

Impact of Corporate Leverage and Working Capital Management on Earnings of Firm : An Empirical Analysis of Indian Companies

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Abstract

The objective of this paper is to examine the impact of corporate leverage and working capital management policy on earnings of the firm in Indian corporate sector. The working capital management has been measured by current ratio and debt-equity ratio has been used as a representative of corporate leverage. Fourteen control variables have been selected to know their impact on EPS. Panel data regression has been applied to establish the relationship between dependent and independent variables. It is found from the empirical analysis that the relation of corporate leverage with EPS has been statistically significant in traditional firms of Indian corporate sector and relation of working capital management with EPS have been found significant in modern firms only from Indian corporate sector.

Key Words

Working Capital Management, Leverage, Earnings per Share, Panel Data

INTRODUCTION

Capital Structure can be defined as a mix of debt and equity capital maintained by a firm. The capital structure of a firm is very important financial decision since it relates to the ability of the firm to meet the needs of its shareholders. One of the many objectives of a corporate financial manager is to ensure the lower cost of capital and thus maximize the wealth of shareholders. Therefore, use of leverage is an important management decision as it greatly influences the owner's

equity return, the owner's risks as well as the market value of the shares. It is, therefore, incumbent on management of a company to use the appropriate amount of debt in their capital structure. (Salawu and Agboola, 2008)

Debt has been preferred over equity because normally the cost of debt is lower than the equity. Further, interest is paid out of before tax profits, thus, interest provides tax shield and helps in reducing the tax burden of firms consequently the profits available to equity shareholders increase. Though leverage cannot change the total expected earning of the company but it can maximize the earnings available to equity shareholders. On the other hand, excessive use of debt increases the financial risk of the firm and makes the debt financing more costly. The leveraging effect may also have inverse impact on profits available to equity shareholders. The mix of debt and equity where the benefit of the debt is higher than the cost of debt is called the optimal capital structure. With the use of appropriate mix of securities to finance the investment needs, the stockholders have higher rate of return on their investment as compared to under or over levered firms.

There are different views regarding the relationship of leverage with earnings per share. Some researchers like, Durand (1959) and Ezra Solomon (1963) feel that capital structure decision can influence the earnings per share whereas others (Modigliani and Miller, 1958) feel that capital structure has no influence on earnings per share of the firm. Due to the conflicting opinions about the effect of leverage on EPS, it was considered imperative to diagnose the relationship of leverage with EPS. Therefore, this paper intends to resolve this puzzle that whether working capital management and leverage decision affects EPS in the Indian Corporate Sector.

This study is an empirical investigation to know the impact of leverage and working capital management on the earnings available to equity shareholders in Indian corporate sector and these firms have been further divided into Traditional and Modern Firms. Conventional theories of capital structure based on the assumptions of the developed markets and economies do not hold true in case of developing economies like India. Most of research studies reported profitability as the most significant determinant of leverage but we perceive that it is the financial structure which determines the earnings available to equity shareholders. The financing decisions reflect in the operational efficiencies and resultantly affect firm's performance. This study will provide an insight into the impact of leverage and working capital management on the earnings available to equity shareholders. This research will provide ground for the new research on capital structure in Indian corporate sector.

The paper is divided as follows : Section 1 provides the introduction and

Section 2 presents the theoretical basis for the analysis and reviews of some recent empirical studies in this area. Section 3 details the methodology, explanation of the variables, the econometric model and the data employed in the study. The empirical results are reported in Section 4. Finally, Section 5 concludes and presents the main finding with some policy recommendations.

LEVERAGE AND EARNINGS : A REVIEW OF THE LITERATURE

The relationship between leverage and earnings cannot be ignored because the improvement in the profitability is indispensable for the long-term survivability of the firm. Because interest payment on debt is tax deductible whereas such deduction is not available in case of equity financing. The addition of debt in the capital structure will increase the earnings available to equity shareholders of the company. Therefore, it is important to test the relationship between leverage and the earnings of the firm to make appropriate capital structure decisions.

Rao (1984) has studied the financial statement of twenty companies belonging to chemical industry of Indian corporate sector for the year 1980 to observe the impact of profitability on the debt-equity ratio in sample firms. The study has observed the negative association between profitability and debt-equity ratio for the entire sample from chemical companies under study.

Wald (1999) used the data from approximately forty countries. The total sample size was over 3,300 firms from the United States alone. By applying regression analysis, he found a negative correlation between leverage and profitability.

