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Capital Structure and Corporate Performance: A Study of Indian Pharmaceutical Companies

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Abstract: Capital structure decision is an important decision in corporate finance. Modigliani and Miller propounded the theory of capital structure irrelevance in their ground-breaking paper in 1958. Later, they reviewed their earlier position by incorporating the impact of tax shield of interest paid on debt. They proposed that firms should use the maximum possible amount of debt in order to maximize their value. Since then, researchers have attempted to establish the relevance of corporate capital structure and advanced several theories such as trade-off theory, pecking order theory, market timing theory and agency theory to explain the variation in capital structure across companies and across countries. Existing literature shows mixed results about the relationship between leverage and firm performance. Besides, previous studies used Ordinary Least Squares regression (OLS) method to analyse the effect of leverage on firm's performance. The OLS approach may not capture the impact of leverage on firm performance if unobservable individual firm characteristics considerably affect the relationship. Therefore, this study uses panel data analysis to investigate the effect of leverage on the performance of pharmaceutical firms in India controlling for heterogeneity among individual firms. The results of this study indicate that financial leverage has a significant positive impact on a firm's financial performance.

Key words: Financial performance, financial leverage, significant, pharmaceutical firms, relationshi, India

INTRODUCTION

Capital structure decision is an important decision in corporate finance. The capital structure of a firm refers to the combination of debt and equity that it uses to finance its operations. This study aims to address the question whether the capital structure of a firm influences its performance. The ratio between the equity and the debt of a firm is generally known as leverage. Existing literature shows varied finding son the relationship between a firm's leverage and its performance. Besides, previous studies used Ordinary Least Squares regression (OLS) method to analyse the effect of leverage on firm's performance. The OLS method may fail to capture the impact of leverage on the performance of a firm if unobservable individual firm characteristics considerably affect the relationship. Therefore, this study uses panel data analysis to examine theeffect of leverage on the performance of pharmaceutical firms in India.

Literature review: Modigliani and Miller (1958) propounded the theory of capital structure irrelevance in their ground breaking paper in 1958. According to them, financial leverage has no impact on the firm's market value (Modigliani and Miller, 1958). However, their theory was based on such limiting assumptions as perfect capital markets, homogenous expectations, absence of taxes and absence of transaction costs. These assumptions do not hold good in practice. Later, they reviewed their earlier position by incorporating the impact of interest tax shield of debt. They proposed that firms should use as much debt as possible in order to maximize their value (Modigliani and Miller, 1963). Since, then, researchers have attempted to establish the relevance of corporate capital structure and advanced several theories such as trade-off theory, pecking order theory, market timing hypothesis and agency theory to explain the variation in capital structure across companies and across countries.

Trade off theory: The trade-off hypothesis proposes that the optimal financing policy involves making adjustments toward the target debt level when the costs of deviation from such level exceed the costs of adjustment. Debt financing has such benefits as the tax deductibility of interest and reduced agency costs through the monitoring role of debt. At the same time, it has the costs such as bankruptcy costs and agency costs of debt. The trade-off model predicts that the trade-off between these benefits and costs creates an optimal capital structure towards

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which firms progress eventually (Myers, 1977). Firms would prefer debt over equity, so long as the probability of financial distress is not significant (Scott, 1977). Ngugi (2008) observes that debt is associated with certain benefits like tax advantages and costs like bankruptcy costsas against equity. The firm will choose an optimal capital structure that balances the benefits of debt against the costs associated with debt. This view is supported by Myers (1984) and Jensen (1986). Myers (1984) suggests that the trade-off between the tax advantage of debt and the cost of financial distress is expected to result in the optimal level of debt that results in the maximization of the value of the firm. The static trade-off theory predicts that highly profitable firms should have high amount of debt, so that, they can shield their high profits from taxes without exposing themselves to excessive costs of bankruptcy. However, the empirical evidence does not support this prediction (Fama and French, 2002).

