

EMPIRICAL STUDY OF ASSOCIATION SHIP BETWEEN CAPITAL STRUCTURE AND PROFITABILITY: A STUDY ON LISTED HEALTH CARE SETUP IN INDIA

Anshu Abhishek*
Dr. Ahamad Hussain**

ABSTRACT

Capital structure decision is the strategically important and dynamically impacting factor for an enterprise. In modern India, hospital industry is important player in capital market and performing well. Now health industry of India is attracting debt and equity for their operations and expansion instead of grants. The successful selection and application of capital is one of the key factor of the firms' financial strategy. Hence, appropriate idea and attention need to be given while determining capital structure decision. The purpose of this study is to investigate the relationship between capital structure (Debt Vs Equity) and profitability of Healthcare firms listed in different stock exchange in India. Total 29 firms have been taken for the research. These all firms are the part of BSE healthcare index. The data has been analyzed by using descriptive statistics and correlation analysis to find out the association between the variables. Results of the analysis show that there is a very weak association between capital structure and profitability except the association between debt to equity and return on equity.

KEYWORDS: *Capital Structure, Capital Structure Ratios, Health Sector, EPS, Profitability, Leverage.*

Introduction

Capital structure and firms value is a key concept in the modern capitalist economy. Many Hospitals and medical services are listed in stock market for their financial needs. This recently growing industry has lot of scope of growth due to need and high intellectual capital availability. India is focusing on Medical tourism for their expansion and improvement for quality. Investors have good expectations about the return. Hospitals and medical services have lot of promoters available now. External business environment of this sectors considered to be good for their growth. This sector has attracted several private equity players, who have been playing a significant role in various strategies of investment trading for Indian hospitals, including organic & inorganic growth. Investor's expectations are directly related to EPS and Risk involved. Capital structure provides a base for EPS, Value of the firm, return and scale of the risk. This study will try to explain the related parameters of financial strategies and establish a framework for optimum capital structure of Hospitals and medical firms. Though many theories tried to explain the capital structure, a model to determine the optimal capital structure is still a famous area among finance researches (Gill et al., 2011). It is widely reported that in the static trade-off theory of capital structure, a more profitable firm is predicted to have a higher leverage ratio (Frank and Goyal, 2005). The empirical relevance of trade off theory has often been questioned. Company chooses the debt and equity mix by balancing the costs and benefits with relation to health care setups. Competent managers who identify the appropriate mix of debt and equity minimize the firm cost of finance, maximize the profitability and thereby improve the competitive advantage. Different firm specific strategies are

* *Research Scholar, Department of Applied Economics and Commerce, Patna University, Patna, Bihar, India & Assistant Professor, School of Management Studies, CMR University, Bangalore, Karnataka, India.*

** *Associate Professor, Vanijya Mahavidyala, Patna University, Patna, Bihar, India.*

implemented by the managers to gain competitive advantage to the firm and thereby enhance the firm value result in performance differences (Gleason et al, 2000).

Modigliani and Miller (MM), (1958) provided that the well-known theory of irrelevance of capital structure where financial leverage does not affect the firm's market value. MM generally viewed this as a purely theoretical result since to derive it, they had to assume away many important factors in which it would influence capital structure decision. Specifically, theory was based on very unrealistic assumptions which we cannot see in the real world. This provides the base with which to examine real world and to consider reason why capital structure is relevant. Presence of bankruptcy costs and favorable tax treatment of interest payment lead to the notion of an "optimal capital structure" which maximizes the value of the firm and minimizes the cost of capital

Indian Healthcare industry contributes~4% to the Gross Domestic Product (GDP). The Indian healthcare sector consists of Hospitals, Pharmaceuticals, Medical equipment and supplies, Medical insurance and Diagnostics. Within the industry, Hospitals is the largest segment contributing ~70% of the industry revenue followed by Pharmaceutical at13% of the total revenue and others contributing 17%. The Hospital segment is highly fragmented with ~ 90% of the hospitals being established and operated by doctors & trusts and the balance are being managed by corporate hospitals chains (Apollo Hospital, Fortis Healthcare, etc.).

