activities	Cash flow	CF/S

The following table presented the result of the descriptive statistics of the distress and non distress public sector undertakings in India.

Table 1.4

Summary statistics of distressed and non-distress Public Sector Undertaking in India

Rations	**Distress Companies**		**Non Distress Companies**	
	Mean	**SD**	**Mean**	**SD**
Net Cash	536.94	284.16	36.07	58.65
Total Assets	0.16	0.02	-0.20	1.17
Total Debt	0.18	0.04	-0.09	0.30
Sales	1.14	0.23	0.59	0.44
Net Worth	6561.81	1873.36	7074.18	3579.45
Net Income	0.12	0.23	0.04	0.48
Long Term Liability	0.60	0.25	-0.62	0.91
Current Assets	-0.07	0.10	0.19	0.39
Current Liability	1.54	0.27	0.21	0.92
Working Capital	0.96	0.15	1.05	1.41
Cash flow from operating Activities	0.05	0.10	-0.02	0.18
Cash flow from Financial Activities	0.64	1.46	1.13	3.23
Total External Source	0.12	0.23	-13.13	24.15
Dividend	0.05	0.10	-0.02	0.18
Cash Flow in Investment Activities	0.11	0.23	-0.16	1.57

The above table depicts the mean and standard deviation of distress and non-distress public sector undertaking companies of last ten years ranging from 2007-08 to 2016-17. From the above table we found that there is a marginal difference between the mean of two groups of companies. The net worth is better than distress group of companies. The standard deviation of non- distress companies is high compare with distress companies. It resulted the distress companies is lower performance compare with non- distress group of companies. .

Table 1.4
Pearson Correlation Co-efficientsof the financial ratios of distressed Public Sector Undertaking in India

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15
X1	1.00*														
x2	0.28	1.00*													
x3	-0.10	0.67	1.00*												
x4	-0.44	-0.46	-0.01	1.00*											
x5	-0.14	-0.32	-0.49	0.43	1.00*										
x6	0.42	0.11	0.16	0.21	-0.12	1.00*									
x7	-0.04	-0.03	-0.51*	0.12	0.83*	0.06	1.00*								
x8	0.33	-0.25	-0.54*	-0.04	-0.23	0.19	-0.03	1.00*							
x9	0.18	0.17	-0.50*	-0.36	0.58*	-0.05	0.88*	0.02	1.00*						
x10	0.30	-0.07	-0.77*	-0.38	0.50*	-0.21	0.71*	0.37	0.87	1.00*					
x11	0.50	0.17	0.17	0.13	-0.13	0.99*	0.05	0.20	-0.01	-0.17	1.00*				
x12	0.45	0.08	0.13	0.19	-0.07	0.99*	0.08	0.16	-0.01	-0.18	0.99*	1.00*			
x13	0.58*	0.22	0.25	0.03	-0.26	0.96*	-0.09	0.18	-0.09	-0.22	0.98*	0.97*	1.00*		
x14	0.50*	0.17	0.17	0.13	-0.13	0.99*	0.05	0.20	-0.01	-0.17	1.00*	0.99*	0.98*	1.00*	
x15	0.47	0.14	0.14	0.17	-0.06	0.99*	0.12	0.17	0.04	-0.14	1.00*	1.00*	0.97*	1.00*	1.00*

Correlation is tested at 1per cent level of significance
*Significant at 5% level

Table 1.5
Analytical Table of correlation Analysis

Variable	**Negative**	**Greater than 50**	**Less than 50**
X1	X3,x4,x5,x7	X11,x13,x14	X2,x6,x8,x9,x12,x15
X2	X4,x5x7x8x10	Nil	X6x9x11x12x14x15
X3	X4x5x7x8x9x10	Nil	X6x11x15x13x14x15
X4	X6x8x11x12x13x14x15	X10x9x7	Nil
X5	X8x13	-	X5x6x7x10x11x12x14x15
X6	X9x10	X11X12X13X14X15	X7
X7	X8x13	X9x10	X11x12x14x15
X8	-	-	X9x15
X9	X11x14	X10	X15
X10	X11x12x13x14x15	-	-
X11	-	X12x13x14	-
X12	-	X13x14x15	-
X13	-	X14x15	-
X14	-	X15	-

Table 1.4 shows that the correlation values are statistically significant at 5 per cent level. Table 1.4 shows the correlation coefficient among financial variables of distress and non-distressed public sector undertaking in India. The financial ratios indicated a medium and high degree of positive correlation with ratios. In other words, there is a significant positive relationship among the financial ratios.

