

An Empirical Analysis on the Nature of Relationship between Capital Structure and Firms Performance: A Study of 40 Indian Firms

Geetika Batra¹, Prof. (Dr.) Alka Munjal

Research Scholar, Amity University, Noida, Uttar Pradesh.

Pocket D, Flat no 91, Sarita Vihar, New Delhi 76

*Corresponding Author, Dean- Students Academic Affairs and Support Services,
Amity University Campus, Sector 125, E2 Block, II Floor, Gautam Buddha Nagar, Noida,
Uttar Pradesh- 201313.*

Abstract: *The financing decision with regard to capital structure theory of finance has been a topic of many theories and their conflicting output for past many years. This paper aims to analyse the nature of relationship between the capital structure of a firm and its performance. The data of 40 firms excluding financial services firms listed on Nifty indices on National Stock Exchange is studied (The composition of 50 firms on Nifty represents a well branch out index reflecting precisely the overall market conditions). Financial services firms have been excluded from purview of this paper, as they are in the business of collecting money and investing in financial assets rather than producing goods, hence follow a unique business valuation model. Further financial services sector being one of the most sensitive sectors. This paper analyzes a period of 13 years (2001-2014) covering the phases of a business cycle starting from boom (2001/02-2006/07), recession (2007/08-2008/09) and then recovery (2009/10-2013/14). The complete business cycle will aid to demonstrate the results more accurately. This paper also surveys the topical developments in the empirical capital structure research. The data for a period of 13 years is analysed using descriptive statistics, correlation and multiple regression techniques. For research purpose, the ratios such as debt-equity ratio, debt-asset ratio and long term debt are taken as independent variables whereas Net Profit, Net Profit Margin, ROCE, ROE and ROA are the ratios taken as dependent variables.*

Key words: *Capital Structure, Firms Performance.*

I. Introduction

Capital structure is defined as a mix of long term debt, short term debt, ordinary shares and preferred equity. The capital structure is how a firm finances its overall operations and the growth by using different sources of funds. Debt as a source of finance comes in the form of bond issues or long term notes payable, while equity is classified as common stock, preferred stock or retained earnings. Financing of working capital is also considered as a part of capital structure. At the time of raising finance for various objectives like expansion, restructuring, acquisitions- the decision regarding how to fund a venture is a centre of discussion.

The firm's management is always surrounded by the question as how to manage the balance sheet in a balanced approach. So there is no trouble of excess cash and liquidity crunch in the firm. To tackle this firstly, the balance has to be kept between profit retention for reinvestment and profit distribution as dividends. Secondly, should the firm finance its new venture by raising debt or new equity? So achieving the right capital structure comprising of equity and debt has been demanding for decades. One of the main objectives of a firm is to maintain a capital structure that maximises the value of a firm and minimizes its cost of capital which essentially means raising the funds at a low cost of capital. Cost of capital is a combination of fixed interest paid to the debenture holders and the dividend paid to the equity share holders. Hence, we can say that the fixed cost is the key factor whether it is involved in production process or fixed financial charges. The fixed cost should be kept low if the management is likely to confront an uncertain environment. But how low or how high the fixed cost should be is the basic question. The market price of the share is also be affected by the capital structure decision.

The decision regarding the capital structure is to be considered at different stages, initially at the time of promotion and subsequently, every time when the external funds have to be raised. A demand for raising funds generates a new capital structure which needs a critical analysis Bodhanwala (2012). Various theories have stated the relationship between capital structure and firm's market value. Traditional theory suggests that the market value of a firm can be increased up to certain level by substituting debt in place of equity beyond that the cost of equity and debt starts rising and firm's market value declines. But Modigliani and Miller (1958) changed the paradigm by "Irrelevance Theory" stating that there is no relationship between capital structure and

firm's market value. They argued that the market values the earning power of a firm's fixed assets and that if the firm's capital investment program is held static and certain other assumptions are satisfied, the combined market value of a firm's debt and equity is independent of its choice of capital structure.

The notion of performance can be explained by two interconnected variables: financial and operational. A firm's operational performance can be measured by productivity, growth in sales, returns, sales per employee, growth in market share whereas the firm's financial performance can be measured and reflected by profit maximisation (Net Profit, Net Profit Margin), wealth maximisation, Return on Assets, Return on Capital Employed as firm's efficiency. Other variables to measure the firm's performance are earning per share, residual income, dividend yield.