Chiang, Chan, and Hui (2002) collected data related to 18 developers and the other 17 contractors from Hong Kong by using DataStream. Their empirical results disclose that profitability and capital structure are closely related.

Abor (2005) took a sample of 22 firms listed on Ghana Stock Exchange over a five-year period (1998-2002). He found i) a positive relationship between the ratio of short-term debt to total assets and return on equity, ii) a negative relationship between the ratio of long-term debt to total assets and return on equity, and iii) a positive association between the ratio of total debt to total assets and return on equity. In addition, he found a positive relationship between i) firm size and profitability, and ii) sales growth and profitability.

Chandrakumarmangalam and Govindasamy (2010) made an attempt 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 has significant impact on the

profitability of the firm and the wealth of the shareholders can be maximized when the firm is able to employ more debt.

Gill, *et al.* (2011) used a sample of 272 American firms listed on New York Stock Exchange for a period of three years from 2005 to 2007 to examine the effect of capital structure on profitability of the American service and manufacturing firms. The results of the study show a significant positive relationship between short-term debt to total assets and profitability and total debt to total assets and profitability in the service and manufacturing industry whereas the relationship between long-term debt to total assets and profitability is positive but insignificant in manufacturing industry and insignificant in service industry.

Rafique (2011) investigated the effect of the profitability of the firm and its financial leverage on the capital structure of the 11 listed firms in automobile sector in Pakistan. The study fails to establish any significant relation between profitability and financial leverage effect on the capital structure for the sample firms.

Saleem and Naseem (2011) analyzed the leverage and profitability of selected oil and gas companies of Pakistan during 2004 to 2009 to understand the impact of leverage on profitability and EPS. The study failed to support the hypothesized positive relationship between financial leverage and both of the profit measures. The results also indicated that high-levered firms were less risky in both market-based and accounting-based measures.

Shubita and Alsawalhah (2012) seek to extend the Abor's (2005) finding regarding the effect of capital structure on profitability by examining the effect of capital structure on profitability of the industrial companies of Jordan. The study sample consists of 39 companies over a period of six years from 2004 to 2009. The result of study reveals significant negative relation between debt and profitability. The findings of the study suggested that profitable firms depend heavily on equity as their main source of financing.

Most of the research studies have been conducted for measuring the impact of capital structure on profitability whereas a few studies are available for measuring the effect of capital structure on the earnings available to equity shareholders. Further, no study has been found so far to measure the impact of working capital management along with capital structure on earnings available to equity shareholders. In summary, based on limited availability of literature on the relationship between leverage and the profitability of the firm, it has been found that capital structure impacts the profitability of the firm. The present study will provide an insight into impact of leverage and working capital management on the earnings available to equity shareholders.

RESEARCH METHODOLOGY

Objectives and Scope of the Study

The objective of the study is to measure the impact of leverage and working capital management on earnings available to equity shareholders in traditional vs modern firms in Indian corporate sector. The proposed study has been based on secondary data only. The necessary data has been procured from the 'Prowess' maintained by Centre for Monitoring Indian Economy (CMIE). The present study the covered period of ten years from 2001-02 to 2010-11.

India is one of the world's largest economies that is fast growing and structurally shifting from traditional to non-traditional (i.e., 'new economy') industries (Pandey, *et al.* 2011). For achieving the objectives of this study, a sample of companies categorized as traditional firms and modern (non-traditional) firms are selected from the BSE 500 companies. The whole sample has been divided into 'Traditional' and 'Modern' firms on the basis used by Pandey, *et al.* (2011). Traditional firms have been defined as those firms which were operating prior to economic liberalization of Indian economy in 1991 and modern firms have been defined as established after liberalization and globalization of Indian economy in 1991. From the list of top 500 companies from Bombay Stock Exchange, 339 were traditional firms (established before 1991) and 161 firms were modern firms (established after the economic reforms of 1991). Eight industries have been selected for sample, i.e., Iron & Steel, Drug & Pharmaceutical, Fertilizer and Chemical industry (the majority of firms in these industries have been operating pre-economic reforms of 1991) and Media & Entertainment, Computer & IT, Telecommunication and Transport Industry (the majority of firms in these industries have been established after economic reforms of 1991).

From the list of 500 top companies from Bombay Stock Exchange, 173 firms from these industries have been selected. After proper screening and filtering, we dropped the firms with incomplete data. Following selection criteria consists of three tests including : (i) firm must belong to the non-financial sector, (ii) firm must be lived during study period, i.e., 2001-02 to 2010-11 and (iii) firm must have comprehensive data for computation of required variables. In the first stage a total of 171 firms have been selected. After critically examining the consistency and availability of data for each firm we were left with 145 firms as our sample. However, based on our third criteria further companies were dropped and our final sample included 133 firms out of which 93 firms belong to traditional group and 40 belong to modern group.