Table 1.6
Pearson Correlation Co-efficient for financial ratios

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15
X1	1.00*														
x2	0.01	1.00*													
x3	0.03	0.95*	1.00*												
x4	0.42	-0.28	-0.39	1.00*											
x5	0.37	-0.17	-0.26	0.96*	1.00*										
x6	0.58*	-0.15	-0.20	0.84*	0.83*	1.00*									
x7	-0.19	0.33	0.47	-0.91*	-0.80*	-0.62*	1.00*								
x8	-0.38	-0.05	-0.03	-0.22	-0.20	-0.67*	0.00	1.00*							
x9	0.11	0.27	0.38	-0.42	-0.23	-0.03	0.75*	-0.37	1.00*						
x10	0.76*	0.35	0.36	0.32	0.39	0.29	-0.14	0.12	0.09	1.00*					
x11	0.63*	-0.14	-0.16	0.69*	0.66*	0.96*	-0.47	-0.81*	0.04	0.24	1.00*				
x12	0.40	0.04	0.15	-0.54*	-0.60*	-0.47	0.54*	0.22	0.19	0.34	-0.33	1.00*			
x13	0.40	0.05	0.02	0.29	0.27	0.71*	-0.11	-0.98*	0.24	-0.07	0.85*	-0.24	1.00*		
x14	0.63*	-0.14	-0.16	0.69*	0.66*	0.968	-0.47	-0.81*	0.04	0.24	1.00*	-0.33	0.85*	1.00*	
x15	0.58*	-0.16	-0.19	0.75*	0.73*	0.98*	-0.548	-0.77*	0.00	0.21	0.99*	-0.41	0.82*	0.99*	1.00*

Correlation is tested at 1per cent level of significance
*Significant at 5% level

Table 1.7
Analytical Table of correlation Analysis

Variable	Negative	Greater than 50	Less than 50
X1		X6,x10,x11,x15	X2,x3,x4,x5,x7,x8x9x12x13x14
X2	X4,x5x6x8x11x14x15	X3l	X7x9x10x12x13
X3	X4x5x7x8x9x10	Nil	X6x11x15x13x14x15
X4	X6x8x11x12x13x14x15	X10x9x7	Nil
X5	X8x13		X5x6x7x10x11x12x14x15
X6	X9x10	X11X12X13X14X15	X7
X7	X8x13	X9x10	X11x12x14x15
X8	-	-	X9x15
X9	X11x14	X10	X15
X10	X11x12x13x14x15	-	-
X11	-	X12x13x14	-
X12	-	X13x14x15	-
X13	-	X14x15	-
X14	-	X15	-

Table 1.7 shows that the correlation values are statistically significant at 5 per cent level. Table 1.7 shows the correlation coefficient among financial variables of distress and non-distressed public sector undertaking in India. The financial ratios indicated a medium and high degree of positive correlation with ratios. In other words, there is a significant positive relationship among the financial ratios.
The following table 1.8 shows the co-efficient of determination for a regression model based on financial and cash flow ration of financial distress of the select public sector undertakings in India.

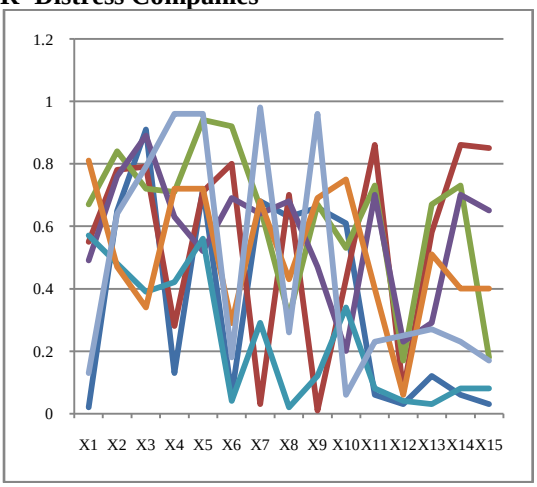
Table 1.8 Ranking of the Coefficients of Determination for a Regression Model Based on Financial and Cash flow ratio of Financial Distress of the Select Public Sector Undertakings in India

