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SUITABILITY OF CAPITAL STRUCTURE THEORIES –EVIDENCE FROM CORPORATE INDIA

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Abstract: Capital structure decisions are the most crucial decisions in Financial Management of Corporates. This study examines the suitability of capital structure theories in select industries of Corporate India. Applicability of capital structure theories viz., Trade off, Agency cost, Pecking order and Signaling theories on select Five large industries in India were done. From those industries a sample of ten companies were selected on the basis of stratified random sampling techniques. The data collected from ACE Equity database for a period of sixteen years from 2006-2007 to 2021-2022. The tools applied for analysis is Ordinary Least Square regression method. The study concluded that the Indian Automobile Industry follows pecking order theory for their capital structure decisions whereas little evidence is there for trade- off theory, agency theory and signaling theory. There is little evidence to support all the four theories viz., trade-off theory, agency theory, signaling theory and pecking order theoryin the Engineering - construction Industry. There is little evidence for trade-off theory, agency theory, signaling theory and pecking order theory in Cement industry. The Indian Pharmaceutical Industry's decisions pertaining to capital structure are in tune with pecking order theory. At the same time there exists little evidence for trade-off theory, agency theory and signaling theory. Further in case of Computers – Software Industry, the results support pecking order theory, trade-off theory and agency theory. Whereas only little support is given to signaling theory in deciding the capital structure.

Keywords: Capital structure, Trade off theory, Agency cost theory, Pecking order theory, Signaling theory

Introduction

Industries play a very important role in economic growth of any country. Industries transform and utilize the natural resources of the country and give back to the citizens in the form of products. India, our ountry as known is highly and densely populated country where Industries play crucial role. India has been n r cotton textile, paper, cottage and household industries before independence itself. Further, Industrial revolution paved the way for the wide development of industries. Different types of industries exist in India, out of those industries five largest industries are Automobile, Engineering – construction, Cement, Pharmaceutical and Computers – Software Industry. Since independence the Indian government and the private sector put forth their efforts to develop Automobile Industry in India. Since then there is tremendous growth in Automobile industry. Engineering-construction is an industry which contributes more to the economic growth of a nation. Indian government always have a keen interest in developing this industry. The reason behind this is that the infrastructure of almost all industries depend on the development of this engineering- construction industry. Indian Cement industry has its roots in the year 1946 by the formation of India Cements Ltd. Cement industry always play important role in the upliftment of human civilization. Amidst many industries pharmaceutical industry has always special place in India. India being densely populated, the population being prone to many diseases, it results in the success of pharmaceutical industry. Pharmaceutical industry is an industry which produces and markets drugs for medicinal purposes.

Financial management plays vital role in any industry. Capital structure decisions are the most crucial decisions that a financial manager should make. Initially in the year 1958, Modigliani and Miller insisted that capital structure has nothing to do with market value that is market value is not affected by capital structure decisions. But in 1963 they insisted that taking into consideration the corporate tax and interest tax shield on debt made capital structure decisions relevant for the market value of the firm. Many theories emerged on capital structure viz., Trade-off theory, Pecking Order theory, Agency theory Signaling theory and so on. The purpose of this study is to find out the suitability of the above-mentioned theories in select industries of Corporate India. Applicability of capital structure theories viz., Trade off, Agency cost, Pecking order and Signaling theories on select Five large industries in India were done.

Literature review

With a view of having insights into the present study several research papers relating to the study has been reviewed. They are

Babu, Suresh and Jain. (1998) in their article entitled “Empirical Testing of Pecking Order Hypothesis with Reference to Capital Structure Practices”, have tested the Indian private corporate sector finance managers’ views on the financial/capital structure

decisions, a survey was conducted among the finance managers' of the private corporate sector in India, to look at each factor to measure its over-capital structure decisions. The analysis of this study was based on the capital structure practices of 91 companies and questionnaires were administered. The study concludes that four relatively important goals/objectives followed by the corporate firms in India are maximising earnings per share, maximizing aggregate earnings, maximizing net worth per share and maximizing rate of return on investment in assets. This study further indicates that in the Indian context the corporate firms prefer internal to external financing thus Pecking order hypothesis is applied.