Research Design

For pursuing any research there is need for proper research design. This has been divided into following sections :-

- (i) Conceptual Framework and Measurement of Variables
- (ii) Panel Data Model

Conceptual Framework and Measurement of Variables

The study is conducted over a period of ten years from 2001-02 to 2010-11 to measure the impact of working capital management and capital structure on earnings available to equity shareholders in the Chemical Industry. This section presents the measurements used for dependent and independent variables which influence earnings of a firm.

Dependent Variable : The dependent variable for this study is earnings available to equity shareholders (EPS). EPS has been calculated by dividing the total earnings available to equity shareholders divided by total number of equity shareholders. Total earnings means profits after payment of preference dividend to preference shareholders, interest payments to bondholders and debenture-holders and other outside payments. The measurement of the variables is a matter of contention between financial economists and practitioners. Differences exist both in definition and method of computation of these variables. However, to be the part of that debate is beyond the scope of the study. Following the existing literature, we adopted simple but effective measures of the said variables.

Independent Variables : The literature has identified a number of firm characteristics which may affect the earnings available for equity shareholders. In this study, leverage and working capital management has been taken as independent variables along with fourteen other control variables, the measure used for those factors has been discussed in the following section:

Leverage

Simply, capital structure refers to the mix of securities issued for financing the assets used by a firm. But different empirical studies have defined capital structure in different ways. The definition of capital structure depends on the objective of the analysis (Rajan and Zingales, 1995). In this study, debt-equity ratio has been used as the proxy for measuring leverage. Debt-equity being the true measure of leverage in the sense that fixed interest commitment acts as a lever to enlarge return to shareholders. Total debt includes debt from banks (short-term as

well as long-term) and financial institutions, inter-corporate loans, fixed deposits from public and directors, foreign loans, loan from government, etc. Funds rose from the capital market through the issue of debt instruments such as debentures (both convertible and non-convertible) and commercial paper are also included here. And the equity includes equity share capital, preference share capital and reserve & surpluses minus revaluation reserves & miscellaneous expenses not written off. This study has used book value of debt and equity. The leverage has been defined for the purpose of this study as follows:

$$\text{Leverage} = \text{Debt/Equity}$$

Working Capital Management

To remain consistent with previous studies, Working capital management has been measured by ratio of current assets and current liabilities. For managing liquidity efficiently, a company's management has to decide on the optimum level of current assets and current liabilities that it should carry.

$$\text{Working Capital Management} = \text{Current Assets/Current Liabilities}$$

Other control variables include size, growth, profitability, tangibility, age, earnings variability, debt service capacity, dividend-payout ratio, non-debt tax shields, degree of operating leverage, price-earnings ratio, promoter shareholdings, tax rate and uniqueness. The measures used for these control variables have been derived from literature survey.

In line with Rafiq *et al.* (2008), this study has used percentage change in total assets to measure growth.

This study has measured size (SZ) of the firm by the taking the natural log of total assets as this measure smoothens the variation over the periods considered.

Earnings before Interest and Taxes (EBIT) divided by total assets have been used as a measure of profitability in this study.

The proxy used in this study to measure the value of tangible assets of the firm is the ratio of net fixed assets to total assets.

In this study, age has been measured by number of years since incorporation as used by all the studies

This study uses the value of the deviation from mean of net profit divided by total number of years for each firm in a given year as a proxy for measuring earning volatility.

Following Bhatt (1980) and Kumar *et al.* (2012), this study has used

earnings before interest and taxes to fixed interest charges as proxy for measuring the debt service capacity.

In line with the Rasoolpur (2012), this study has used dividend per share to earnings per share to measure the dividend payout ratio.

Following Oztekin (2010), this study has used the depreciation scaled down by total assets to measure non-debt tax shield.

In the present study, the percentage change in EBIT to percentage change in sales is being used for measuring operating leverage.

In line with Rani (1997), MPS/EPS has been used as a proxy for price-earning multiplier.

In line with Saravanam (2006), this study has been measured as a percentage of shares held by the promoters to the total number of shares outstanding.