	R^2 Distress Companies							R^2 Non-Distress Companies							
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8
X1	0.02	0.55	0.67	0.49	0.57	0.81	0.13	0.87	0.73	0.52	0.14	0.27	0.31	0.07	0.26
X2	0.65	0.78	0.84	0.76	0.48	0.47	0.64	0.06	0.70	0.42	0.87	0.72	0.23	0.34	0.33
X3	0.91	0.79	0.72	0.89	0.39	0.34	0.79	0.01	0.92	0.20	0.92	0.38	0.38	0.69	0.55
X4	0.13	0.28	0.71	0.63	0.42	0.72	0.96	0.14	0.84	0.63	0.78	0.60	0.57	0.66	0.27
X5	0.72	0.71	0.94	0.52	0.56	0.72	0.96	0.09	0.94	0.72	0.77	0.70	0.97	0.91	0.62
X6	0.06	0.80	0.92	0.69	0.04	0.29	0.18	0.12	0.02	0.04	0.78	0.90	0.61	0.87	0.02
X7	0.68	0.03	0.66	0.64	0.29	0.68	0.98	0.25	0.81	0.66	0.87	0.66	0.46	0.58	0.34
X8	0.63	0.70	0.31	0.68	0.02	0.43	0.26	0.22	0.52	0.88	0.09	0.81	0.75	0.46	0.31
X9	0.66	0.01	0.67	0.47	0.12	0.69	0.96	0.36	0.71	0.68	0.71	0.59	0.18	0.37	0.50
X10	0.61	0.43	0.53	0.20	0.34	0.75	0.06	0.70	0.39	0.72	0.91	0.96	0.42	0.37	0.02
X11	0.06	0.86	0.73	0.70	0.08	0.40	0.23	0.18	0.27	0.02	0.74	0.59	0.06	0.88	0.30
X12	0.03	0.07	0.17	0.23	0.04	0.06	0.25	0.29	0.03	0.02	0.69	0.94	0.01	0.84	0.04
X13	0.12	0.58	0.67	0.29	0.03	0.51	0.27	0.11	0.36	0.69	0.79	0.87	0.69	0.14	0.71
X14	0.06	0.86	0.73	0.70	0.08	0.40	0.23	0.18	0.27	0.02	0.74	0.12	0.06	0.88	0.30
X15	0.03	0.85	0.18	0.65	0.08	0.40	0.17	0.12	0.29	0.02	0.34	0.94	0.02	0.92	0.13

Source: Calculated by researcher

Ranking of the Coefficients of Determination for a Regression Model Based on Financial and Cash flow ratio of Financial Distress of the Select Public Sector Undertakings in India

R^2 Distress Companies



R^2 Non-Distress Companies

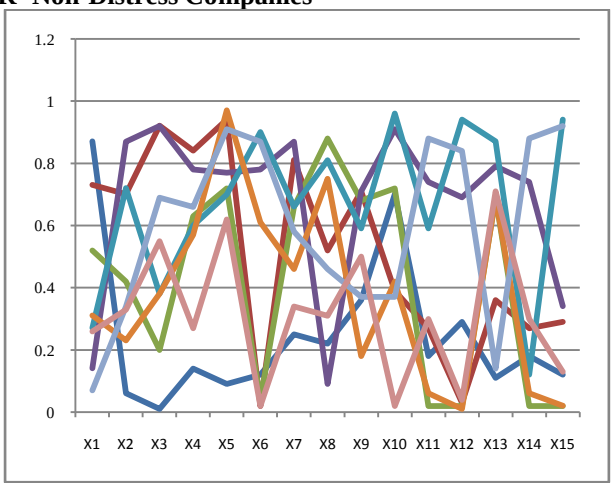


Fig.1.

The diagram shows the R^2 of the distress and non-distress companies of the selected public sector undertakings in India. The non-distress companies has sound financial position based on the performance of financial ratios.