India, despite being the second most populated country and sharing close to 20% of the global disease burden, lacks in proper healthcare infrastructure. India holds just 6% of the global beds and 8% share of doctors and nursing staff. Further, India has just 9 beds per 10,000 people which is significantly lower than the global median average of 30 beds per 10,000 people. It is believing that with rising population, the need to improve healthcare infrastructure may come into the forefront in the government agenda. This indicates a huge opportunity for hospital chains which is in the process capacity expansion not only in urban areas but in the Tier - II and Tier -III cities as well.

Capital structure refers to the different options used by a firm in financing its assets (Bhaduri, 2002). Generally, a firm can go for different levels/mixes of debts, equity, or other financial arrangements. The foundation for theories and research focus on the subject of capital structure began with the introduction of Modigliani and Miller's (M&M) theoretical model about corporate capital structure in 1958 which is considered to have created the turning point for modern corporate finance theory. The theory provides insight into a firm's capital structure decision in a capital market free of taxes, transaction costs, and other frictions. Following Modigliani and Miller (1958), most theories such as the Pecking Order Theory, Agency Theory and Trade Off Theory have sought to explain capital structure by introducing frictions omitted in the original Modigliani and Miller framework. According to Myers (2001) there is no universal theory of the debt-equity choice, and no reason to expect one. However, there are several useful theories as identified earlier each of which helps to understand the debt-to-equity structure that firms choose. These theories can be divided into two groups –either they predict the existence of the optimal debt-equity ratio for each firm (so-called static trade-off models) or they declare that there is no well-defined target capital structure (pecking-order hypothesis). Static trade-off models understand the optimal capital structure is achieved when the marginal present value of the tax shield on additional debt is equal to the marginal present value of the costs of financial distress on additional debt. On the other hand, the pecking-order theory suggests that there is no optimal capital structure but firms ration between internal financing (retained earnings) to external funds depending on the extent of perceived information asymmetry in the financing environment. Several factors may influence the financial structure of companies. For example Salawu (2007) identifies factors such as ownership structure and management control, growth, profitability, issuing cost, and tax issues associated with debt as the major factors influencing bank's capital structure. Bevan and Danbolt (2001) also highlights company size, profitability, tangibility, growth opportunities, non-debt tax shields and dividend as possible determinants of the capital structure choice. The focus of this study is to discuss these factors influencing the capital structure of quoted companies. This is imperative as the corporate sector in India is characterized by many firms operating in a largely deregulated and increasingly competitive environment.

Review of Literature

Taub (1975) tried to ascertain the factors influencing a firm's choice of a debt equity ratio. For this study, a total of 89 firms from Unites States were chosen randomly over a period of ten year from 1960 to 1969 and the likelihood-ratio statistics and t-test were used to test the hypothesis described therein. Bhat (1980) tried to analyze the determinants of financial leverage and to investigate the relationship between the