The measurement of performance is based upon the information introduced in the measurement system. The classical indicators for measurement of firm's performance used in financial analysis are Net Profit Margin, Return on Assets, Leverage, Cash flow, efficiency, inventory turnover ratios, receivable turnover ratios. In addition to these other new indicators of performance are MVA (Market Value added), EVA (Economic Value added), CFROI (Cash flow Return on Investment), and NPV (Net Present Value).

The choice of variables for measuring firm's performance depends upon its objectives. In the paper, variable selection is based on classical performance indicators reflecting profit and shareholders return maximisation namely NP, NPM, ROA, ROE and ROCE.

India as an emerging economy is influenced by various factors (internal and external) with regard to the capital structure decision. The decision regarding the capital structure is affected by economic environment apart from firm specific factors. The Indian economy was affected by various global crisis and events. The recent Subprime crisis also affected the world globally and Indian economy in particular. The firms altered their mode of raising funds as equity markets lost investors confidence and interest rates for debt financing rose. So the paper also analyze relationship between capital structure and firms performance in phases for the period of boom from 2001/02-2006/07, recession when subprime crisis hit Indian economy 2007/2008-2008/2009 and then the period of recovery from 2009/10-2013/14.

The paper is organised as follows: the next section consists of research objectives, followed by hypotheses of the study, research methodology, some of the theoretical and empirical literature review, analysis and findings and the last section consists of conclusion.

Research Objective

The objectives of the study are:

- To identify the capital structure of a firm.
- To analyse the nature of relationship between capital structure and firms performance.
- To analyse the nature of relationship between capital structure and firms performance for various phases of a business cycle (Boom-recession- Recovery).

Debt- Equity ratio (DER), Debt-Asset ratio (DAR) and Long Term Debt to Equity ratio (LTDER) are taken as dependent variables whereas Net Profit, Net Profit Margin, Return on Equity (ROE), Return on Assets (ROA), Return on Capital Employed (ROCE) are taken as independent variables for the study.

Hypotheses Of The Study

H₀: There is no significant relationship between capital structure and firms performance.

H₁: There is a significant relationship between capital structure and firms performance.

II. Research Methodology

This paper aims to analyse the nature of relationship between the capital structure of a firm and its performance. Data of 40 companies excluding financial services firms listed on Nifty indices of National Stock Exchange has been analyzed. Nifty is a composition of 50 well diversified companies representing 12 sectors, hence reflecting accurately the overall market financial condition. Financial services firms have been excluded from purview of this paper. A Financial firm is an enterprise such as a bank whose primary business and function is to collect money from the public and invest it in financial assets and it that does not deal with production of goods. Further, financial services sector being of the most sensitive sectors with a unique business valuation model which is unlike with the goods manufacturing firms. In this paper a period of thirteen (13) years (i.e. 2001-2014) is studied as it reflect upon the several phases of an Indian economy business cycle starting from boom- recession-depression and then the recovery. Further the period is sub divided into various phases of a business cycle i.e. boom (2001/02-2006/07)-recession (2007/08-2008/09)-recovery (2009/10-2013/14). There are 4159 observations from 2001-2014 that have been used for analysis. The aforementioned period will help

demonstrate the question of relationship between firm financing and its capital structure accurately. Analysis is done by using descriptive statistics, correlation and multiple regressions technique.

