CHAPTER V

THE DETERMINANTS OF CAPITAL STRUCTURE OF SELECTED SERVICES SECTOR INDUSTRIES IN INDIA

Introduction:

In this chapter, the factors determining the capital structure of selected service sector industries in India have been analysed and presented. Every business transaction involves funds either directly or indirectly. A firm requires both equity forms of finance as well as debt to cater to its requirement. There are various internal and external factors, theoretically, important in determining the capital structure policy of a company. The various firm-specific attributes are suggested by different theories of capital structure. A review of the previous literatures suggests a number of factors which are likely to have an impact on a company's capital structure. The following table explains the independent variables selected for the analysis of the factors determining the capital structure of the services sector industries in India.

Table – 35

Independent Variables and their Measurement to Analyse the Determinants of Capital Structure

Variables	Measurement
1. Asset Structure	Net Fixed Assets / Total Assets
2. Trading on Equity	EBIT / EBIT-I
3. Liquid Asset	Liquid Assets / Total Assets
4. Profitability	EBIT / Capital Employed
5. Size	Total Assets
6. Business Risk	Standard Deviation of EBIT
7. Growth	Year on Year Asset Growth
8. Debt Service Capacity	EBIT / Interest on Debt
9. Corporate Tax	Provision for Tax / Profit Before Tax
10.Collateral Value of Assets	Accounts Receivables + Inventory + Net Fixed Assets / Total Assets
11.Non Debt Tax Shield (NDTS)	Depreciation / Total Assets
12.Deposits *	Demand Deposits to Total Deposits
13.Total Loan Portfolio *	Advances to Total Assets

*Used only in the analysis of banking industry along with other variables.

The total debt to equity was used as the dependent variable to represent the capital structure in this study. In finding the influence of various independent variables over the dependent variable of service sector industries in India, multiple linear regression – step wise was used. At the beginning, an analysis is carried out to understand the determinants of capital structure for the services sector in India by combining together all the selected industries. Then the same analysis has been repeated to understand the influence of these independent variables on the dependent variable across the service sector industries in India by analyzing each industry separately. The results are exhibited in the following pages.

1. The Determinants of Capital structure of Services Sector in India

Regression analysis has been applied for the services sector in India by combining the companies of all the selected services sector industries together to know the determinants of capital structure of the services sector in India and the results are discussed below.

Table - 36

REGRESSION ANALYSIS FOR SERVICES SECTOR IN INDIA

Dependent Variable: Debt –Equity Ratio

	Regression Coefficients (B)	Std. Error	t	Sig.
(Constant)	1.739	0.099		
Profitability	-0.0152	0.001	-14.429	**
Collateral Value of Assets	-0.645	0.130	-4.957	**
Liquid Assets	-1.594	0.225	-7.079	**
Trading on Equity	0.0133	0.003	4.649	**
Business Risk	0.00054	0.000	4.406	**
Non Debt Tax Shield	-6.238	1.555	-4.010	**

* - Significant at 5% level, ** - Significant at 1% level,

R	R Square	F	Sig.
0.346	0.119	56.295	**

Source: Computed, Period: 1995-96 – 2009-10.

Multiple linear regression – step wise was used to find out the effect of the selected independent variables on the dependent variable namely debt – equity ratio.

It is seen from the regression table 36 that the multiple correlation coefficient which measures the degree of relationship between a set of independent variables included in the regression equation and the dependent variable was found to be 0.346. This indicates that there is a moderate correlation between the set of independent variables taken together and the dependent variable. The F ratio value (56.295) shows that the multiple correlation coefficient is significant at 1% level. The R^2 value (0.119) shows that 11.9% of variations in debt-equity ratio was explained by the 6 independent variables included in the model.

The step wise multiple regression will not include all the variables in the model. The independent variables with high correlations among themselves will be ignored in the procedure as this might affect the stability of regression equation. Finally, the variables which are deemed to be fit to enter in the equation will alone be included. As such out of 11 independent variables only 6 were included, the other independent variables are left out of equation as their contribution is negligible.