This study has used the following method to calculate the effective tax rate as used by Singh, G. (2011) :

$$TR = 1 - (EAT / EBT)$$

Where,

TR = Tax Rate

EAT = Earnings after Tax

EBT = Earnings before Tax

As in line with Rasoolpur (2012), this study has used selling and distribution expenses over sales as a proxy for uniqueness.

Note that all variables were calculated using book value.

Panel Data Model

The model we have used is adopted from Cuong and Canh (2012). This study has used panel data for the period 2001-02 to 2010-11 and an appropriate regression model to examine the impact of capital structure and working capital management policy on earnings available to equity shareholders in the traditional vs modern firms. Panel data have space as well as time dimension (Gujrati, 2004). If well-organized panel data are given, then, panel data models are definitely attractive and appealing since they provide ways of dealing with heterogeneity and examine fixed and/or random effects in the longitudinal data. Panel data give more informative data, more variability, less collinearity among the variables, more degrees of freedom and more efficiency (Baltagi, 2005).

From a random sample, we perform panel data techniques of Fixed Effects model and Random Effects model. After this we apply the Hausman's specification test, if the results of this test reject the null hypothesis, which is, "difference in

coefficients not systematic", then we use Fixed Effects model otherwise we apply Random Effects model. Further, we test the validity of Random Effects model by applying Wald chi square and should use Random Effects model only by rejecting null hypothesis of "no random effects", otherwise we can use Pooled Ordinary Least Square (OLS) regression.

Variance Inflation Factor (VIF) has been used to check the multi-collinearity among regressors. In the present study, analysis has been performed with the help of software packages STATA.

EMPIRICAL FINDINGS

The purpose of the study is to compare the impact of leverage and working capital management on EPS in traditional vs modern firms from Indian corporate sector. Empirical findings for traditional and modern firms have been presented in the following sections :

Traditional Firms

Variance Inflation Factor (VIF) Test

Variance Inflation Factor (VIF) test refers to actual disparity percentage to total disparity. VIF test has been applied to check the multi-collinearity among the regressors used in present study. Gaud, *et al.* (2003) has quoted that the collinearity should not constitute a problem, if VIF values are lower than 10. It has been observed from the VIF test analysis that VIF values for all independent variables are below 1.69, hence, collinearity can not be a problem for the present model.

Hausman's Specification Test

Hausman's specification test has compared the results from fixed effects and random effects model to check the appropriateness of model. The value for Hausman's test is 20.84 with p-value 0.0528 which is higher than .05 supports the acceptance of null hypothesis regarding the difference in coefficients. The result of Hausman's test reveals the suitability of Random Effects model for this data. Therefore, the results of Random Effects regression for Traditional firms have been displayed for interpretation.

Panel Data Analysis

Table 1 presents the panel regression results to examine the impact of leverage and working capital management on EPS for Traditional Firms. Random Effects model has been used for interpreting the results for this model on the basis of Hausman's Specification Test.

Table 1
Random Effects Regression Results for Impact of Leverage and Working Capital Management on EPS in Traditional Firms

R-sq : Within = 0.0226 Between = 0.2209 Overall = 0.0854	Number of Observations = 930 Number of Groups = 93 Wald chi ² (16) = 40.88 Prob > chi ² = 0.0006
Variable	Regression Coefficients
Capital Structure (D/E Ratio)	-39.056 (1.66)***
Working Capital Management	-10.232 (0.62)
Size (Assets)	151.168 (3.16)*
Growth (Assets)	55.640 (1.30)
Profitability	889.694 (3.60)*
Tangibility	-119.852 (0.61)
Age	0.788 (0.40)
Earnings Variability	-0.102 (2.99)*
Debt Service Capacity	0.004 (0.37)
Dividend Payout Ratio	-54.225 (1.41)
Non-debt Tax Shield	56.790 (0.03)
Degree of Operating Leverage	-0.025 (0.22)
Price Earnings Ratio	1.579 (3.44)*
Promoter Holdings	181.161 (1.09)
Tax Rate	338.264 (2.42)**
Uniqueness	460.706 (1.37)
Cons	-616.155 (2.34)

*** Indicates significance at 10 per cent level

** Indicates significance at 5 per cent level

* Indicates significance at 1 per cent level

Note : The figures given in parentheses indicate the z-values.