Table 1.9. B_0 Estimation of cubic Trend model of Distress and Non-Distress Companies of the Select Public Sector Undertakings in India

	B_0 Distress Companies							B_0 Non-Distress Companies							
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8
X1	62.23	-32.45	-16.0	0.54	-0.08	-28.95	0.05	20.93	0.03	-31.1	-21.56	-0.01	-0.01	0.01	-0.56
X2	0.20	0.32	0.48	0.14	0.04	-0.02	0.37	-0.62	0.014	0.35	0.21	0.22	0.27	0.25	0.06
X3	0.30	0.2	0.44	0.17	0.24	0.08	0.17	-0.08	0.07	0.08	0.23	0.01	0.04	0.01	0.38
X4	1.01	0.2	0.11	0.65	0.14	0.71	0.12	0.71	0.46	0.31	0.31	0.09	0.18	-0.002	0.4
X5	19.8	12.63	33.75	11.52	-21.86	85.96	53.97	73.59	82.03	42.65	25.12	10.7	33.18	-45.4	-37.6
X6	0.27	0.28	0.3	-0.36	0.14	0.02	0.14	0.59	0.01	0.04	0.42	-0.08	0.07	-0.12	0.3
X7	0.07	0.02	-0.45	0.26	0.18	-0.12	0.22	-0.17	-0.4	-0.1	0.12	0.9	-0.25	0.96	-0.08
X8	-0.16	-0.53	0.09	0.69	0.08	0.1	0.02	-0.26	0.5	0.76	-0.96	2.3	0.23	3.7	-0.25
X9	0.99	1.18	-10.59	1.55	1.05	-0.79	3.42	1.1	0.26	1.02	0.5	18.11	-0.36	24.88	0.45
X10	0.59	1.53	1.19	0.61	0.14	0.32	1.61	3.25	0.1	2.9	1.23	2.3	2.73	1.66	0.13
X11	0.12	0.23	0.23	-0.19	0.08	-0.03	0.13	0.24	0.07	0.03	0.29	0.07	0.09	-0.11	0.15
X12	1.42	1.64	0.94	-36.26	-2.66	1.55	4.26	6.72	4.48	0.65	2.21	-0.07	2.86	-6.79	-0.99
X13	0.37	0.88	0.44	-3.33	81.71	-1.6	0.23	11.04	-10.17	0.47	0.83	-3.07	0.95	6.24	3.81
X14	0.12	0.23	0.23	-0.19	0.08	-0.03	0.13	0.24	0.07	0.03	0.29	68.17	0.09	-0.11	0.15
X15	0.23	0.45	0.46	-0.25	0.01	-0.12	0.28	1.7	0.03	0.26	0.53	-0.07	0.76	-1.77	0.04

The above table indicated that the B_0 values of cubic trend model of the distress and non-distress companies of the public sector undertaking in India. The Non distress companies better than the distress companies based on the cubic trend model. The following table shows the B_1 values of cubic trend model of the distress and non-distress companies of the public sector undertaking in India.

Table 1.10 Estimation of cubic Trend model of Distress and Non-Distress Companies of the Select Public Sector Undertakings in India

	B_1 Distress Companies							B_1 Non-Distress Companies							
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8
X1	-53.04	19.17	11.6	-0.11	0.05	27.06	0.05	-55	-0.08	19.76	17.23	0.09	0.02	0.04	0.45
X2	-0.21	-0.05	0.06	-0.03	-0.02	0.07	-0.11	0.29	-0.04	-0.02	0.05	0.03	0.01	0.01	-0.02
X3	-0.58	-0.04	-0.04	-0.04	-0.11	0.04	-0.05	0.01	-0.02	-0.04	-0.04	0.05	-0.02	0.05	-0.12
X4	0.08	0.02	-0.03	-0.1	0.24	-0.22	-0.01	0.02	-0.01	-0.07	-0.04	-0.03	0.02	0.04	0.26
X5	14.27	68.44	13.12	8.71	21.71	-27.51	19.13	45.09	36.63	-10.8	-11.67	-55.1	22.72	42.43	54.8
X6	-0.04	-0.06	-0.01	0.12	-0.03	0.06	-0.02	-0.2	0.03	0.06	-0.09	-0.04	0.02	-0.03	-0.02
X7	0.18	-0.06	0.36	0.07	-0.21	0.12	-0.01	-0.39	0.07	0.13	0.12	0.03	0	-0.03	-0.33
X8	0.07	0.22	-0.85	-0.23	0.01	-0.18	0.25	0.24	-0.17	-0.38	0.42	1.57	0.15	-0.3	0.1
X9	0.14	-0.07	9.26	0.25	-0.15	1.29	-0.36	-0.6	0.02	0.31	1.14	6.56	0.02	-3.99	-0.11
X10	0.12	0.1	0.21	0.02	-0.02	0.18	0.07	3.25	0.1	2.9	1.23	2.3	2.73	1.66	0.13
X11	-0.02	-0.05	-0.01	0.06	-0.02	0.07	-0.03	-0.09	-0.01	0.004	-0.06	0.04	-0.002	-0.02	-0.09
X12	-0.23	-0.16	-0.11	19.05	2.15	0.41	-2.2	-1.97	-0.3	-0.01	-0.63	-0.04	-0.05	-0.19	1.42
X13	-0.09	-0.21	-0.08	0.81	-21.91	1.24	0.08	-11.98	36.47	-0.23	-0.23	-1.81	0.44	-6.59	-0.97
X14	-0.02	-0.05	-0.01	0.06	-0.02	0.07	-0.03	-0.09	-0.01	0.04	-0.06	-44	-0.02	-0.02	-0.09
X15	-0.04	-0.08	-0.09	0.08	-0.04	0.12	-0.05	-0.71	-0.07	-0.03	-0.1	-0.04	0.02	-0.13	0.04