Individually, from the regression coefficients, it is observed that all the 6 independent variables have significant effect on debt-equity ratio at 1% level. Out of the 6 variables included in the equation only 2 have positive effect on debt-equity ratio, whereas, remaining 4 variables have negative effect.

Trading on Equity and business risk are found to have positive effect on debt-equity ratio, where as profitability, collateral value of assets, liquid assets and non debt tax shield have negative effect on debt-equity ratio of services sector in India.

This analysis has been repeated for all the selected industries individually to identify the determinants of capital structure of each services sector industry in India. The results of the analysis of each industry are exhibited in the following pages.

2. The Determinants of Capital structure of Asset Financing Services Industry in India

Regression analysis has been applied for the asset financing industry in India to understand the determinants of capital structure of this industry and the results are discussed below. Multiple linear regression – step wise was used to find out the effect of the selected independent variables on the dependent variable namely debt – equity ratio.

Table- 37
REGRESSION ANALYSIS FOR ASSET FINANCING SERVICES INDUSTRY
Dependent Variable: Debt to Equity Ratio

	Regression Coefficients (B)	Std. Error	t	Sig.
(Constant)	4.935	0.359		
Collateral Value of Assets	-2.791	0.492	-5.671	**
Growth	3.414	0.501	6.812	**
Liquid Assets	-6.604	1.402	-4.711	**
Size	0.0001350	0.000	3.341	**
Asset Structure	-3.429	1.059	-3.238	**
Corporate Tax	-0.207	0.077	-2.699	**
Business Risk	-0.003905	0.002	-2.156	*

* - Significant at 5% level, ** - Significant at 1% level,

R	R Square	F	Sig.
0.655	0.429	31.550	**

Source: Computed, Period: 1995-96 – 2009-10.

It is observed from the regression table 37 of asset financing services industry in India that the multiple correlation coefficient which measures the degree of relationship between a set of independent variables included in the regression equation and the dependent variable was found to be 0.655. This indicates that there is a high correlation between the set of independent variables taken together and the dependent variable. The F ratio value (31.55) shows that the multiple correlation coefficient is significant at 1% level. The R^2 value (0.429) shows that 42.9% of variations in debt-equity ratio was explained by the 7 independent variables included in the model.

As such, out of 11 independent variables only 7 were included; the other independent variables are left out of equation as their contribution is negligible. Individually, from the regression coefficients, it is observed that 6 independent variables, namely, collateral value of assets, growth, liquid assets, size, asset structure, and corporate tax have significant effect on debt-equity ratio at 1% level and 1 variable that is business risk has significant effect on debt-equity ratio at 5% level.

Out of the 7 variables included in the equation only 2 have positive effect on debt-equity ratio, whereas, remaining 5 variables have negative effect, that is, growth and size are found to have positive effect on debt-equity ratio; where as collateral value of assets, liquid assets, asset structure, corporate tax and business risk have negative effect on debt-equity ratio.

3. The Determinants of Capital structure of Banking Services Industry in India

Regression analysis has been applied for the banking services industry in India to understand the determinants of capital structure of this industry and the results are discussed below. Multiple linear regression – step wise was used to find out the effect of the selected independent variables on the dependent variable namely debt – equity ratio.

For the purpose of analysis of determinants of capital structure of banking services industry in India, there are 13 variables taken for the study. Out of these 13 variables, 11 variables are as common as considered for the other industries for the similar analysis. Deposits and the total loan portfolio are the variables exclusively added to this industry.

From the regression table 38 of banking services industry in India, it is witnessed that the multiple correlation coefficient which measures the degree of relationship between a set of independent variables included in the regression equation and the dependent variable was found to be 0.778. This indicates that there is a high correlation between the set of independent variables taken together and the dependent variable.