Pecking order theory: Myers and Majluf (1984) and Myers (1984) conclude that firms follow a pecking order in their financing decisions to alleviate the adverse effects of inefficiencies in investment decisions due to information asymmetry. Managers who possess superior information will act in the best interests of existing shareholders. They will issue equity when it is overpriced. Moreover, managers will stay away from positive net present value investments if the equity necessary to finance them is underpriced by the market. Therefore, the decision to issue equity to finance investments will convey negative information to the market leading to a fall in the priceon the announcement of the decision. Myers and Majluf (1984) suggest that a firm can avoid the underinvestment problem by issuing a security that has low riskandlow sensitivity to mispricing (for example, debt). When a firm faces the underinvestment problem, capital structure is directed by a hierarchy of preferences or a pecking order for raising new capital. Firms would prefer to use retained earnings as a means of financing. They will seek external funds only if there is an investable need to do so. In such a case, they will prefer debt to equity.

Myers (2001) arguesthat a firm issues equity only when debt is costly, that is, debt ratio is at a perilously high level where substantial costs of financial distress are anticipated. He shows that firms do not go for equity issues if they can raise debt on reasonable terms. Firms should issue equity in two situations: when their stocks experience a high valuation because the asymmetric information costs to the firm are expected to be low in such a case and when theyforesee high growth opportunities which encourages them to issue equity to finance their investing needs, so that, they can reserve their borrowing capacity for the future (Rajan and Zingales, 1995; Titman and Wessels, 1988).

Fama and French (2005) argue that if firms can raise equity without causing the problem of information asymmetry, then asymmetric information may not hinder equity issues. Consequently, pecking order may not hold good. In other words, financing with equity does not become the least preferred alternative and capital structure is not driven by asymmetric information. This does not mean that asymmetric information is of no consequence. It means that its implications become quite limited.

Market timing: According to the market timing hypothesis of Baker and Wurgler (2002), firms issue equity when the relative cost of equity is low. They issue debt when the relative cost of equity is high. Capital structure evolves as the cumulative outcome of past attempts by a firm to time the equity market. The main difference between the market timing and pecking order approaches is that, the pecking order theory assumes semi-strong form market efficiency. So, the announcement of security issues is a proxy for information asymmetry. The market timing theory does not assume semi-strong form market efficiency. Under the market-timing hypothesis, stock prices do not fully adjust to any information transmitted by the decision to issue equity. There are windows of opportunity, so, long as the relative cost of equity varies for whatever reason-irrational or rational.

Empirical findings: Roden and Lewellen (1995) conducted regression analysis of data on corporate capital structure decisions related to 107 leveraged buyout companies in the United States. The data covered 10 years period from 1981-1990. They observeda positive relationship between profitability and the proportion of debt in total buyout-financing. Wald (1999) examined data on firms from nearly forty countries and observed a negative correlation between leverage and profitability. Chiang *etal.* observed that profitability and capital structure are interrelated. Their study sample consisted of 35 companies listed in Hong Kong Stock Exchange. Abor (2005) examined the relationship between capital structure and profitability of twenty two firms listed on the Ghana Stock Exchange. The data covered a 5 years period (1998-2002). He observed a significantly positive relationship between the ratio of short-term debt to total assets on the one hand and ROE on the other. Further, he observed anegative relationship between the ratio of long-term debt to total assets on the one hand and ROE on the other. Gill *et al.* (2011) investigated the effect of capital structure on profitability of service and manufacturing firms in the USA. The results of the study show: a positive relationship between the ratio of short-term debt to total assets on the one hand and profitability on the other and a positive relationship

between the ratio of total debt to total assets on the one hand and profitability on the other in the service industry. The results also show: a positive relationship between the ratio of short-term debt to total assets on the one hand and profitability on the other, a positive relationship between the ratio of long-term debt to total assets on the one hand and profitability on the other and a positive relationship between total debt to total assets on the one hand and profitability on the other in the manufacturing industry. Other major studies by Hadlock and James (2002), Phillips and Sipahioglu (2004), Pandey and Chotigeat (2004), Huang and Song (2006) and Chakraborty (2010) came up with conflicting findings. Some studies confirm positive relationship between capital structure and profitability. On the other hand, some other studies confirm negative e relationship between the variables.

