



Corporate Leverage and its Impact on Profitability

KEYWORDS

Capital structure, leverage, profitability

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ABSTRACT Profitability plays an essential role in leverage decision. In general, the profitable companies are able to tolerate high level of debt, by virtue of their ability to meet the financial obligations on time. The profit earning companies can easily add more debt in their capital structure. Diversified sector is a capital intensive sector, where greater prominence has been given in designing the capital structure. Hence, the present paper makes an attempt to examine the impact of leverage on profitability of diversified sector for the period 1995-96 to 2009-10. A panel data approach has been applied to analyse the data. The study reveals that the leverage has a significant influence on profitability.

Profit is an essential indicator to measure the performance of a firm. The ability to make profits depends on the capacity and activity of a business. Capacity refers to the competence of a management to procure funds from right source at right time to finance the assets, whereas, activity measures the efficiency of a firm in the utilization of the assets in enhancing its earning capacity. In general, the profitable companies are able to tolerate high level of debt, by virtue of their ability to meet the financial obligations on time. The profit earning companies can easily add more debt in their capital structure. Hence, the profitability plays an essential role in leverage decision.

Diversified sector

The companies, which have been engaged in the production of varied products, are known as diversified companies. The diversified companies such as, Aditya Birla Nuvo Ltd, Apar Industries Ltd, Nahar Industrial Enterprises Ltd, Surya Roshni Ltd, Texmaco Ltd, Kesoram industries Ltd, and Voltas Ltd, etc., are the popular diversified companies in India.

Objective of the study

- To examine the impact of leverage on profitability

Hypothesis

The following null hypothesis has been framed for the purpose of the study:

- Leverage does not influence the profitability

Research methodology

Source of data

The study is primarily based on secondary data. The data has been collected from PROWESS 3.1 version maintained by Centre for Monitoring Indian Economy Pvt Ltd.

Period of study

The study has covered a period of 15 financial years from post-liberalisation era, namely, 1995 -1996 to 2009-2010.

Sampling design

A sample of 7 firms, which have been listed at both BSE and NSE stock exchange by applying purposive sampling technique have been taken for the study.

Tools for analysis

Pooled OLS regressions, Panel data regression with Fixed Effect and Random Effect have been applied to analyse the data. Two tests have been carried out to decide the appropriateness of these three models. Initially, the Lagrange multiplier test has been applied to find the existence of panel effect in the values. The classical model (Pooled OLS) and the Random Effect model are compared and when there is no panel effect, the pooled OLS has been chosen for further analysis; otherwise, the Random Effect model has been chosen for the next step of application. As a second step, the Random Effect model is compared with Fixed Effect model using Hausman Specification test and the appropriate model is chosen for further analysis based on the significance of the chi-square value.

Results and Discussion

To ascertain the impact of leverage from its different dimensions on profitability the variables, namely, Long Term Debt (LTD)ratio, Short Term Debt (STD)ratio, Interest Coverage (IC)ratio, Financial Leverage (FL), Operating Leverage(OL), Combined Leverage(CL), and Working Capital Leverage(WCL) are considered as independent variables. The dependent variables are Return on Total Assets (ROTA), Return on Net Worth (RONW) and Return on Capital Employed (ROCE).

Independent Variables	Formulae
Long Term Debt ratio (LTD)	Long Term Debt / Total Assets
Short Term Debt ratio (STD)	Short Term Debt / Total Assets
Interest Coverage ratio (IC)	PBIT net of P&E / Interest Paid
Financial Leverage(FL)	PBIT net of P&E / PBT net of P&E
Operating Leverage(OL)	Contribution / PBIT net of P&E

Combined Leverage(CL)	Contribution / PBT net of P&E
Working Capital Leverage(WCL)	Percentage change in Return on Investment / Percentage change in Current Assets Where, Return on investment = PBIT net of P&E/ Total Assets
Dependent variables	Formulae
Return on Total Assets	PAT net of P&E / Average total assets
Return on Net Worth	PAT net of P&E / Average Net Worth
Return on Capital Employed	PAT net of P&E / Average capital employed

The panel data analysis on these parameters reveals the following results:

Return on Total Assets

The dependent variable (ROTA) has been regressed with the independent variables, namely, LTD ratio, STD ratio, IC ratio, FL, OL, CL and WCL with the following null hypothesis.