Table-38

REGRESSION ANALYSIS FOR BANKING SERVICES INDUSTRY

Dependent Variable: Debt to Equity Ratio

	Regression Coefficients (B)	Std. Error	t	Sig.
(Constant)	2.413	0.381		
Growth	1.844	0.149	12.404	**
Business Risk	0.003724	0.000	6.788	**
Debt Service Capacity	-1.312	0.263	-4.992	**
Liquid Assets	-6.121	1.215	-5.040	**
Asset Structure	12.712	4.609	2.758	**

* - Significant at 5% level, ** - Significant at 1% level,

R	R Square	F	Sig.
0.778	0.606	48.602	**

Source: Computed, Period: 1995-96 – 2009-10.

The F ratio value (48.602) shows that the multiple correlation coefficient is significant at 1% level. The R^2 value (0.606) shows that 60.6% of variations in debt-equity ratio was explained by the 5 independent variables included in the model.

The step wise multiple regression will not include all the variables in the model. The independent variables with high correlations among themselves will be ignored in the procedure as this might affect the stability of regression equation. Finally, the variables which are deemed to be fit to enter in the equation will alone be included. As such out of 13 independent variables selected, only 5 were included in the model, the other independent variables are left out of equation as their contribution is negligible. Individually, from the regression coefficients, it is seen that all the 5 independent variables have significant effect on debt-equity ratio at 1% level. Among these variables, growth, business risk, and asset structure are found to have positive effect on debt-equity ratio; whereas debt service capacity and liquid assets have negative effect on debt-equity ratio.

4. The Determinants of Capital structure of Fee Based Financial Services Industry in India

Regression analysis has been applied for the fee based financial services industry in India to find out the determinants of capital structure of this industry. The results are discussed below. Multiple linear regression – step wise has been used to find out the explanatory variables contributing the most towards the variation in the capital structure of Fee based financial services industry in India.

Table-39

REGRESSION ANALYSIS FOR FEE BASED FINANCIAL SERVICES INDUSTRY

Dependent Variable: Debt to Equity Ratio

	Regression Coefficients (B)	Std. Error	t	Sig.
(Constant)	0.245	0.041		
Corporate Tax	-0.207	0.065	-3.203	**
Trading on Equity	0.05086	0.018	2.867	**
Liquid Assets	-0.261	0.103	-2.542	*
Growth	0.141	0.036	3.958	**
Profitability	-0.006603	0.002	-3.409	**

* - Significant at 5% level, ** - Significant at 1% level,

R	R Square	F	Sig.
0.500	0.250	10.000	**

Source: Computed, Period: 1995-96 – 2009-10.

From the regression table 39, it can be seen that the multiple correlation coefficient which measures the degree of relationship between a set of independent variables included in the regression equation and the dependent variable was found to be 0.500. This indicates that there is a moderate correlation between the set of independent variables taken together and the dependent variable. The F ratio value (10.00) shows that the multiple correlation coefficient is significant at 1% level. The R^2 value which is equal to 0.250 which suggests that 25% of variations in debt-equity ratio has been explained by the 5 independent variables such as corporate tax, trading on equity , liquid assets, growth, and profitability. All the other variables got automatically excluded under step-wise regression analysis as their contribution to the model is negligible.

From the regression coefficients, it is seen that out of the 5 variables included in the equation only 2 have positive effect on debt-equity ratio, whereas, remaining 3 variables have negative effect. The independent variables, trading on equity and growth have significant effect on debt-equity ratio at 1% level with positive sign. Corporate tax and profitability are found to have significant effect on debt-equity ratio with negative sign at 1% level; whereas liquid assets have negative effect on debt-equity ratio at 5% level.

5. The Determinants of Capital structure of Health Services Industry in India

Table 40 highlights the results of regression analysis to identify the determinants of capital structure of health services industry in India. Multiple linear regression – step wise was used to find out the effect of the selected independent variables on the dependent variable namely debt – equity ratio.

For the purpose of analysis of determinants of capital structure of health services industry in India, there are 11 variables taken for the study. Out of these 11 variables, the variations in debt-equity ratio of health services industry in India have been explained only by one independent variable that is profitability. All the other variables got automatically excluded under step-wise regression analysis as their contribution to the model is negligible.