In summary, a review of the extant literature shows that capital structure and the profitability are related. The present study examines the effect of capital structure on profitability of firms in the Indian pharmaceutical industry. This study uses static panel estimators to test the relationship.

Model specification: The models are specified as follows:

- ROE = $\alpha+\beta_1$ financial leverage+β_2 tangibles+β_3 size+£company effect+$\varepsilon_{i,t}$
- Tobin Q = $\alpha+\beta_1$ financial leverage+β_2 tangibles+β_3 size+£company effect+$\varepsilon_{i,t}$

MATERIALS AND METHODS

Data: This study has adopted a quantitative, non-experimental research design in order to gain a broad understanding of the relationship between financial leverage and financial performance of Pharmaceutical companies listed in BSE India. It used secondary data obtained from Ace equity, a financial database maintained by Accord Fintech Private Limited which is extensively used by academic researchers as well as practitioners in India. The study used panel data to test the proposed relationship using pooled cross sectional and time series data. A finite sample of 150 listed companies operating in the pharmaceutical industry in India as on 7th January 2016 was selected for the study. Thirty companies were excluded from the sample because full data were not available in respect of them. Therefore, data relating to 120 companies for the period covering the financial years from 1999-2000 to 2014-2015 were analysed.

Measurement of variables: This study used five measures namely financial leverage, Tobin Q ratio, Return on Equity (ROE), tangible assets and firm size. It used one accounting measure of ROE (%) as a proxy of financial performance (for example, Majumdar and Chhibber, 1999; Abor, 2005; Demsetz and Lehn, 1985; Gorton and Rosen, 1995; Mehran, 1995; Ang *et al*., 2000; Konar and Cohen, 2001). This ratio is commonly used as a comprehensive measure of financial measure that uses data from Income Statement and Balance sheet. Another measure of firm performance is Tobin Q which is computed as the market value of total debt and equity of a company divided by the book value of debt and equity. This is in line with Ghosh (2007), Aggarwal and Zhao (2007), King and Santor (2008) and Soumadi and Hayajneh (2012). This study measured the leverage by employing total debt to total assets ratio (total debt divided by total assets). It indicates the degree to which a firm is utilising borrowed money to achieve its expected performance. The leverage was used as an independent variable. There are two control variables namely tangibility and firm size. Tangibility of assets is measured by the ratio between the net fixed assets and total assets as done by Dessi and Robertson (2003), Margaritis and Psillaki (2010) and Soumadi and Hayajneh (2012). Firm size was measured by natural logarithm of total assets as used by Onaolapo and Kajola (2010), King and Santor (2008) and Soumadi and Hayajneh (2012).

Analysis tools: OLS regression does not take into account the individual non-observable effects. Besides, OLS approachmay underestimate the effect of explanatory variables on the dependent variable due to the form of estimation and the failure to capture firm diversity. Thus, this study uses a random or fixed effect panel model.

RESULTS AND DISCUSSION

Empirical results: The mean and Standard Deviations (SD) scores of the measures used in this study are presented in Table 1. The ROE indicates an average of 13.84% with SD of 18.04%. The standard deviation shows that there is a high variation in terms of usage of debt and ROE. The financial leverage ratio is less than one which indicates that the pharmaceutical firms largely depend on equity for financing their operations. Table 1 also

Table 1: Descriptive statistics and one-way ANOVA results

Variables	ROE	FL	Tobin
Mean	13.84042	0.593468	1.760853
Median	13.17000	0.440000	0.933040
Maximum	195.4200	3.230000	28.499990
Minimum	-163.6400	0.000000	0.036442
SD	18.05527	0.587113	2.731225
Observations	992992992		
F-statistics	3.84	3.84.000	3.84.000