leverage ratio and institutional characteristics viz. firm size, variation in income, growth, profitability, debt service and dividend payout through correlation and regression analysis. Venkatesan (1983) tried to explore the relationship of certain exogenous variables with the financial leverage. He used the data of 66 firms from four different industries for a time span of four year from 1977 to 1980. He attempted to analyze the impact of seven different variables on financial structure of firms by using the multiple regression model, correlation and t-test. The study reveals that null hypothesis proposed in the study that size does not have any relationship with financial leverage could not be rejected for any of the industries. Titman and Wessels (1988) introduced a factor analysis technique for estimating the impact of unobservable attributes on the choice of corporate debt ratio using the data from the 469 UK firms for the period of nine years from 1974-82. Chandra kumar mangalam and Govindasamy (2010) tried to investigate the relationship between leverage (financial leverage, operating leverage and combined leverage) and earnings per share by using the data from seven public limited cement companies for a period of 11 years from 1997 to 2007. The study found that there is significant relationship between DFL and EPS, DCL and EPS and DOL and EPS. The study reveals that leverage have significant impact on the profitability of the firm and the wealth of the shareholders can be maximized when the firm can employ more debt. Rani (1997) in her Ph.D. thesis used backward multiple regression model to identify significant variables affecting capital structure by considering leverage ratio as dependent variable. Kakani and Reddy (1998) attempted to find out the determinants of the capital structure for 400 firms for a period of 11 years from 1985 to 1995 by using correlation and multiple regression. The study has analyzed measure of short-term and long-term debt rather than an aggregate measure of total debt. Samarakoon (1999) examined the determinants of leverage in a cross section of listed companies in Sri Lanka using a sample of firms listed in the Sri Lanka Stock Exchange. The results indicate that the use of long term debt is relatively low. Pandey, et al. (2000) analyzed the 221 Thai manufacturing firms for the period of 1990-95 to find out the financing pattern of these firms during the period of country's financial liberalization and economic success. The results of the study show that the Thai manufacturing firms have been financing more than half of their total assets through debt during study period and share of long term debt to short term debt has gone down from 40 percent to 24 percent during the same period. Dailida and Novikov (2004) in their research work on capital structure answered to the question whether the corporate financial leverage decisions differ significantly between developing and developed countries and the debt ratios in developing countries are influenced by the same factors as they are in developed countries. impact on firm's leverage ratio. Shah and Khan (2007) have applied two variants of panel data analysis to find out the determinants of capital structure of KSE listed non-financial firms for the period 1994-2002. Pooled regression analysis was applied with the assumption that there were no industry or time effects and by using fixed effect dummy variable regression, the coefficients for a number of industries were significant showing there were significant industry effects, hence, the study has accepted the latter model for analysis. Singh (2011) have examined the capital structure practices of developing countries through a study of Indian Corporate sector by classifying the capital structure of a sample of 298 out of top 500 manufacturing companies for a period of 11 years commencing from 1995-1996 to 2005-06. Srivastava (2012) studied the determinants of capital structure in Indian Pharmaceutical companies for the pre-and post-liberalization period extended over the years from 1977-78 to 2006-2007 using regression analysis, Jargue-Bera (JB) test, chow test, t-test and F test. The regression analysis for the total period shows cash ratio and firm size to be the only significant variables at the 5 percent level. In the pre-liberalization period, i.e., 1977-78 to 1991-92, profitability, non-debt tax shield and asset structure are the significant variables although profitability and asset structures are significant with the negative signs.

Research Problem

Substantial parts of the literature concerning capital structure have dealt with issues relating to capital structure ratios. These ratios have been analyzed in many ways. This research problem will also be dealt with these ratios in a new manner. This study attempts to investigate the relationship between capital structure and profitability of the healthcare setups listed in different stock exchange in India.

Objective of Study

This research attempts:

- To find out the relationship between capital structure and profitability.
- To find an optimal capital structure that would be associated with the best performance.
- To suggest the healthcare setups in a way to increase profitability through adapting a better strategic framework of capital structure.

Research Methodology

In Indian stock exchanges, have about 30 healthcare setups been listed. The sample selected includes all health sectors institutions listed and the number of the sample consists of five companies which are from hospitals, Pathology and Clinical segment. The ten-year data from 2007–2016 are used for this study. Selection criterion is based on the availability of the data. The secondary data were collected for the study during the period of ten years (2007 -2016) and the data used for the empirical analysis was derived from the data base maintained by different stock exchange and numbers of financial consultancies. This data base contains balance sheet, profit and loss account and investor guide. The data were averaged over five years to smooth the variables. While Titman and Wesseles (1988) adopted three-year averages, Rajan and Zingales (1995) used five-year averages. Following Rajan and Zingales, this study used five-year averages and some necessary data were hunted from online (official website of different stock exchange. Further, annual reports of the companies, books, journals, magazines, and research reports were also used for data collection. In this study, various statistical methods have been employed to analyze data collected from five companies listed in NSE and BSE etc. A well know statistical package called Excel Analysis Tool has been used to analyze the data researcher collected. The upper level of statistical significance for hypotheses testing was set at 5%. All statistical test results were computed at the 2-tailed level of significance. Statistical analysis involves both descriptive and inferential statistics. According to research objective and research questions, this study has set the variables and their measurement is largely adopted from existing literatures. The following table shows the variables and their measures.