Table-40

REGRESSION ANALYSIS FOR HEALTH SERVICES INDUSTRY

Dependent Variable: Debt to Equity Ratio

	Regression Coefficients (B)	**Std. Error**	**t**	**Sig.**
(Constant)	1.180	0.328		
Profitability	-0.07785	0.027	-2.916	**

* - Significant at 5% level, ** - Significant at 1% level,

R	R Square	F	Sig.
0.279	0.078	8.505	**

Source: Computed, Period: 1995-96 – 2009-10.

From the regression coefficients, it is seen that both the independent variables i.e., trading on equity and growth have significant effect on debt-equity ratio at 1% level and these variables are found to have positive effect on debt-equity ratio of investment services industry in India.

9. The Determinants of Capital structure of Recreational Services Industry in India

Table 44 shows the results of regression analysis to identify the determinants of capital structure of recreational services industry in India. Multiple linear regression – step wise was used to find out the effect of the selected independent variables on the dependent variable namely debt – equity ratio.

For the purpose of analysis of determinants of capital structure of recreational services industry in India, there are 11 variables taken for the study. Out of these 11 variables, the variations in debt-equity ratio of recreational services industry in India have been explained only by one independent variable that is size. All the other variables got automatically excluded under step-wise regression analysis as their contribution to the model is negligible.

Table-44
REGRESSION ANALYSIS FOR RECREATIONAL SERVICES INDUSTRY
Dependent Variable: Debt to Equity Ratio

	Regression Coefficients (B)	Std. Error	t	Sig.
(Constant)	0.399	0.045		
Size	-0.00007884	0.000	-2.418	*

* - Significant at 5% level, ** - Significant at 1% level,

R	R Square	F	Sig.
0.285	0.081	5.848	*

Source: Computed, Period: 1995-96 – 2009-10.

The regression table 44 of recreational services industry in India suggests that the multiple correlation coefficient which measures the degree of relationship between a set of independent variables included in the regression equation and the dependent variable was found to be 0.285. This indicates that there is a low correlation between the set of independent variables taken together and the dependent variable.

The F ratio value (5.848) shows that the multiple correlation coefficient is significant at 5% level. The R^2 value (0.081) shows that only 8.1% variation in debt-equity ratio was explained by the independent variable size, which is the only variable included in the model. From the regression coefficients, it is observed that the independent variable size has significant effect on debt-equity ratio at 5% level with negative sign.

10. The Determinants of Capital structure of Transport Services Industry in India

Regression analysis has been applied for the transport services industry in India to identify the determinants of capital structure of this industry and the results are discussed below. Multiple linear regression – step wise was used to find out the effect of the selected independent variables on the dependent variable namely debt – equity ratio.

Table-45

REGRESSION ANALYSIS FOR TRANSPORT SERVICES INDUSTRY

Dependent Variable: Debt to Equity Ratio

	Regression Coefficients (B)	Std. Error	t	Sig.
(Constant)	1.061	0.181		
Liquid Assets	-2.932	0.722	-4.059	**
Asset Structure	0.721	0.290	2.485	*
Profitability	-0.03337	0.009	-3.592	**
Business Risk	0.002728	0.001	2.027	*

* - Significant at 5% level, ** - Significant at 1% level,

R	R Square	F	Sig.
0.477	0.227	11.338	**

Source: Computed, Period: 1995-96 – 2009-10.

It is observed from the regression table 45 that the multiple correlation coefficient which measures the degree of relationship between a set of independent variables included in the regression equation and the dependent variable was found to be 0.477. This indicates that there is a moderate correlation between the set of independent variables taken together and the dependent variable. The F ratio value

(11.338) shows that the multiple correlation coefficient is significant at 1% level. The R^2 value (0.227) shows that 22.7% of variation in debt-equity ratio was explained by the four independent variables namely liquid assets, asset structure, profitability, and business risk included in the model. All the other variables got automatically excluded under step-wise regression analysis as their contribution to the model is negligible.

An observation of the results of the model shows that asset structure and business risk have significant effect on debt-equity ratio at 5% level with positive sign, whereas, liquid asset and profitability have significant effect on debt-equity ratio at 1% level with negative sign.