The R² for the model is 0.0854, which means that 8.54 per cent of variation in EPS has been explained with the help of this model. The empirical results show that capital structure has been found to be negatively related to EPS and relation has been statistically significant at the .10 level. These results are supporting the predictions of Traditional theory. Traditional firms are going through

the last phase of Traditional theory in which cost of capital is increasing and earnings are declining with the use of additional debt in capital structure. The beta coefficient for working capital management has also turned out to be negative with EPS but the relation has not statistically significant, hence, working capital management is not influencing earnings available to equity shareholders. From the control variables, size, profitability and price earnings has been found to be positively related to EPS and relation has been found statistically significant at .01 level whereas the positive relation between tax rate and EPS has been found statistically significant at .05 level. The earnings variability has negative relation with EPS and relation has been found statistically significant at .01 level. All other variables included in the study have been found to be statistically insignificant for influencing EPS in Traditional firms.

Modern Firms

Variance Inflation Factor (VIF) Test

The results of VIF test reveal that the values for independent variables are below 1.59, hence, collinearity can not be a problem for the present model.

Hausman's Specification Test

Hausman's Specification test has been applied to check the appropriateness of model. The value of Hausman's Specification test is 9.08 with p-value of 0.6970. Being p-value for Hausman's test is greater than .05 that does not reject the null hypothesis. Hence, Random Effects model has been considered appropriate for this model and hence, used for interpreting the results for Modern firms.

Panel Data Analysis

Table 2 presents the panel regression results to examine the impact of leverage (measured as debt-equity ratio) and working capital management on EPS for Modern Firms. Random Effects model has been used for interpreting the results for this model on the basis of Hausman's Specification Test.

Table 2
Random Effects Regression Results for Impact of Leverage and Working Capital Management on EPS in Modern Firms

R-sq : Within = 0.1115 Between = 0.4788 Overall = 0.2400	Number of Observations = 400 Number of Groups = 40 Wald chi ² (16) = 71.90 Prob > chi ² = 0.0000
Variable	Regression Coefficients
Capital Structure (D/E Ratio)	-1.169 (0.21)
Working Capital Management	23.322 (2.15)**
Size (Assets)	99.076 (2.45)**
Growth (Assets)	44.554 (2.32)**
Profitability	644.177 (3.40)*
Tangibility	-118.806 (0.95)
Age	9.052 (1.27)
Earnings Variability	-0.001 (0.05)
Debt Service Capacity	0.034 (1.12)
Dividend Payout Ratio	-4.201 (0.49)
Non-debt Tax Shield	-666.715 (0.87)
Degree of Operating Leverage	0.028 (0.34)
Price Earnings Ratio	0.210 (3.08)*
Promoter Holdings	418.801 (3.05)*
Tax Rate	48.546 (0.35)
Uniqueness	49.870 (1.00)
Cons	-520.992 (3.26)

*** Indicates significance at 10 per cent level

** Indicates significance at 5 per cent level

* Indicates significance at 1 per cent level

Note : The figures given in parentheses indicate the z-values.

The value of Wald Chi square is 71.90 and p-value (0.0000) being less than .05 validates the model. The R² for the model is 0.2400, which means that 24 per cent of variation in EPS has been explained with the help of this model. The relationship of leverage with EPS has been found to be negative but relation has not been statistically significant. Thus, leverage has not been influencing

earnings available to equity shareholders in modern firms. But the beta coefficient for working capital management is 23.32 with a z-value of 2.15 and p-value is less than .05, which shows that working capital management is positively related to EPS and relation is statistically significant at .05 level. With a unit change in working capital, earnings per share have increased by 23.32 units during study period. From the control variables, size, growth, profitability, liquidity, price-earnings ratio and promoter holdings have positive and statistically significant relationship with EPS whereas all other control variables have statistically insignificant relationship.

CONCLUSION

This paper examines the impact of leverage and working capital management on EPS for traditional and modern firms in Indian corporate sector. The empirical results show that leverage has been found to be negatively related to EPS in traditional and modern firms but the relation has been statistically significant in traditional firms only. The results reveal that leverage has been influencing EPS in traditional firms whereas insignificant in modern firms. Thus, traditional firms have been supporting some of the predictions of Traditional theory and modern firms have been supporting MM approach. The relation of working capital management has turned out to be negative with EPS in case of traditional firms whereas relation has been found positive in case of modern firms but the relation has been statistically insignificant in traditional firms though significant in modern firms. It shows that working capital management has not been influencing earnings available to equity shareholders in traditional firms but significant factor in influencing EPS in modern firms. From the control variables, size, profitability, earnings variability, tax rate and price-earnings have been found to be significant variables for influencing EPS in traditional firms whereas size, growth, profitability, liquidity, price-earnings ratio and promoter holdings have been found to be the significant factors affecting EPS in modern firms.

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