Zelia Serrasquerio and Paulo Macas Nunes (2007) in their article entitled"The Explanatory Power of Capital Structure Theories: A Panel Data Analysis", have investigated the main capital structure theories viz., pecking order, trade-off, agency and signalling theories which can explain the determinants of debt of Portuguese companies. For better sampling, this study referred to a balanced panel data of 162 companies covering the period of five years from 1999 to 2003. For analysis, the study usedregression models and inferred that the results from the panel study support the pecking order theory, since profitability is negatively related to debt; this suggests that Portuguesecompanies prefer internal finance to debt. This study concludes company size is positively related to the level of debt, a result that corroborates trade-off and signalling theories which state that larger companies, being more diversified are less likely to go bankrupt and so it can resort to debt.

Karampal, Monika Verma (2009) in their article entitled "Corporate Capital Structure: The Case of Indian Textile Firms", have analysed the capital structure of select textile firms in India and found out the determinants of capital structure. Forty firms of the textile sector were accounted for analysis. The study covered a period of 11 years from 1996 to 2006. The tools used for analysis were mean, standard deviation, ANOVA, correlation and multiple regression. The study concludes that factors like profitability, asset composition and growth rate are leading determinants followed by factors like cost of debt, tax shield and firm size. Furthermore, the analysis confirms that the peckingorder theory is the most suited for Textile firms operating in India.

Neha Mittal (2011) in the article "Determinants of Corporate Capital Structure of Indian Industries", have examined the factors that determine the corporate capital structure of Indian industries and further investigated to what extent the capital structure theories can explain the capital structure choice of Indian firms. Multiple regression model was tested on the selected industries by collecting data for the period 2001-2008. The study concludes that variables determining the capital structure of industries in India are agency cost, asset structure, non-debt tax shield, and size.

Bayrakdaraglu, EgeIlhan, Yazici, Nusret (2013) in their study "A Panel Data Analysis of Capital Structure Determinants: Empirical Results from Turkish Capital Market", have examined the firm-specific capital structure determinants in the emerging market of Turkey, and examined the validity of modern Capital Structure Theories in explaining capital structure of the Turkish companies. For this, capital structure of 242 companies of different sectors that were traded in Istanbul Stock Exchange identified. The study period was 10 years from 2000 to 2009. The results of the study reveal that

Trade-off Theory is less successful than the Pecking Order hypothesis in explaining the capital structure of the Turkish companies. In addition, Pecking Order Hypothesis is prevailing largely in Turkish companies.

Douglas Wafula Simiyu and Dr.Willis Outya (2019) in their study " A Critical Literature Review of Capital Structure Theories", assessed the capital structure theories, such as Franco Modigliani and merton miller theorem, Trade-off theory, Pecking order theory, the market timing theory and Agency cost theory. The study concluded that scrutinizing of its operations by financial institutions should be preceded by capital structure decisions.

Peter Brusov and Tatiana Filatova (2023) in their study " Capital Structure Theory: Past, Present, Future", scrutinized capital structure theories and explored the importance of capital structure theories in decision making. Modigliani-Miller and Brusov-Filatova-Orekhova which are the two major theories were conferred and scrutinized. The study concluded that the Modigliani-Miller theory is only true for perpetual ompanies, while the Brusov-Filatova-Orekhova theory is valid for companies of any age.

Objectives of the study

The objectives of the study is to determine the suitability of capital structure theories on Automobile, Engineering – construction, Cement, Pharmaceutical and Computers – Software Industry

Methodology

The sample of the study being ten companies from Automobile, Engineering – construction, Cement, Pharmaceutical and Computers – Software Industry. The companies have been selected on the basis of debt equity ratio and the availability of data for the period of study. The data used is secondary in nature and it has been collected from ACE Equity database for a period of sixteen years from 2006-2007 to 2021-22. The variables used in this study were selected after a detailed survey of the available literature on the subject and advice from industrial experts and academicians were given due consideration. In order to identify the Suitability of Capital structure theories in select five industries, Total debt, Short term debt and long term debt were taken as dependent variables. Profitability, size, Asset structure, Dividend payout ratio, Growth were considered as independent variables. The tools applied for analysis is Ordinary Least Square regression method.