11. The Determinants of Capital structure of Wholesale and Retail Trading Industry in India

Regression analysis has been applied for the wholesale and retail trading industry in India to identify the determinants of capital structure of this industry. The results are discussed below. Multiple linear regression – step wise has been used to find out the explanatory variables contributing the most towards the variation in the capital structure of wholesale and retail trading industry in India. For the purpose of analysis of determinants of capital structure of wholesale and retail trading industry in India, there are 11 variables taken for the study. Out of these 11 variables, the variations in debt-equity ratio of wholesale and retail trading services industry in India have been explained by four independent variables that are non debt tax shield, size, profitability and asset structure. All the other variables got automatically excluded under step-wise regression analysis as their contribution to the model is negligible.

It is observed from the regression table 46 that the multiple correlation coefficient which measures the degree of relationship between a set of independent variables included in the regression equation and the dependent variable was found to be 0.351. This indicates that there is a moderate correlation between the set of independent variables taken together and the dependent variable. The F ratio value (23.256) shows that the multiple correlation coefficient is significant at 1% level. The R^2 value (0.123) shows that 12.3% of variation in debt-equity ratio was explained by the four independent variables namely non debt tax shield, size, profitability and asset structure included in the model.

Table-46

REGRESSION ANALYSIS FOR WHOLESALE & RETAIL INDUSTRY
Dependent Variable: Debt to Equity Ratio

	Regression Coefficients (B)	Std. Error	t	Sig.
(Constant)	0.398	0.060		
Non Debt Tax Shield	8.162	2.232	3.656	**
Size	0.000578	0.000	4.973	**
Profitability	-0.01556	0.004	-4.286	**
Asset Structure	0.546	0.201	2.719	**

* - Significant at 5% level, ** - Sigificant at 1% level,

R	R Square	F	Sig.
0.351	0.123	23.256	**

Source: Computed, Period: 1995-96 – 2009-10.

An observation of the results of the model denotes that non debt tax shield, size and asset structure have significant effect on debt-equity ratio at 1% level with positive sign, whereas, profitability has significant effect on debt-equity ratio at 1% level with negative sign.

Table-47
The Overall Result: Determinants of Capital structure of Services Sector Industries in India
Dependent Variable: Debt-Equity Ratio

Independent variables	All Industries	Asset Financing Services	Banking Services	Fee Based Financial Services	Health Services	Hotels & Tourism	Informa-tion Techno-logy	Invest-ment Services	Recrea-tional Services	Trans-port Services	Whole-sale & Retail Trading
1. Asset Structure	Negative	Negative	Positive			Positive				Positive	Positive
2. Trading on Equity	Positive			Positive				Positive			
3. Liquid Assets	Negative	Negative	Negative	Negative			Negative			Negative	
4. Profitability	Negative			Negative	Negative	Negative	Negative			Negative	Negative
5. Size		Positive							Negative		Positive
6. Business Risk	Positive	Negative	Positive							Positive	
7. Growth		Positive	Positive	Positive				Positive			
8. Debt Service Capacity			Negative								
9. Corporate Tax		Negative		Negative							
10.Collateral Value of Assets	Negative	Negative									
11.Non Debt Tax Shield (NDTS)	Negative										Positive
12.Deposits *											
13.Total Loan Portfolio*											

Source: Computed, Period: 1995-96 – 2009-10.

Conclusion

In this chapter, the determinants of capital structure of Indian services sector have been analysed by using the step wise multiple linear regression to find out the explanatory variables contributing to the variations in the capital structure. Further, the same analysis has been extended to all the selected services sector industries in India. For the purpose of analysis of determinants of capital structure for the services sector as well as for each selected industry in India, there are 11 variables taken for the study. At the same time, for the banking services industry, additional variables such as deposits and total loan portfolio have been included. The stepwise multiple regression will not include all the variables in the equation. The independent variables with high correlation among themselves will be ignored in the procedure as this might affect the stability of regression equation. Finally, the variables which are deemed to be fit to enter in the equation will alone be included. The results of determinants of capital structure of each industry have been consolidated in the following table.