Ho₁: "The independent variables, namely, LTD ratio, STD ratio, IC ratio, FL, OL, CL and WCL do not have a significant influence on ROTA"

Table 1-ROTA - Pooled OLS and Panel Data Regression-Diversified

	Pooled OLS			Fixed Effect			Random Effect		
	B	t-value	Sig.	B	t-value	Sig.	B	z-value	Sig.
(Constant)	3.820	2.329	*	22.1738	2.48	*	12.19102	3.87	**
Long term debt ratio	-.293	-.084	NS	3.446573	0.40	NS	10.35689	2.06	*
Short term debt ratio	-1.280	-.520	NS	2.74683	0.24	NS	3.86959	0.93	NS
Interest coverage ratio	.262	5.638	**	-.1918097	-0.93	NS	.1694182	2.58	**
Financial Leverage	-.174	-1.863	NS	-7.374687	-2.75	*	-6.316912	-3.25	**
Operating leverage	-.113	-3.255	**	-2.732957	-3.05	**	-1.504943	-3.49	**
Combined leverage	0.0164	1.745	NS	1.050851	2.53	*	.8542657	2.84	**
Working Capital Leverage	-0.000332	-.323	NS	.0004789	0.45	NS	.0001334	0.14	NS
R ²	.385			0.6164			0.5506		
F-statistic	7.945		**	4.82		**			
Wald (chi square)							41.35		**
Hausman (chi square)				5.68		NS			
LM (chi square)							1.34		NS

Source : Computed * significant at 5 per cent level ** significant at 1 per cent level

It is revealed from the table1 that the signs of the regression coefficient have been the same in the FE and RE models,except, for the variable interest coverage ratio, but they differ in the pooled OLS Model. The R² values have shown the existence of high correlation between the selected independent variables and the dependent variable in the FE and RE models and the existence of low correlation in the Pooled OLS model. The F-test and Wald chi square test have disclosed a significant correlation between the selected independent variables and the ROTA at one per cent level of significance.

The result of **LM test** shows that the chi-square value (1.34) has not been statistically significant revealing that the pooled OLS model is preferred over RE model. In all the three models applied; the **pooled OLS model** serves as an appropriate model for further analysis.

The **pooled OLS model** discerns that the IC Ratio has a significant positive effect on ROTA and the OL has a significant negative effect on ROTA. Hence, the null hypothesis (H₀₁) has been rejected in respect of these variables.

The rest of the variables, namely, LTD ratio, STD ratio FL,

CL and WCL have not been significant in influencing the ROTA. Hence, the null hypothesis (H₀₁) has been accepted in respect of these variables.

It is concluded that in the diversified sector, the **IC ratio** and **OL** are the prominent influencing factors of ROTA. The IC ratio has favoured the ROTA, increasing the profitability and the financial position of the sector, while the OL has not favoured the ROTA. Adoption of a proper source mix would enhance the performance of the diversified sector.

Return on Net Worth

The dependent variable (RONW) has been regressed with the independent variables, namely, LTD ratio, STD ratio, IC ratio, FL, OL, CL and WCL with the following null hypothesis.

H₀₂: "The independent variables, namely, LTD ratio, STD ratio, IC ratio, FL, OL, CL and WCL do not have a significant influence on RONW"

Table 2 -RONW-PooledOLS and Panel Data Regression-Diversified

	Pooled OLS			Fixed Effect			Random Effect		
	B	t-value	Sig.	B	t-value	Sig.	B	z-value	Sig.
(Constant)	-1.482	-.267	NS	59.46196	2.15	*	19.75374	1.89	NS
Long term debt ratio	19.492	1.662	NS	18.04497	0.67	NS	52.46839	3.13	**
Short term debt ratio	18.613	2.237	*	33.04956	0.93	NS	41.74651	3	**
Interest coverage ratio	.900	5.737	**	-0.60918	-0.95	NS	0.540955	2.48	*
Financial Leverage	-.561	-1.780	NS	-23.8079	-2.87	**	-18.9001	-2.93	**
Operating leverage	-.414	-3.537	**	-8.84846	-3.19	**	-4.51918	-3.15	**
Combined leverage	.057	1.778	NS	3.46487	2.7	*	2.631741	2.63	**
Working Capital Leverage	-.00068	-.197	NS	0.001955	0.6	NS	0.000622	0.19	NS
R ²	.412			0.6211			0.5446		
F-statistic	8.895		**	4.92		**			
Wald (chi square)							43.16		**
Hausman (chi square)				8.57		NS			
LM (chi square)							0.00		NS

Source : Computed * significant at 5 per cent level ** significant at 1 per cent level

It is evident from the table 2 that the signs of the regression coefficient have been uniform for all the independent variables in FE and RE models, except for the interest coverage ratio, whereas, they differ in the pooled OLS model. The F-test and Wald chi-square test have shown a high correlation between RONW and the selected independent variables in the FE model and RE model. A moderate correlation has been found in the Pooled OLS model.