Capital structure theories

Four important capital structure theories are Trade off, Agency cost, Pecking order and Signaling theory.

a. Trade-off theory

Trade-off theory developed by Modigliani and Miller (1963). It was the most popular theory that elaborates capital structure. The important advantage of debt is benefit of deduction of tax related to interest but there will be bankruptcy cost. The trade off theory balances tax gains provided by debt and bankruptcy costs in order to arrive at debt equity ratio that ensures an optimal structure (Sorana Vatavu, 2012). The following are the hypotheses applied to check, whether decisions pertaining to capital structure are in tune with Trade-off theory.

H1 : Debt and Profitability are positively related.

H2 : Debt and Size are positively related.
H3 : Debt and Asset Structure are positively related.
H4 : Debt and Growth are negatively related.

b. Agency cost theory

Jensen and Meckling introduced a theory called Agency cost Theory in the year 1976. The theory advocates that an optimal capital structure requires the minimization of the agency cost by increasing the ownership of the managers in the firm or taking more debt to control managers' tendency for excessive perk consumptions. The hypotheses which have been applied to decide, whether the Agency Cost theory is suitable to the Indian industries are summarized below.

H5 : Debt and Size are positively related.

H6 : Debt and Growth are negatively related.

H7a : Debt and Asset Structure are negatively related.
H7b : Debt and Asset Structure are positively related.

c. Pecking order theory

Myers and Majulf introduced Pecking order theory in the year 1984. The theory exhibits that there does not exists any optimal capital structure and managers normally have an order of preferences on the issue of new capital which depends on the cost of capital. Retained earnings are considered as the importance source of finance as it does not incur any cost, the second preference of source of finance is debt and the last preference is equity. The hypotheses which have been used to check whether the capital structure decisions are made in accordance with Pecking order theory are given below:

H8 : Debt and Profitability are negatively related.
H9 : Debt and Size are negatively related.
H10 : Debt and Asset structure are positively related.
H11 : Debt and Dividend payout ratio are positively related.
H12 : Debt and Growth are positively and negatively related.

d. Signaling theory

Signaling theory was developed by Ross in the year 1977. On the basis of asymmetric information, that managers use leverage decision to give signal to the market because investors treat debt financing as a signal of high future performance and high future cash flows of the firm (Imran Hossain and Akram Hossain, 2015). The hypotheses which have been used to test whether the signaling theory is applicable to the Indian Industries are listed below.

H13 : Debt and Profitability are positively related.
H14 : Debt and Size are positively related.
H15 : Debt and Dividend payout are negatively related.
H16 : Debt and Growth are positively related.

Regression models

This study uses the Panel Estimation Model, which is specified as follows:

$$yit = \alpha + \chi it\,\beta + \mu it \text{ , with } i = 1,\ldots\ldots\ldots 10;\ t = 1,\ldots\ldots 16$$

Here i represents number of companies in the sample, and t represents each year considered. yit which serves as the vector of the explained variables, $\chi\ it$ is the vector ofthe explanatory variables of each company at any time, β is the vector of estimated parameters and $\mu\ it$ represents the error vector which is

$$\mu\ it = vi + e\ it$$

in which vi is the individual effect of each company and eit denotes the reminder disturbance. The following regression model is applied in the study

$$Zi = \alpha i + \beta 1n\ Xn + \beta 2n\ D + \beta 3n\ Xn\ D + \epsilon i$$

Where Zi denotes total debt, short term debt and long term debt.

Xn denotes explanatory variables such as profitability, growth, assets structure,size and dividend.

α denotes intercept, D denotes dummy variable, ϵi denotes random error term.

First, the study estimated the models considering the two traditional estimation models – the panel with fixed effects and a normal regression using the least square method. An analysis over time may generate an autocorrelation of errors, thereby it was decided to estimate the debt equations, when in the presence of a first order autocorrelation AR (1). The use of dummy variables made it possible to check macroeconomic effects on company debt.