From the overall results table 47, it is observed that the independent variable asset structure has been contributing towards the variation in capital structure of six industries out of eleven selected industries. It has been influencing the capital structure of two industries with negative sign such as services sector as a whole and the asset financing services industry. At the same time, for four industries such as banking services, hotels & tourism, transport services and wholesale & retail trading industries it has been contributing with positive sign towards the variation of capital structure. This indicates a possibility that the term loans are used to finance longer-lived assets. This result is not consistent with previous findings by Demirgue-Kunt and Maksimovic (1994).[132]

Trading on equity has been contributing towards the variations in capital structure of only three out of eleven selected industries with positive sign. The services sector as a whole; fee based financial services and investment services are the industries where the influence of trading on equity on capital structure is seen. The independent variable liquid assets have been contributing towards the variation of capital structure of six out of

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[132] Kunt, A.D., and V.Maskimovic (1995), 'Stock Market Development and Firm Financing Choice", *World Bank Policy Research Working Paper*, No.1461.

eleven selected industries with negative sign. The whole of services sector, asset financing services, banking services, fee based financial services, information technology and transport services are the industries influenced by liquid assets.

Profitability has been the variable which is influencing the capital structure the most among the independent variables selected for the study. It has been influencing the variation of capital structure of seven industries out of selected eleven industries. In all the seven industries profitability has been contributing with negative sign. Services sector, fee based financial services, health services, hotels and tourism, information technology, transport services and wholesale & retail trading industries' capital structure have been influenced by profitability. The variable size has been influencing only three industries namely, asset financing services, recreational services and wholesale & retail trading. In recreational services its contribution is with negative sign, whereas in other two industries it is positive towards the variation in the capital structure.

Business risk has been influencing the capital structure of four industries out of eleven selected industries such as services sector, asset financing services, banking services and transport services. Except asset financing services, business risk is positive in influencing the capital structure of selected industries. The independent variable growth has been contributing towards the variations of capital structure positively in four industries out of the selected eleven industries. Asset financing services, banking services, fee based financial services and investment services are the industries in which growth becomes an influential variable. All these industries belong to financial services business.

Debt service capacity has been influencing the capital structure of banking services with negative sign. Corporate tax has been seen as a contributing variable of capital structure of asset financing services and fee based financial services with negative sign. Surprisingly, the collateral value of assets have been observed as an influencing variable towards the capital structure of only in service sector as a whole and asset based financial services industry with negative sign.

The independent variable non debt tax shield has been influencing the capital structure of two industries such as services sector as a whole with negative sign and wholesale and retail industry with positive sign. For the banking services industry the independent variables deposits and total loan portfolio are selected as the additional variables along with the other variables and both these variables found to have no influence over the capital structure of banking services industry.

From the above discussion it is observed that the determinants of capital structure of various industries in the services sector in India differ widely. Asset structure, trading on equity, business risk and growth are the variables that have positive influence over the capital structure of few services sector industries in India. Other variables are found to have influence in very few industries with both the signs. At the same time, Liquid assets and profitability are the two important variables found to be having significant negative relationship with debt-equity ratio in most services sector industries. It means that there is a reduction in the debt-equity ratio of services sector industries in India whenever their profitability and liquid assets increase. This is possible with the increase in the reserves as a result of increase in profitability or reduction in debt by using the profits. However, it reveals that the pecking order theory is applicable in the services sector industries in India. The result contradicts with the findings of Sahoo and Omkarnath (2005)[133] and Mahakud (2006)[134].

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[133] Sahoo, S.M. and Omkarnath, G. (2005), 'Capital Structure of Indian Private Corporate Sector: An Empirical Analysis'. *The ICFAI Journal of Applied Finance*, pp. 41-56.

[134] Mahakud.J. (2006), 'Testing the Pecking Order Theory of Capital Structure: Evidence from the Indian Corporate Sector', *The ICFAI Journal of Applied Finance*, Vol.12, No.11, pp. 16-26.