The following table shows the B_2 values of cubic trend model of the distress and non-distress companies of the public sector undertaking in India.

Table 1.11. Estimation of cubic Trend model of Distress and Non-Distress Companies of the Select Public Sector Undertakings in India

	B_2Distress Companies							B_2 Non-Distress Companies							
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8
X1	5.28	-14.29	-98.22	0.007	0	-25.06	-0.003	3.57	0	-138.84	-16.63	0	-0.002	0	-0.03
X2	0.002	0.003	-0.007	0.002	0.001	-0.007	0.008	-0.03	0	0.001	-0.005	-0.004	-0.001	-0.001	0.001
X3	0.004	0.002	0.002	0.003	0.009	-0.005	0.003	-0.002	0.003	0	-0.001	0	0	0	0.009
X4	-0.009	-0.001	0.004	0.01	-0.02	0.01	0.003	-0.007	0.007	0.008	0.002	0.003	0	-0.002	-0.01
X5	-90.05	-47.56	4.54	5.18	-184.53	27.67	9.62	-70.25	-69.97	145.79	40.75	738.33	77.48	-94.8	-335.72
X6	0.002	0.004	-0.001	-0.009	0.003	-0.007	0.001	0.014	-0.002	0.0002	0.005	0.005	-0.003	0.005	0
X7	-0.01	0	-0.02	-0.01	0.01	-0.01	-0.005	0.04	-0.01	-0.01	-0.01	-0.004	0	0.002	0.022
X8	-0.008	-0.02	0.08	0.01	-0.003	0.01	-0.02	-0.02	0.01	0.03	-0.03	-0.18	-0.01	-0.009	-0.008
X9	-0.006	0.005	-0.78	-0.03	0.01	-0.1	0	0.06	-0.008	-0.03	-0.1	-0.71	-0.003	0.2	0.006
X10	-0.009	-0.011	-3.78	-0.001	0.002	-0.006	0	0.002	0.001	0	0.009	0.01	0.005	0.004	0
X11	0.001	0.003	-7.57	-0.004	0.003	-0.007	0	0.007	0.002	0	0.003	-0.003	0	0.004	0
X12	0.01	0.01	0.01	-1.33	-0.25	-0.05	0.24	0.13	0.012	0.003	0.06	0.005	0.006	0.08	-0.12
X13	0.006	0.01	0.007	0.06	1.85	-0.13	0.007	1.08	2.61	0.03	0.01	0.21	0.01	0.5	0.06
X14	0.001	0.003	-7.57	-0.004	0.003	-0.007	0.002	0.007	0.002	-0.0001	0	2.91	0	0.004	0
X15	0.002	0.005	0	-0.005	0	-0.01	0.006	0.05	0	0.002	0.008	0.005	-0.001	0.03	0

The following table shows the F values of cubic trend model of the distress and non-distress companies of the public sector undertaking in India.