Suitability of capital structure theories – automobile industry

Table 1 discloses the results of fixed effects, pooled OLS and first order autocorrelation for total debt, short term debt and long term debt of Automobiles Industry. The results show that, the variables profitability, size, asset structure, dividend payout ratio and growth are associated with the debt ratios.

i) ***Profitability and Debt ratios***: From Table 1.1 it is clear that, profitability and debt ratios are negatively related. This negative relationship accepts the hypothesis (H8) which supports pecking order theory.

ii) ***Size and Debt ratios:*** Size is related negatively with total debt and long term debt.The negative relationship indicate that the hypothesis (H9) is accepted that corroborates pecking order theory. On the other hand size is positively related with short term debt this accepts the alternative hypotheses (H2), (H5) and (H14) that are in tune with trade-off theory, agency theory and signaling theory.

iii) ***Asset structure and Debt ratios:*** The negative relationship between asset structure and total debt, accepts the hypothesis (H7a) which confirms agency

theory. Whereas, asset structure and short term debt are positively related. This positive relationship accept the alternative hypotheses (H3), (H7b) and (H10) that are in tune with trade-off theory, agency theory and pecking order theory.

iv) ***Dividend payout ratio and Debt ratios:*** The relationship between dividend payout ratioand debt ratios are positive which accepts alternative hypothesis (H11). The results are intune with pecking order theory.

v) ***Growth and Debt ratios:*** The positive relationship between growth and debt ratios accepts alternative hypothesis (H16). The results support signaling theory.

It is inferred from the results that the Indian Automobile Industry follows pecking order theory for their capital structure decisions whereas little evidence is there for trade- off theory, agency theory and signaling theory.

TABLE 1

SUITABILITY OF CAPITAL STRUCTURE THEORIES – AUTOMOBILE INDUSTRY (Fixed effects, Pooled (OLS) & Random effects AR(1))

Dependent variable : Total Debt						
Independent Variables	**Fixed Effects**		**Pooled OLS**		**Random Effects AR (1)**	
	Coefficient	***p-value***	**Coefficient**	***p-value***	**Coefficient**	***p-value***
Profitability	-1.07243	<0.00001**	-1.23407	<0.00001**	-0.90656	<0.00001**
Size	-0.01296	0.41941	-0.03986	0.00369**	-0.06301	<0.00001**
Asset structure	-0.05145	0.53389	-0.14522	0.06491	-0.15121	0.02370*
Dividend payout	0.00542	0.06168	0.00526	0.07649	0.00582	0.00006**
Growth	0.16107	0.01843*	0.18760	0.00705**	0.08737	0.24699
Constant	0.93085	<0.00001	1.22646	<0.00001	1.36307	<0.00001
Observations	160		160		160	
R^2	0.28619		0.24521		0.31560	
F - statistic	1.67e-09		2.62e-08		2.00e-11	
Dependent variable : Short Term Debt						
Profitability	0.10059	0.19187	0.12797	0.08753	0.16342	0.01709*
Size	0.00903	0.11825	0.01359	0.00482**	0.01285	0.00086**
Asset structure	0.12927	0.00002**	0.14515	<0.00001**	0.14918	<0.00001**
Dividend payout	0.00380	0.00033*	0.00383	0.00031*	0.00371	<0.00001*

		*		*		*
Growth	0.06657	0.00683**	0.06207	0.01107*	0.06669	0.00522**
Constant	0.16223	0.00724	0.11215	0.02017	0.11607	0.00353
Observations	160		160		160	
R^2	0.34084		0.33242		0.78107	
F - statistic	5.28e-12		3.18e-12		5.77e-49	
Dependent variable : Long Term Debt						
Profitability	-0.65086	<0.00001**	-0.68681	<0.00001**	-0.60376	<0.00001
Size	-0.02411	0.00377**	-0.03009	0.00002**	-0.03089	<0.00001
Asset structure	-0.02204	0.60245	-0.04290	0.27413	-0.08478	0.02168
Dividend payout	0.00082	0.57795	0.00079	0.59499	0.00058	0.54976
Growth	0.01788	0.60615	0.02378	0.49013	-0.05395	0.25940
onstant	0.53679	<0.00001	0.60253	<0.00001	0.63258	<0.00001
Observations	160		160		160	
R^2	0.40140		0.39491		0.40667	
F - statistic	4.55e-15		2.11e-15		4.86e-16	

*Significant at five per cent level **Significant at one per cent level

Suitability of Capital Structure Theories – Engineering - Construction Industry

Table 2 shows the results of fixed effects, pooled OLS and first order autocorrelation for total debt, long term debt and short term debt of Engineering-construction industry. The results indicate that the variables profitability, size, asset structure, dividend payout and growth are associated with debt ratios.

i) ***Profitability and Debt ratios***: Profitability and short term debt are negatively related. This negative relationship accepts the hypothesis (H8) which supports pecking order theory. The relationship between profitability and long term debt is positive. The positive relationship accepts alternative hypotheses (H1) and (H13). This implies trade-off theory and signaling theory.