Table 2: Regression analysis of research model

	Panel A: ROE				Panel B: Tobin Q			
Variables	Pooling	REM	FEM	FEM with AR	Pooling	REM	FEM	FEM with AR
Intercept	-5.53**	2.372	20.04*	21.336*	0.865**	-0.609	-1.39**	-0.362
FL	-4.273	-4.489*	-4.29*	-4.487*	-0.527*	-0.273	-0.193	-0.064
Size	3.458	2.379*	-0.127	-0.693	0.347*	0.437*	0.51*	0.189**
Tangibility	-7.60**	-8.191	-8.748	-8.948	-3.804*	-1.71*	-0.97	-0.814
AR(-1)				0.210*				0.763*
AR(-2)								-0.091*
R^2	20.29%	06.42%	39.18	41.94%	16.21%	05.95%	44.87%	70.44%
Adj. R^2	20.05%	06.13%	34.98	37.57%	15.96	05.66%	41.06%	68.00%
F-statistic	83.86*	22.61*	9.33*	9.60*	63.73*	20.82422	11.78	28.92
AIC	8.40		8.26	8.231	4.677		4.38	3.86
SC	8.42		8.579	8.575	4.697		4.70	4.230
DW test	1.15		1.536	2.005	0.448		0.65	2.05

Hausman (1978) test = 26.56; p<0.000, 11.82; p<0.000; LM test = 22.73; p<0.000; *Significant at 1% level; **Significant at 5% level

indicates that there is a significant difference among the companies in terms of usage of debt capital and financial performance.

Table 2 (Panel A) provides the pooled data regression-using ROE as a performance measure. It indicates that all the variables are statistically significant at 5% level. In addition, financial leverage has a negative relationship withperformance. In order to ascertain whether a fixed effects model is better than the OLS pooled model, the study used LM-test (Breusch and Pagan, 1980). The result of LM test shows that FEM is better than the OLS pooled model (Table 2 Panel A). In order to choose the better one between FEM and REM, Hausman (1978) test was performed. The result indicates that FEM is better than REM.

Financial leverage has a negative relationship with performance measure and is statistically significant at one per cent level. Although, the FEM is better, there is serial correlation (refer DW test value). In order to deal with this problem, AR (1) was added as an independent variable. The DW value is close 2 which proves that the model is devoid of serial correlation. It is observed that, financial leverage has a negative relationship and is statistically significant at one percent level.

Table 2 (Panel B) provides the pooled data regressionusing Tobin Q as a performance measure. It indicatesthat financial leverage has a negative relationship with Tobin Q and is statistically significant at one per cent level. In order to ascertain whether a Fixed Effects Model is better than the OLS pooled model, the study used LM-test (Breusch and Pagan, 1980). The result of LM test shows that FEM is better than the OLS pooled model (Table 2-Panel B). In order to choose the better one between FEM and REM, Hausman (1978) test was performed. The result indicates that FEM is better than REM. Although, the FEM is better, there is serial correlation (refer DW test value). In order to deal with this problem, AR (1) was added as an independent variable. The DW value is close 2 which proves that the model is devoid of serial correlation. Financial leverage has a negative relationship with performance and is statistically insignificant at 5% level. The negative relationship between financial leverage and firm performance indicates a higher level of debt in capital structure.

CONCLUSION

The objective of this study is to investigat 4 the influence of financial leverage on financial performance of companies in the pharmaceutical Industry of India. The theory says that leverage is one among the means for enhancing the financial performance of a company. However, increase in leverage will be beneficial to the company only so long as the debt remains within the optimum level. If debt increases beyond the optimum level, it adversely affects ROE. The results of this study show that financial leverage has a significantly negative impact on financial performance and explains about 68% of the variation in performance. This finding is in line with the findings of Majumdar and Chhibber (1999), Graham (2000), Eriotis *et al.* (2011), Goddard *et al.* (2005), Zeitun and Tian (2007), Amidu (2007) and Nunes *et al.* (2009) and others. On the other hand, it is in contrast to those of Rajan and Zingales (1995), Roden and Lewellen (1995), Michaelas *et al.* (1999), Margaritis and Psillaki (2010), Dessi and Robertson (2003), Abor (2005), Odit and Gobardhun (2011) and Ojo (2012) and others. The reason underlying the negative relationship may be that the sample companies under study have exceeded the optimum level of debt. However, the conclusions support the view of debt which affects ROE negatively. As pointed out by De Wet and Hall (2004), the firms can unlock significant amounts of value by moving closer to the optimum level of gearing. It is suggested that studies can be extended to different industries as well as countries.

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