Table 1: Operationalization

Concept	Variables	Indicators	Measurement
Capital Structure	Equity Ratio (ER)	Total Equity / Total Assets	Ratio
	Debt Ratio	Debt / Total Asset	Ratio
	Debt to Equity Ratio	Debt/ Equity	Ratio
Profitability	Net Profit Ratio (NP)	Net Profit / Sale turnover	Ratio
	Return on Capital Employed (ROCE)	EBIT/ Total Assets	Ratio
	Return on Equity (ROE)	Net Profit / Total Equity	Ratio
	Earnings per Share (EPS)	Earnings Available to shareholders / Total Number of shares	Ratio

The general form of the panel data model can be specified more compactly as follows:

$$Y_{it} = \alpha + \beta X_{it} + \epsilon_{it}$$

The subscript i representing the cross-sectional dimension and t denoting the time-series dimension. The left hand variable Y_{it} , represents the dependent variable in the model and X_{it} contains the set of independent variables in the estimation model, is taken to be constant overtime t and specific to the individual cross-sectional unit i . If α is taken to be the same across units, ordinary least squares (OLS) provides a consistent and efficient of α and β . Researchers use multiple regression model to test the impact of independent variables on dependent variable:

$$EPS_{i,t} = \alpha_0 + \alpha_1 ER_{i,t} + \alpha_2 DR_{i,t} + \alpha_3 LR_{i,t} + \epsilon_{i,t}$$

Where;

$EPS_{i,t}$ - ratio of net income to number of equity shares for firm i in period t

$\alpha_0, \alpha_1, \alpha_2, \alpha_3$ - Model coefficients

$ER_{i,t}$ - ratio of total equity to total assets for firm i in period t

$DR_{i,t}$ - ratio of long term debt to total assets for firm i in period t

$LR_{i,t}$ - ratio of debt to equity for firm i in period t and

$\epsilon_{i,t}$ - Error term.

Hypotheses

The following hypotheses have been developed for testing.

- H₁** : There is a significant negative relationship between Debt to equity and Net Profit Ratio.
- H₂** : There is a significant negative relationship between Debt to equity and Return on Capital Employed.
- H₃** : There is a significant negative association between Debt to equity and Return on Equity.
- H₄** : There is a significant negative relationship between Debt to equity and EPS.

According to the descriptive study the dependent and independent variable have the summary of 29 samples, having different value. EPS and EBIT are the nominal value in Rupees currency, while others are ratios. The table is describing the nature of whole data with their central tendency and dispersion. The whole data is not showing normal distribution because of Kurtosis and skewness is greater than three. Debt to equity (DE) has mean value of 0.093 with standard deviation 0.817. Debt to total Fund (DTF) has mean value of 0.434 with standard deviation of 0.96023. Net Profit Ratio has the mean value of -0.2109 with standard deviation of 0.92591. Other variables have same way of central tendency and dispersion.

• **Correlation and Regression Analysis**

The results of correlation between three independent and dependent variables are reported in table 4. The results indicate a negative relationship between equity ratio and Positive correlation with debt ratio.

Table 4: Correlation Matrix

		DE	DTF	NetProfitRatio	EBIT	ROCE	ROE	EPS
DE	Pearson Correlation	1	-.503**	.015	.150	.085	.004	.000
	Sig. (2-tailed)		.005	.938	.437	.822	.982	.878
	N	29	29	29	29	29	29	29
DTF	Pearson Correlation	-.503**	1	.024	-.033	.056	.010	-.076
	Sig. (2-tailed)	.005		.901	.886	.771	.858	.684
	N	29	29	29	29	29	29	29
NetProfitRatio	Pearson Correlation	.016	.024	1	.116	.077	.836**	.166
	Sig. (2-tailed)	.900	.901		.550	.690	.000	.422
	N	29	29	29	29	29	29	29
EBIT	Pearson Correlation	.150	-.033	.116	1	.210	.167	.002
	Sig. (2-tailed)	.437	.886	.553		.276	.416	.994
	N	29	29	29	29	29	29	29
ROCE	Pearson Correlation	.085	.056	.077	.210	1	.088	.003
	Sig. (2-tailed)	.622	.771	.690	.276		.661	.988
	N	29	29	29	29	29	29	29
ROE	Pearson Correlation	.004	.010	.836**	.167	.088	1	.117
	Sig. (2-tailed)	.982	.969	.000	.416	.661		.544
	N	29	29	29	29	29	29	29
EPS	Pearson Correlation	.000	-.076	.166	.002	.003	.117	1
	Sig. (2-tailed)	.878	.684	.422	.994	.988	.544	
	N	29	29	29	29	29	29	29

** Correlation is significant at the 0.01 level (2-tailed)

Debt to equity is positively correlated with Net Profit Ratio, ROCE, ROE and EPS, but the extent of correlation is very week i.e. maximum correlation with EBIT is 0.15 and minimum is 0.004 with ROE. Means all the correlation of debt equity with profitability ratio is near to zero but more than zero. So, it can be explaining as uncorrelated or very week positive correlated phenomenon. The multiple regression analysis is carried out to investigate the simultaneous impacts of all the independent variables on the dependent variable. The results of regression, four (04) indicators of capital structure (independent variables) against the dependent variable are shown below.