III. Literature Review

The core objective of financial management is wealth maximization. The wealth maximization is gained from share price maximization. The first of the serious attempts to explore capital structure choice is the theory developed by Paton (1922) which postulates that companies value is free of substituting one form of capital for another in case of no taxation. This conclusion was also supported by the first proposition of Modigliani and Miller (1958) called Irrelevance Theorem, resting on some simplifying assumptions such as the presence of efficient capital market, fairly priced securities, and distorting taxes. Their theory believed in 100% debt financing due to the tax shields on interest payments.¹ Tax shielding is an advantage/ benefit that a firm gets on interest payment of debt. These assumptions given by Arrow- Debreu about the debt irrelevance are hardly realistic. In 1963 Modigliani and Miller waived off the no tax assumption and considered the advantages of tax shielding. The general paradigm changed in 1970's when many academicians believed that the optimal capital structure entailed balancing the tax shielding from debt against the present value of bankruptcy costs. It gained momentum when Miller presented a theory stating that under certain conditions the tax shielding from debt exactly offset the disadvantage of debt at the personal level. The outcome of this work is that if there are significant "leverage-related" costs, such as bankruptcy costs, agency costs of debt, and loss of non-debt tax shields, and if the income from equity is untaxed, then the marginal bondholder's tax rate will be less than the corporate tax rate and there will be a positive net tax advantage to corporate debt financing. The firm's optimal capital structure will involve the trade off between the tax advantage of debt and various leverage-related costs. O' Brien, (2003.) On the other hand with regard to Miller and Modigliani propositions, that capital structure strategy choice is dynamic, not fixed over time. Velanmpy T and Niresh Aloy (2012) stated that the highly levered institutions explained that the total assets by mainly financed by debt and there is a negative correlation between capital structure and profitability. If their capital structure choices does not matter as suggested by Miller (1977) then they would be compelled not to make future capital structure choice that will affect the firm's performance. Ross's (1977) model suggested that the values of firms would increase with leverage, since increasing the market value. Firms with lower expected cash flows find it more costly to raise new debt. So, when the firm raise new debt, it commits itself to future interest payments and signals about its stable financial position and ability to make these payments in the future Myers (1984) also stated that company always prefer internal funding (retained earnings) and then secured debt. Another theory developed on the similar lines by Leland and Pyle (1977), the higher the quality of the project the manager wants to invest in, the higher will be the willingness to raising funds. Hence the manager will attract lower debt. The last alternative would be to raise new equity for financing. Shyam-Sunder and Myers (1999) provides a better explanation than any other traditional theories in the area of capital structure.

The Pecking order theory by Myers emphasize on taxes and financial distress as important factors. The researchers started focussing on the relationship between capital structure and company's market value through a concept called as agency theory. The agency theory by Jensen and Meckling (1976), Harri and Raviv (1991) and Myers (2001) discussed about the concept of conflict between shareholders and managers on one hand and on the other hand about the potential conflict between the shareholders and debtholders. The conflict arose when the managers made an attempt to expropriate the wealth of the company to serve their personal motives in place of company's wealth maximization by investing into high risk ventures. The investment in the high risk ventures concentrated on serving the self motives for maximizing the rewards and compensation of managers first after that concerning the interests of all other shareholders of a company leading to maximize company's value.

Summing up of capital structure theories

Theory	Relationship	Causality
Modigliani & Miller	Positive	Performance affects debt
Trade Off	Positive	Performance affects debt
Pecking Order Theory	Negative	Performance affects debt
Agency problem	Positive	Debt effects performance
Signaling	Positive	Performance affects debt

Source: Author's compilation

There are number of empirical studies which reveal the negative relationship between capital structure and firms performance. Nor edi and fatihah (2012) identified a negative relationship between capital structure and firms performance from the Malaysian firms sample. The study by Mustafa and Osama (2007) on Jordanian

100% debt financing is also not possible due to statutory requirements. (Modigliani & Miller (1958)).

firms listed on Amman stock market also showed a negative relationship between financial leverage and firm's performance. It means that a firm should finance its operations through debt which may lead to bankruptcy and decrease in tax shields then to minimize firm's performance. It also found that there are no significant differences between a high levered and a low levered firm to significantly affect the firm's performance.