ii) ***Size and Debt ratios:*** Size is related negatively with long term debt. The negative relationship indicate that the hypothesis (H9) is accepted that corroborates pecking order theory.

iii) ***Asset structure and Debt ratios:*** The negative relationship between asset structure and total debt, asset structure and short term debt accepts the hypothesis (H7a)which confirms agency theory.

iv) ***Dividend payout ratio and Debt ratios:*** That the relationship between dividend payout ratio and debt ratios are negative. The negative relationship accepts

hypothesis (H15). This implies that the Engineering - construction Industry follows signaling theory.

v) ***Growth and Debt ratios:*** Negative relationship exists between growth and debt ratios. This negative relationship accepts the hypothesis (H4) which supports trade- off theory.

From the results it is clear that, there is little evidence to support all the four theories viz., trade-off theory, agency theory, signaling theory and pecking order theoryin the Engineering - construction Industry.

TABLE 2

SUITABILITY OF CAPITAL STRUCTURE THEORIES – ENGINEERING – CONSTRUCTION INDUSTRY (Fixed effects, Pooled (OLS) & Random effects AR(1))

Dependent variable : Total Debt						
Independent Variables	**Fixed Effects**		**Pooled OLS**		**Random Effects AR (1)**	
	Coefficient	***p-value***	**Coefficient**	***p-value***	**Coefficient**	***p-value***
Profitability	0.25201	0.39201	0.25221	0.39010	0.13600	0.20334
Size	-0.00016	0.98485	-0.00036	0.96636	-0.00633	0.31143
Asset structure	-0.21070	<0.00001**	-0.21059	<0.00001**	-0.19581	<0.00001**
Dividend payout	-0.01063	0.05029	-0.01065	0.04924*	-0.00930	0.00871**
Growth	-0.04153	0.34660	-0.04191	0.33917	-0.04395	0.04362*
Constant	0.75599	<0.00001	0.75730	<0.00001	0.80345	<0.00001
Observations	160		160		160	
R^2	0.25452		0.25446		0.37613	
F - statistic	3.70e-08		1.07e-08		2.07e-14	
Dependent variable : Short Term Debt						
Profitability	-0.68978	0.03336*	-0.68778	0.03388*	-0.71222	0.01866*
Size	0.00737	0.43590	0.00545	0.55692	0.01080	0.14316
Asset structure	-0.21700	<0.00001**	-0.21596	<0.00001**	-0.20672	<0.00001**
Dividend payout	0.00744	0.20931	0.00731	0.21705	-0.00704	0.00037**
Growth	-0.10562	0.02974*	-0.10946	0.02396*	-0.09416	0.04694*
Constant	0.50596	<0.00001	0.51905	<0.00001	0.47520	<0.00001
Observations	160		160		160	
R^2	0.42455		0.42058		0.77626	
F - statistic	2.48e-		8.20e-		3.05e-	

	16		17		48	
Dependent variable : Long Term Debt						
Profitability	0.94179	0.01281*	0.93999	0.01286*	0.39082	0.19557
Size	-0.00754	0.49371	-0.00580	0.59026	-0.02718	0.00439**
Asset structure	0.00630	0.89888	0.00536	0.91379	0.00136	0.97974
Dividend payout	-0.01807	0.00935**	-0.01796	0.00969**	-0.00927	0.02065*
Growth	0.06408	0.25452	0.06754	0.22791	-0.12884	0.01335*
Constant	0.25003	0.01826	0.23825	0.02283	0.42976	<0.00001
Observations	160		160		160	
R^2	0.17446		0.17106		0.38076	
F - statistic	0.00004 5		0.00002 1		1.19e- 14	

*Significant at five per cent level **Significant at one per cent leve

Suitability of Capital Structure Theories – Cement Industry

The results of fixed effects, pooled OLS and first order autocorrelation for total debt, long term ebt and short term debt are presented in table 3 The results show that the variables profitability, size, asset structure, dividend payout ratio and growth are associated with the debt ratios.

i) ***Profitability and Debt ratios:*** Table 3 Shows that the relationship between profitability and total debt, profitability and long term debt are negative. The negative relationship accepts that the hypothesis (H8) which supports pecking order theory.