Table 1.9. F value of the financial Distress and Non-Distress Companies of the Select Public Sector Undertakings in India

	B_2Distress Companies							B_2 Non-Distress Companies							
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	8
X1	0.083	4.36*	7.32*	3.43*	4.75*	15.45*	0.53	23.98*	9.67*	3.86*	0.58	1.3	1.62	0.28	1.27
X2	6.43*	12.76*	19.15*	11.52*	3.25*	3.18*	6.39*	0.22	8.28*	2.61*	23.55*	9.11*	1.05	1.85	1.78
X3	36.04*	13.21*	9.11*	29.10*	2.28*	1.8	13.28*	0.05	44.98*	0.87	44.02*	2.15*	2.19*	7.91*	4.34*
X4	0.55	1.39	8.84*	6.20*	2.59*	9.20*	97.98*	0.57	19.03*	6.19*	12.99*	5.33*	4.64*	6.80*	1.29
X5	9.42*	8.63*	63.83*	3.86*	4.59*	8.99*	100.49*	0.37	64.63*	9.17*	12.24*	8.21*	151.56*	36.50*	5.84*
X6	0.25	14.59*	45.90*	8.02*	0.17	1.49	0.79	0.51	0.1	0.15	13.07*	33.62*	5.52*	24.76*	0.1
X7	7.74*	0.13	7.09*	6.29*	1.43	7.47*	250.19*	1.19	15.90*	6.79*	25.29*	6.91*	3.06*	4.86*	1.8
X8	6.09*	8.52*	1.64	7.71*	0.09	2.67*	1.26	1.01	3.90*	26.57*	0.37	14.96*	11.0*	3.01*	1.63
X9	7.04*	0.05	7.28*	3.18*	0.52	8.02*	88.05*	2.02*	8.90*	7.59*	8.60*	5.05*	0.8	2.06*	3.50*
X10	5.47*	2.69*	4.01*	0.88	1.84	10.86*	0.24	8.54*	2.31*	9.00*	35.57*	87.17*	2.55*	2.13*	0.07
X11	0.23	22.42*	9.53*	8.54*	0.32	2.38*	1.07	0.77	1.35	0.1	10.14*	5.13*	0.24	26.78*	1.52
X12	0.14	0.28	0.75	1.06	0.17	0.23	1.18	1.48	0.1	0.08	7.81	64.61*	0.03	18.60*	0.15
X13	0.48	4.88*	7.34*	1.46	0.14	3.65*	1.32	0.46	2.03*	7.90*	13.96*	24.80*	7.9*	0.59	8.85*
X14	0.23	22.42*	9.53*	8.54*	0.32	2.38*	1.07	0.77	1.35	0.1	10.14*	0.5	0.24	26.78*	1.52
X15	0.12	20.13*	0.76	6.77*	0.33	2.35*	0.72	0.5	1.45	0.07	1.82	64.61*	0.09	44.97	0.54

*- Significance at 1 % level.

The above table presented the significant of trend on distress and non-distress of public sector undertaking companies. F value reveals the significance of the above trend equation. The Coefficient of determination R^2 indicates that the trend equations b_1, $b_2$and b_3 put together explain the variation which shows the adequacy of the model fitted to forecast the trend values. The significant cubic trend equations forecast the positive trend (non shadow of the box) in the future years.

IV. CONCLUSION

The present study examines the financial distress of Indian public sector companies applying descriptive statistics, correlation analysis and cubic trend analysis with 14 financial ratios. A strong cubic trend analysis is constructed with selected financial ratios and it is found that positive financial ratios among the distress and non-distress companies. It indicates that forecast of the financial distress among the companies. The study shows that a public sector company in India may become financially healthy if it implements good financial management system as well as proper financial policy. The empirical result of the study shows that distress and non-distress concluded by the efficiency of financial ratios are helpful in predicting the overall financial health of the companies under the study.

REFERENCES:

[1]. Beaver, W.H. (1966).Financial ratios as predictor of failures.Journal of Accounting Research, 4, 71 –111.
[2]. John, T. A. (1993). Accounting measures of corporate liquidity, leverage, and costs of financial distress. Financial Management, 91–100. Retrieved From: https://doi.org/10.2307/3665930
[3]. Platt H. D. & Platt M. B. (2002). Predicting corporate financial distress: reflections on choice-based sample bias. Journal of Economics and Finance, 26(2), 184–199. Retrieved From: https://doi.org/10.1007/BF02755985
[4]. Trieschmann, J. S., & Pinches, G. E. (1973). A multivariate model for predicting financially distressed PL insurers. Journal of Risk and Insurance, 327–338. Retrieved From: https://doi.org/10.2307/252222.

Richard Paul.V" Empirical Analysis of Financial Distress of Selected Public Sector Undertakings in India" International Journal of Business and Management Invention (IJBMI), vol. 08, no. 04, 2019, pp 30-38