Atseye et.al (2014) found mixed results on the lines of traditional theory of capital structure. They suggested on judiciously employing of debt for maximization of firms value. Firms can borrow when profit are high, taking advantage of tax shield. Long term debts should be employed in the financing of long term projects. And short term debts should be employed in financing fast maturing financial obligation. Financial managers should then choose policies ending to increase in stock holders' wealth. Lawal et al (2014) also found similar results that capital structure measures (total debt and debt to equity ratio) are negatively related to firm performance. It is hereby recommended that firms should employ more of equity than debt in financing their business activities, in as much as the value of a firm can be maximised using debt capital. Hence firms should establish the point at which the weighted average cost of capital is minimal and maintain that gearing ratio so that the company's value is not be eroded, as the firm's capital structure is optimal at this point. Kimberly et al (2000) found that capital structure may vary even cultural classification of retailers among seven European countries. They identified that retailer's performance is independent of any culture. Capital structure influences culture. Finally agency conflicts are majorly responsible for overleveraging of retailers resulting in a negative relationship between capital structure and firms performance. Nirajini and Priya (2013) established a positive relationship between capital structure and firms performance on Srilankan firms. Saeedi and Mahmoodi (2011) studied the capital structure and financial performance of Iranian companies considering four performance measures such as return on assets, return on equity, earning per share and Tobin's Q as dependent variable and three capital structure measures including long term debt, short term debt and total debt ratios as independent variables of 320 listed companies in Tehran Stock Exchange. They proved that financial performance of the firms measured by EPS and Tobin's Q is significantly and positively associated with capital structure, while ROA has the negative relation with capital structure and ROE has no significant relation with capital structure.

Data Collection

Data collected for analysis is secondary in nature. A period of thirteen years has been extracted from PROWESS (an electronic database developed and maintained by Centre for Monitoring Indian Economy). This study uses accounting data. The data collected is tabulated, analysed and interpreted using AMOS SPSS 21 software.

IV. Analysis & Findings

Data of 40 firms on Nifty on National Stock Exchange (NSE) are considered, the sectoral classification of these firms is as follow:

Sr. No	Sector	Number of firms
1	Cement & Cement Products	4
2	Consumer Goods	3
3	Automobile	6
4	Industrial Manufacturing	1
5	Energy	8
6	Telecom	2
7	Pharma	4
8	Metals	5
9	IT	5
10	Construction	1
11	Media & Entertainment	1
	Total	40

The total number of observations for a time period of 2001-2-14 of the aforementioned 40 stocks is 4159 considering all the variables (dependent and independent).

The relationship between capital structure and firms performance is analysed by using multiple regression model:

$$Y_{it} = \alpha_i + \beta_1 X_{it} + U_{it}$$

Where α_i is a regression constant, i is firms, t is time period, Y_{it} is a dependent variable, β_1 is parameters, X_{it} are explanatory variables, and U is a random unobserved component that reflects unobserved shocks affecting the performance of firms.

So the model formed is as follows with regard to the selected dependent and independent variables:

$$NP_{it} = \alpha_i + \beta_1 DER_{it} + \beta_2 DAR_{it} + \beta_3 LTDER_{it} + U_{it} \quad (1)$$

$$NPM_{it} = \alpha_i + \beta_1 DER_{it} + \beta_2 DAR_{it} + \beta_3 LTDER_{it} + U_{it} \quad (2)$$

$$ROE_{it} = \alpha_i + \beta_1 DER_{it} + \beta_2 DAR_{it} + \beta_3 LTDER_{it} + U_{it} \quad (3)$$

$$ROA_{it} = \alpha_i + \beta_1 DER_{it} + \beta_2 DAR_{it} + \beta_3 LTDER_{it} + U_{it} \quad (4)$$

$$ROCE_{it} = \alpha_i + \beta_1 DER_{it} + \beta_2 DAR_{it} + \beta_3 LTDER_{it} + U_{it} \quad (5)$$

Where notations:

NP= Net Profit is measured by Profit after tax.

NPM= Net profit margin is measured by Net profit to net sales.

ROE= Return on Equity is measured by profit after tax to equity.

ROA= Return on Assets is measured by profit after tax to Total assets.

ROCE= Return on capital employed is measured by profit after tax to capital employed.

DER= Debt to equity ratio for firm I in year t.

DAR= Debt to asset ratio for firm I in year t.

LTDAR= Long term debt to equity ratio for firm I in year t.

U= error term for firm I in year t.