Table 4: Regression between D/E (Independent) and EPS (Dependent)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.030 ^a	.001	-.036	85.58881

a. Predictors: (Constant), DE

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	173.343	1	173.343	.024	.879 ^a
	Residual	197786.976	27	7325.444		
	Total	197960.318	28			

a. Predictors: (Constant), DE b. Dependent Variable: EPS

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	19.031	16.000		1.189	.245
	DE	3.045	19.794	.030	.154	.879

a. Dependent Variable: EPS

Regression between D/E (Independent) and ROE (Dependent)
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.004 ^a	.000	-.037	.20661

a. Predictors: (Constant), DE

ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	.000	1	.000	.001	.982 ^a
	Residual	1.153	27	.043		
	Total	1.153	28			

a. Predictors: (Constant), DE b. Dependent Variable: ROE

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.039	.039		1.021	.316
	DE	.001	.048	.004	.023	.982

a. Dependent Variable: ROE

Regression between D/E (Independent) and ROCE (Dependent)
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.095 ^a	.009	-.028	.45510

a. Predictors: (Constant), DE

ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	.051	1	.051	.248	.622 ^a
	Residual	5.592	27	.207		
	Total	5.644	28			

a. Predictors: (Constant), DE b. Dependent Variable: ROCE

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.020	.085		-.233	.818
	DE	.052	.105	.095	.498	.622

a. Dependent Variable: ROCE

Regression between D/E (Independent) and Net Profit Ratio (Dependent)
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.015 ^a	.000	-.037	.94279

a. Predictors: (Constant), DE

ANOVA^b

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	.005	1	.005	.006	.938 ^a
	Residual	23.999	27	.889		
	Total	24.004	28			

a. Predictors: (Constant), DE b. Dependent Variable: NetProfitRatio

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.213	.176		-1.206	.238
	DE	.017	.218	.015	.078	.938

a. Dependent Variable: NetProfitRatio

Regression results visualizing R square is very low with dependent variable and independent variable. R square for Net profit ratio is 0.000 means Net Profit ratio is not significant dependent on debt to equity. ROCE has the R square 0.009, means only 9% dependency is explained by debt to equity ratio. R square for the ROE and EPS is also very low with 0.001. Significance value for each dependent variable such as Net Profit Ratio, ROCE, ROE and EPS is higher than 0.005. So, hypothesis is rejected for each one.

Table 5: Testing of Hypotheses

Hypothesis	Beta Coefficient	R	Result	Statistical Significant
H ₁	0.015	0.3	Rejected	Not significant (p > 0.05)
H ₂	0.095	0.004	Rejected	Not significant (p > 0.05)
H ₃	0.004	0.095	Rejected	Not significant (p > 0.05)
H ₄	0.030	0.15	Rejected	Not significant (p > 0.05)

Limitations

This study is based on the secondary data related to few recent years available from financial literature of concerned company. Some financial data used without audited financial statement. Some negligible number of healthcare setups are also listed but here ignored due to non-performing or idle participation in the market.

Conclusion

In this paper, the relationship between capital structure ratio and profitability ratio such as Net Profit Ratio, ROCE, ROE and Earnings per Share (EPS). Due to the availability of the data sample, twenty-nine companies were selected for this analysis. The study employed multiple regression model, bi-variate analysis and descriptive analysis to derive the conclusion. The study revealed that Debt to Equity has positive association with profitability ratio with very low magnitude and about to un-correlated. This finding is corroborated with what was reported by Schwartz (1959), Ronald, W. (1983), Kinsman and Newman (1998), Rajan *et al.* (1995). The findings of this research have both theoretical & practical significance. As this research model proves to be an explanatory model about capital structure ratios and EPS, findings are of importance to improve the leverage decisions which maximize firm value. As whole healthcare industry is appearing less impact of debt equity ratio on the profitability ratio.

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