

# Test of Descriptive Power of Capital Structure Theories in Auto Ancillary Industry in India

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**Abstract:** More than the past fifty years after the contribution by Modigliani and Miller's to the literature of capital structure, many economists in the field of finance have been intensely contributed to this concept. Various principles such as Agency Theory, Principle of Pecking Order, Signaling Theory and Theory of Trade off have been invented by various authors in the concept of capital structure. This study undertaken to know to the extent the theories of capital structure are applied in Indian industries especially in Auto Ancillary sector. The changes in today's financial markets after liberalization have certainly made an impact on the composition of capital of corporate units. Hence the present research concentrates on post liberalization period to observe the descriptive power of the principles of capital structure.

**Index Terms:** Theory of Pecking Order, Agency Theory, Principle of Trade off, Signaling Theory, Profitability, Size, Asset Structure, Growth Opportunities and Cost of Financial Distress

## I. INTRODUCTION

Subsequent from the ground-breaking hard work of MM on capital structure, four different principles have been invented. They are: The principle of Pecking Order, Principle of Trade-off, Agency theory and Signaling theory. The principle of trade-off says that the best structure of capital is possible when the net tax advantage derived from external loan is equal to cost of leverage viz bankruptcy and financial distress (Baxter, 1970)[1]. Pecking Order Theory invented by Myers said that firms preferential order for their new projects, first with undistributed earnings, then with loan, and finally with an issue of shares. Agency Cost principle confirms that a best capital structure can be inclined by bringing down the costs of misunderstanding among the parties involved.

Michel (1971)[5] accepted that agency costs are important in financial decisions from disagreement that may exist between debtors and equity holders. The Signaling theory approaches the conflicts among the economic agents, which result from asymmetric information. As per this theory, the well-versed agents may send out signals about the company to lesser informed agents.

According to Ross (1977)[10], CEOs are well informed about the company's profitability than external investors. Therefore, the managers may change the arrangement of capital of a business organization to send out signs to investors to review their estimates on company's profitability and risk. This research aims to examine if

theory of Pecking order, Theory of Trade-off, agency theory and signaling theory - can explain the mixture of debt - equity of Auto Ancillary industries in India.

## II. METHODOLOGY

Top ten companies based on Long term borrowings, under Auto ancillary industry, whose financial information are published without any break from 1992 were selected for this research.

## III. VARIABLES

To examine if different capital structure principles fit the Indian industries' debt-equity decisions the study uses the following variables which are portrayed in the subsequent Table.

Table 1 Measurement of Variables

Variables	Measurement
<b>Dependent Variables</b>	
Total Liability	Ratio between Total Liabilities and Total Assets
Short Term Liability	Ratio between Short Term Liabilities and Total Assets
Long Term Liability	Ratio between Long Term Liabilities and Total Assets
<b>Independent Variable</b>	
Profitability	Ratio between EBIT and Total Assets
Size	Logarithm of Total Sales
Asset Structure	Ratio between Fixed Assets and Total Assets
Cost of Financial Distress	Value of % change of EBIT
Growth Opportunities	Growth rate of Total Sales

Dependent variable, according to this study is the total debt of the companies, calculated by the total liabilities / total assets ratio.

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According to Zelia Serrasqueiro (2007)[14] the research on the debt determinants in view of total debt may cover up the important variations between the debt of long-term and short-term. Thereby, total debt can be divided into short-term and long-term loan to inspect the behavior differences of these two forms of debt.

## IV. THEORY OF TRADE-OFF

The principle of Trade-off Following of MM, authors, such as Kraus and Litzenberger (1973)[9] and Scott (1977)[13], developed relevant studies, commonly referred as the trade-off principle. The principle of Trade-off recognizes the best mixture of loan and share capital present, that maximizes the company's market value.

The alternative hypotheses to inspect if the principle of trade-off is relevant are given below:

H1: Debt ratios and Profitability have positive relationship.

H2: Debt ratios and Size of the company have positive relationship.

H3: Debt ratios and Asset Structure of the company have positive relationship

H4: Debt ratios and Cost of Financial Distress have negative relationship.

H5: Debt ratios and Growth Opportunities of the company have negative relationship.

## V. AGENCY COST THEORY

This principle insists that a best capital structure can be determined by brought down the costs created from conflicts on one side, between CEOs and insiders, and on the other, between the insiders and the outsiders Chakarborthy S.K (1977)[4]. The alternative hypotheses to examine if the principle of Agency cost is relevant are mentioned below:

H6 : Debt ratios and Size of the company have positive relationship.

H7a : (equity cost explanation)Debt ratios and the company's Asset Structure have negative relationship.

H7b : (debt cost explanation) Debt ratios and company's Asset Structure have positive relationship.

H8 : Debt ratios and company's Growth Opportunities have negative relationship.

## VI. PECKING ORDER THEORY

As per this principle, companies follow one sequential preference for their sources of finance: first, they choose internal source; second, they choose debt, which is followed by securities like convertible bonds; finally, they choose equity from new investors from the market. The alternative hypotheses to inspect if Pecking Order exists in Auto Ancillary industry are :

H9: Debt ratios and Profitability of company are negatively related.

H10:Debt ratios and Size are negatively related.

H11:Debt ratios and company's Asset Structure are positively related

H12 : Debt ratios and company's Growth Opportunities can either positively or negatively related.