ii) ***Size and Debt ratios:*** The positive relationship between debt and total debt, debtand short term debt accepts the alternative hypotheses (H2), (H5) and (H14) that arein tune with trade-off theory, agency theory and signaling theory. The negative relationship between size and long term debt indicate that the hypothesis (H9) is accepted that corroborates pecking order theory.

iii) ***Asset structure and Debt ratios:*** The present study shows the negative relationship between asset structure and short term debt. This negative relationship accepts the hypothesis (H7a) which confirms agency theory.

iv) ***Dividend payout ratio and Debt ratios:*** It is found from Table 6.5 that the relationship between dividend payout ratio and debt ratios are negative. The negative relationship accepts hypothesis (H15). This implies that the Cement Industry follows signaling theory.

v) ***Growth and Debt ratios:*** The positive relationship between growth and long term debt accepts alternative hypothesis (H16). The results support signaling theory.

It is inferred from the results that there is little evidence for trade-off theory, agency theory, signaling theory and pecking order theory in Cement industry.

TABLE 3

SUITABILITY OF CAPITAL STRUCTURE THEORIES – CEMENT INDUSTRY

(Fixed effects, Pooled (OLS) & Random effects AR(1))

Dependent variable : Total Debt						
Independent Variables	**Fixed Effects**		**Pooled OLS**		**Random Effects AR (1)**	
	Coefficient	***p-value***	**Coefficient**	***p-value***	**Coefficient**	***p-value***
Profitability	-0.56716	0.00001**	-0.56002	0.00001**	-0.42390	0.00063**
Size	0.01207	0.17655	0.01731	0.03554*	0.01401	0.06207
Asset structure	0.01338	0.79567	0.02203	0.66906	-0.01440	0.80119
Dividend payout	-0.08396	0.00006**	-0.08958	0.00001**	-0.08907	<0.00001**
Growth	0.03500	0.37185	0.03609	0.35883	0.04839	0.26233
Constant	0.67106	<0.00001	0.63049	<0.00001	0.65499	<0.00001
Observations	160		160		160	
R^2	0.32671		0.31729		0.35146	
F - statistic	2.47e-11		1.67e-11		3.71e-13	
Dependent variable : Short Term Debt						
Profitability	0.10059	0.19187	0.12797	0.08753	0.16342	0.01709
Size	0.00903	0.11825	0.01359	0.00482**	0.01285	0.00086**
Asset structure	-0.17425	<0.00001**	-0.17544	<0.00001**	-0.14687	<0.00001**
Dividend payout	-0.00380	-0.00033**	-0.00383	-0.00031**	-0.00371	<0.00001**
Growth	0.02009	0.53890	-0.03318	0.49507	-0.06709	0.19618
Constant	0.04447	0.81828	0.06864	0.18499	0.08460	0.01277
Observations	160		160		160	
R^2	0.18178		0.13015		0.05798	
F - statistic	0.000024		0.000602		0.098106	
Dependent variable : Long Term Debt						
Profitability	-0.61710	<0.00001**	-0.62161	<0.00001**	-0.75006	<0.00001**
Size	-0.01790	0.06123	-0.02121	0.01568*	-0.00829	0.26400
Asset structure	0.07234	0.19126	0.06689	0.22326	0.01569	0.74414
Dividend payout	-0.08892	0.00006**	-0.08538	0.00009**	-0.10865	<0.00001**

Growth	0.09177	0.02940*	0.09108	0.03045*	0.07776	0.04599*
Constant	0.61351	<0.00001	0.63908	<0.00001	0.63555	<0.00001
Observations	160		160		160	
R^2	0.48035		0.47782		0.59125	
F - statistic	1.29e-19		3.29e-20		2.90e-28	

*Significant at five per cent level **Significant at one per cent level

Suitability of Capital Structure Theories – Pharmaceuticals Industry

The results of fixed effects, pooled OLS and first order auto correlation for total debt, short term debt and long term debt are presented in Table . The results exhibit that the variables profitability, size and dividend payout ratio are related with debt ratios in Pharmaceuticals industry.

i) ***Profitability and Debt ratios:*** It is found from the Table 4 that the relationship between profitability and total debt, profitability and long term debt is negative. This accepts the hypothesis (H8) which strongly supports pecking order theory in Pharmaceuticals Industry.

ii) ***Size and Debt ratios: S***ize of the variable is positively related by total debt and short term debt which supports alternative hypotheses (H2), (H5) and (H14) that are in tune with trade-off theory, agency theory and signaling theory. Further, the variable size is negatively related with long term debt which indicates that the hypothesis (H9) is accepted that corroborates pecking order theory.

iii) ***Dividend payout ratio and Debt ratios***: There exists negative relationship between dividend payout ratio and debt ratios. The negative relationship accepts hypothesis (H9). This implies that the Pharmaceutical industry follows pecking order theory.