The **LM test** reveals that the chi-square value has not been statistically significant showing that the panel data does not exist; thereby, the simple Pooled OLS model has been finally taken to study the influence of leverage measures on RONW.

The **pooled OLS model** has displayed that the STD ratio and the IC ratio have a significant positive effect on RONW and the OL has a significant negative effect on RONW. Hence, the null hypothesis (H_{02}) has been rejected for these variables.

The LTD ratio, FL, CL and WCL have not had a significant

influence on RONW. Hence, the null hypothesis (H_{02}) has been accepted in respect of these variables.

In general, it is found that the **STD ratio, IC ratio and OL** are the significant influencing factors of RONW. The IC ratio and the STD ratio have favoured the RONW, increasing the profitability position of the sector. The OL has not favoured the RONW. The elimination of negative effect of OL by altering its leverage position would increase the performance of the sector.

Return on Capital Employed

The dependent variable (ROCE) has been regressed with the independent variables, namely, LTD ratio, STD ratio, IC ratio, FL, OL, CL and WCL with the following null hypothesis.

H_{03} : "The independent variables, namely, LTD ratio, STD ratio, IC ratio, FL, OL, CL and WCL do not have a significant influence on ROCE"

Table 3-ROCE- Pooled OLS and Panel Data Regression-Diversified

	Pooled OLS			Fixed Effect			Random Effect		
	B	t-value	Sig.	B	t-value	Sig.	B	z-value	Sig.
(Constant)	1.844	.513	NS	26.94139	1.7	NS	13.25367	2.37	*
Long term debt ratio	-.329	-.043	NS	4.248338	0.28	NS	15.75047	1.76	NS
Short term debt ratio	9.785	1.814	NS	32.96876	1.61	NS	23.95339	3.23	**
Interest coverage ratio	.832	8.187	**	-0.05492	-0.15	NS	0.584962	5.02	**
Financial Leverage	-.281	-1.373	NS	-11.8773	-2.5	*	-9.8217	-2.85	**
Operating leverage	-.255	-3.358	**	-4.70766	-2.96	**	-2.44188	-3.19	**
Combined leverage	.028	1.374	NS	1.724676	2.34	*	1.343459	2.52	*
Working Capital Leverage	-.0010	-.448	NS	0.000966	0.51	NS	0.000336	0.19	NS
R ²	.569			0.7165			0.6639		
F-statistic	16.801		**	7.58		**			
Wald (chi square)							97.70		**
Hausman (chi square)				5.77		NS			
LM (chi square)							1.53		NS

Source : Computed * significant at 5 per cent level ** significant at 1 per cent level

The table 3 has shown that the regression co-efficient signs have been uniform for the FE and RE models, except for the variable IC ratio, while they differ in the pooled OLS model. The R^2 values have shown a high correlation between ROCE and the selected independent variables. The F-test and Wald chi-square test have a significant value at one per cent level indicating that there exists a correlation between the selected independent variables and the ROCE.

The **LM test** shows that the chi-square value (1.53) has not been statistically significant indicating that there is no existence of panel effect. Hence, the **pooled OLS model** has been finally selected to study the impact of leverage on return on capital employed.

The **pooled OLS model** has identified that the IC ratio has a significant positive influence on ROCE and the OL has a significant negative influence on ROCE. Hence, the null hypothesis (H_{03}) has been rejected for these variables.

The variables, namely, LTD ratio, STD ratio, FL, CL and

WCL have not had a significant influence on ROCE. Hence, the null hypothesis (H_{03}) has been accepted with reference to these variables.

In a nut shell, it is found that the **IC ratio** and **OL** are the significant factors of ROCE. The IC ratio has favoured the ROCE and enhanced the profitability position of the sector. The elimination of negative effect of OL by altering its debt–equity position would strengthen the performance of the sector.

Conclusion

The survival of a firm for a long period of time depends on its earning capacity. The evaluation of a company's profit will be useful to its creditors in assessing the credit worthiness of a firm, investors to take investment decision, management to expand the business etc... The Interest Coverage Ratio and Operating Leverage ratio have influenced the profitability. Therefore, the leverage has an effective influence on profitability.

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