## VII. SIGNALING THEORY

The signaling theory approaches the conflicts among the economic agents, which result from asymmetric information. Ross (1977)[10] stresses that the raise of outsiders loan is a good sign for the market, since companies with perspectives of high profitability are likely to issue loan than less profitable ones. The alternative hypotheses to examine if the Signaling theory exists are :

H13 : Debt ratios and Profitability of the company are positively related.

H14 : Debt ratios and Size of the company are positively related.

H15 : Debt ratios and Cost of Financial Distress are positively related.

H16 : Debt ratios and company's Opportunity to grow are positively related.

## VIII. ANALYSIS AND FINDINGS

The outcome of fixed effects, random effects, pooled OLS and first order autocorrelation for total debt, long-term debt and short-term loan are displayed in table 2. It is clear from the outcome of Lagrange Multiplier (LM) test, the null hypothesis is accepted which indicates that the effects of companies are not significant.

The Hausman test accepts the null hypothesis which tells that the effects are not correlated with explanatory variables for all three types of debt ratios used. The observation of R2, Wald (c2) and F test are made it possible to conclude that independent variables explain the dependent variable.

TABLE 2 Four Different Estimators of LEV Equation

Independent Variables	Dependent Variable: Total Liability				Dependent Variable: Short Term Liability				Dependent Variable : Long Term Liability				
	Fixed Effects	Random Effects	Pooled OLS	Random Effects AR (1)	Fixed Effects	Random Effects	Pooled OLS	Random Effects AR (1)	Fixed Effects	Random Effects	Pooled OLS	Random Effects AR (1)	
Profitability	-0.5147**	-0.4629**	-0.1236	-0.4315	0.1157	-	0.1235	0.042	0.6305**	-	0.5919**	0.0002	-
	(0.1589)	(0.1590)	(0.8830)	(0.1209)	0.1573	0.141	0.1291	0.1168	0.135	0.1349	0.1826	0.1049	0.5195
Size	-0.0569**	-0.0535**	-0.0223	-0.0608	0.0101	-	0.0192	-	0.0671**	-	0.0637**	0.0031	-
	(0.0183)	(0.0184)	(0.0225)	(0.0271)	0.0181	0.0165	0.154	0.228	0.0156	0.0156	0.0218	0.0227	0.0343
Asset Structure	-0.0965	-0.0488	0.1868*	-0.2340	0.2977**	0.2193**	0.1688*	-	0.2011*	0.2149**	0.3557*	-	0.2109
	0.1022	0.0994	0.0956	0.0975	0.1011	0.0802	0.0655	0.0806	0.0868	0.0856	0.0927	0.0843	0.2109
Financial Distress	0.0004	0.0003	0.0002	-	0.0001	0.0002	0.0001	-	0.0004	0.0003	0.0001	-	0.0002
	0.0004	0.0004	0.0005	0.0003	0.0003	0.0003	0.0004	0.0002	0.0004	0.0003	0.0005	0.0002	0.0002
Sales Growth	0.0003	0.0003	0.0007	-0.0003	0.0002	0.0002	0.0003	-	0.0004	0.0003	0.0004	-	0.0002
	0.0004	0.0004	0.0005	0.0003	0.0003	0.0003	0.0003	0.0002	0.0004	0.0003	0.0004	0.0002	0.0002
Constant	0.815	0.7761	0.5045	0.9419	0.343	0.3369	0.333	0.5359	0.4719	0.4542	0.1715	-	0.4079
	0.0684	0.0733	0.084	0.0809	0.0677	0.0615	0.0575	0.06489	0.0581	0.067	0.08147	0.0705	0.4079
Observations	170	170	170	170	170	170	170	170	170	170	170	170	170
LM (X2)		1.29				1.16				0.14			
Hausman (X2)		6.53				-41.83				1.25			
R2	0.083	0.0004	0.0399	0.0033	0.0468	0.0626	0.0735	0.0618	0.044	0.0047	0.102	0.0077	0.0077
Wald (X2)		17.95**		31.72		8.79		28.6		33.31*		32.99	32.99
F Statistics (N (0, 1))	24.96**		1.36		3.04*		2.6*		37.77*		3.73*		

It is clear from the results of regression, the variables Profitability, Size, and the company's Asset Structure are significantly associated with Debt ratios in Auto Ancillary industry.

**i) Profitability and Debt ratios**

It is clear from the table 2 that the variable Profitability is negatively related with total liability and long term liability at 1 per cent level of significance.



The existence of negatively related profitability and debt ratios accepts the alternative hypothesis (H1). This result leads to a conclusion that the Auto Ancillary industries' decision of combination of capital are in tune with Pecking Order.

## ii) Size and Debt ratios

The consequences of panel with random effects, fixed effects and pooled OLS shows that the variable size is negatively related with total liability and long-term liability at 1 per cent level of significance. This result strongly accepts alternative hypothesis (H2) which corroborates Pecking Order Theory. No relationship exists between size and short-term liability in Auto Ancillary industry.

## iii) Asset Structure and Debt ratios

The variable Asset Structure is associated with total liability and long-term liability. As the relationship that exists between asset structure and total debt is negative in nature which accepts, the results shows that it is in tune with Agency theory. But, the relationship between asset structure and long-term debt is positive.

## VIII CONCLUSION

It is verified from the results, that there is slight proof to support the principle of Agency theory and Trade-off, On the whole, the result shows that the theory of Pecking Order describes the determinants of debt ratios in Auto Ancillary industry in India.

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