It can be concluded from the results that, the Indian Pharmaceutical Industry's decisions pertaining to capital structure are in tune with pecking order theory. At the same time there exists little evidence for trade-off theory, agency theory and signaling theory.

TABLE 4

SUITABILITY OF CAPITAL STRUCTURE THEORIES - PHARAMACEUTICALS

INDUSTRY (Fixed effects, Pooled (OLS) & Random effects AR(1))

Dependent variable : Total Debt						
Independent Variables	**Fixed Effects**		**Pooled OLS**		**Random Effects AR (1)**	
	Coefficient	***p-value***	**Coefficient**	***p-value***	**Coefficient**	***p-value***
Profitability	-0.68997	0.07618	-0.81614	0.04913*	-0.90865	0.01950*
Size	0.06983	0.00179**	0.05678	0.01580*	0.04519	0.01794*
Asset structure	-0.14226	0.35259	0.13411	0.37429	0.03455	0.78306
Dividend	-0.15616	0.00003**	-0.16695	0.00003**	-0.13160	<0.00001*

payout						*
Growth	-0.08942	0.40472	-0.03892	0.73252	-0.03952	0.69463
Constant	0.39635	0.01884	-0.81614	0.04913	0.49752	0.00094
Observations	160		160		160	
R^2	0.27639		0.17011		0.25073	
F - statistic	4.44e-09		0.000023		1.54e-08	
Dependent variable : Short Term Debt						
Profitability	0.09649	0.46844	0.09213	0.48662	0.19001	0.07184
Size	0.05056	<0.00001**	0.05011	<0.00001**	0.04203	<0.00001**
Asset structure	0.07669	0.14548	0.08624	0.07622	0.08865	0.00859**
Dividend payout	-0.03397	0.00700**	-0.03435	0.00618**	-0.02998	0.00413**
Growth	-0.00092	0.97996	0.00082	0.98207	0.02804	0.11924
Constant	-0.15130	0.00920	-0.15091	-0.15091	-0.12072	0.00097
Observations	160		160		160	
R^2	0.234563		0.233424		0.363283	
F - statistic	0.000021		8.07e-08		9.45e-14	
Dependent variable : Long Term Debt						
Profitability	-0.99309	<0.00001**	-0.99657	<0.00001**	-1.09566	<0.00001**
Size	-0.03067	0.00924**	-0.03103	0.00778**	-0.03936	0.00015**
Asset structure	0.12860	0.11346	0.13621	0.06916	0.13242	0.05173
Dividend payout	-0.06192	0.00150**	-0.06222	0.00135**	-0.04656	<0.00001**
Growth	-0.03893	0.49311	-0.03754	0.50524	0.05304	0.20089
Constant	0.66175	<0.00001	0.66205	<0.00001	0.70701	<0.00001
Observations	160		160		160	
R^2	0.392100		0.391859		0.568387	
F - statistic	1.41e-14		0.391859		1.81e-26	

*Significant at five per cent level **Significant at one per cent level

Suitability of Capital Structure Theories – Computers Software Industry

Table 5 discloses the results of fixed effects, pooled OLS and first order autocorrelation for total debt, short term debt and long term debt. The variables size, asset structure and growth are associated with debt ratios in Computers – Software Industry.

i) ***Size and Debt ratios:*** It is clear from Table 1.5 that the variable size is positively

associated with short term debt. This positive relationship leads to a conclusion that the hypothesis (H2), (H5) and (H14) is accepted which confirms Trade-off theory, Agency theory and Signaling theory. Size is negatively associated with long term debt. The size is negatively associated with long term debt. This result leads to conclude that the hypothesis (H9) is accepted which confirms Pecking order theory.

ii) ***Asset structure and Debt ratios:*** The variable asset structure is positively related withtotal debt and short term debt. This positive relationship accepts the alternative hypotheses (H3), (H7b) and (H10) that are in tune with trade-off theory, agency theory and pecking order theory.

iii) ***Growth and Debt ratios:*** Negative relationship exists between growth and total debt, growth and short term debt. This negative relationship accepts the hypothesis (H4)and (H6) which supports trade-off theory and agency theory.

To sum up, the results support pecking order theory and trade-off theory and agency theory. Whereas only little support is given to signaling theory in deciding the capital structure of Computers – Software Industry.

TABLE 5

SUITABILITY OF CAPITAL STRUCTURE THEORIES - COMPUTERS – SOFTWARE INDUSTRY (Fixed effects, Pooled (OLS) & Random effects AR(1))

Dependent variable : Total Debt						
Independent Variables	**Fixed Effects**		**Pooled OLS**		**Random Effects AR (1)**	
	Coefficient	***p-value***	**Coefficient**	***p-value***	**Coefficient**	***p-value***
Profitability	-0.01793	0.83940	-0.01911	0.82908	-0.05883	0.55706
Size	0.00390	0.61557	0.00454	0.55786	-0.00233	0.70488
Asset structure	0.17951	0.04456*	0.19339	0.02893*	0.18905	0.01566*
Dividend payout	-0.00474	0.44235	-0.00291	0.62338	0.00223	0.63444
Growth	-0.01031	0.00331**	-0.01021	0.00362**	-0.00805	0.02271*
Constant	0.23598	<0.00001	0.22601	<0.00001	0.25872	<0.00001
Observations	160		160		160	
R^2	0.08534		0.07847		0.07327	
F - statistic	0.03498 8		0.02898 7		0.04063 6	
Dependent variable : Short Term Debt						
Profitability	-0.03319	0.62351	-0.03126	0.64832	-0.13907	0.08946
Size	0.01634	0.00654**	0.01529	0.01167*	0.01877	0.00005**
Asset structure	0.22237	0.00127**	0.19960	0.00379**	0.23962	0.00048**

Dividend payout	0.00147	0.75516	-0.00154	0.73714	-0.00608	0.18000
Growth	-0.01103	0.00005**	-0.01120	0.00005**	-0.01182	<0.00001**
Constant	0.05731	0.11435	0.07369	0.04159	0.07060	0.02519
Observations	160		160		160	
R^2	0.17856		0.15006		0.56752	
F - statistic	0.000041		0.000153		7.19e-26	
Dependent variable : Long Term Debt						
Profitability	0.01525	0.81669	0.01215	0.85948	-0.03974	0.60541
Size	-0.01244	0.03271*	-0.01074	0.07526	-0.00131	0.78586
Asset structure	-0.04286	0.51651	-0.00621	0.92729	0.04118	0.32935
Dividend payout	-0.00621	0.17698	-0.00137	0.76536	-0.00386	0.04921
Growth	0.00072	0.77967	0.00099	0.71163	0.00115	0.76840
Constant	0.17867	<0.00001	0.15232	0.00004	0.09001	0.01156
Observations	160		160		160	
R^2	0.11960		0.03617		0.06339	
F - statistic	0.003599		0.345135		0.075588	

*Significant at five per cent level **Significant at one per cent level

Conclusion

Suitability of capital structure theories in Automobile, Engineering – construction, Cement, Pharmaceutical and Computers – Software Industry were examined in this paper. Panel study results reveals that, of the four theories viz., Trade-off theory,Agency theory, Pecking order theory and Signaling theory, the results support that the Indian Automobile Industry follows pecking order theory for their capital structure decisions whereas little evidence is there for trade- off theory, agency theory and signaling theory. There is little evidence to support all the four theories viz., trade-off theory, agency theory, signaling theory and pecking order theoryin the Engineering - construction Industry. There is little evidence for trade-off theory, agency theory, signaling theory and pecking order theory in Cement industry. The Indian Pharmaceutical Industry's decisions pertaining to capital structure are in tune with pecking order theory. At the same time there exists little evidence for trade-off theory, agency theory and signaling theory. Further in case of Computers – Software Industry, the results support pecking order theory, trade-off theory and agency theory. Whereas only little support is given to signaling theory in deciding the capital structure. This study is based on secondary data collected from ACE Equity, and any limitations of the secondary data will also influence the study.

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