Descriptive Statistics

Table 1 provides descriptive statistics from year 2001-2014 and further sub sections base on the phases of a business cycle. In table 1, the mean for DAR is lowest at 9.4% with a minimum variance. The mean for LTDER is 17.6% during the period from 2001-2014. The mean increased to around 22% around recession because of augment in debt financing. However this percentage is still less risky for the sample firms. It depicts that many firms survive on no debt and few are funded by the government. The mean for DER, DAR and LTDER is least during the boom phase. While the maximum value for DER and LTDER is at 2.598 and 2.522. The minimum value for DER, DAR and LTDER is zero through all the phases. However, the maximum increase in debt levels was in the recessionary phase and recovery phase as explained by Table 1.2 and 1.3 to build up for the losses. This refers to the importance of debt financing to firms for all the decisions in finance. Moreover equity markets were deficient in confidence during these phases. The DAR also showed the maximum level during the recession phase. With regard to ROE, ROA and ROCE the figures does not vary to a great extent between various phases. The mean for NPM speckled very small but its variance speckled high. The lowest minimum and highest maximum is in recovery phase. This shows that the market in full swing gained confidence and momentum gradually.

Table 1: Time period 2001-2014

Variables	Observations	Mean Estimate	Variance	Minimum	Maximum
DER	520	.219	.142	0	2.598
DAR	520	.094	.014	0	0.581
LTDER	520	.176	.108	0	2.522
NP	519	28134.214	1720596782	-46455.5	251229.2
NPM	520	17.993	503.532	-223.63	90.86
ROE	520	29.514	396.620	-37.23	142.68
ROA	520	16.299	81.906	-23.92	50.79
ROCE	520	27.474	384.195	-32.05	130.01

Table 1.1: Boom Phase: Time Period 2001/02-2006/07

Variables	Observations	Mean Estimate	Variance	Minimum	Maximum
DER	242	.107	.018	0	0.722
DAR	242	.052	.003	0	0.390
LTDER	242	.084	.014	0	0.709
NP	232	15453.52	670313464.9	-2124.5	195063.9
NPM	240	15.489	533.461	-223.63	90.86
ROE	240	23.521	376.705	-37.23	130.01
ROA	240	12.403	82.123	-23.92	50.79
ROCE	240	20.035	376.186	-32.05	130.01

Table 1.2: Recession Phase: Time Period 2007/08-2008/09

Variables	Observations	Mean Estimate	Variance	Minimum	Maximum
DER	81	.292	.204	0	2.227
DAR	81	.141	.021	0	0.562
LTDER	81	.218	.122	0	2.015
NP	81	29333.544	1295325890	-689.5	167016.5
NPM	80	17.343	204.760	-40.05	73.04
ROE	80	24.312	396.620	-37.23	142.68
ROA	80	13.032	81.906	-23.92	50.79
ROCE	80	21.111	384.195	-32.05	130.01

Table 1.3: Recovery Phase: Time Period 2009/10-2013/14

Variables	Observations	Mean Estimate	Variance	Minimum	Maximum
DER	200	.219	.142	0	2.599
DAR	200	.094	.014	0	0.581
LTDER	200	.176	.108	0	2.522
NP	200	29264.860	1723120647	-46455.5	251229.200
NPM	200	16.005	505.469	-223.630	90.860
ROE	200	23.717	418.462	-37.230	130.010
ROA	200	13.032	81.906	-23.920	50.790
ROCE	200	20.909	412.732	-32.050	130.010

Correlations

Table 2 and its sub tables show the correlation between dependent and independent variables. In table 2, the correlation between DER and DAR, DAR and LTDER is the highest (near to 1). Whereas the correlation between ROA and DER, ROA and DAR, ROA and LTDER is negative depicting that debt goes without physical collateral. Similar, association is depicted between ROE and DER, ROE and DAR. The association between DER and NPM, DAR and NPM, LTDER are found to be negative demonstrating that whenever the debt level goes up, the profit margins decline in all the phases represented by Table 2.1, 2.2 and 2.3. This association is positive during boom phase stating with rise in debt level the net profit margins does not decline.

Table 2: Time Period 2001-2014

Variables	Pearson correlation signed (2 tailed)	DAR	DER	LTDER	NP	NPM	ROE	ROA	ROCE
DAR		1	.874	.845	0.018	-0.091	-0.300	-0.439	-0.382
DER		.874	1	.967	-0.012	-0.075	-0.237	-0.387	-0.310
LTDER		.845	.967	1	0.012	-0.041	-0.210	-0.352	-0.285
NP					1	0.157	0.050	0.116	0.063
NPM						1	0.277	0.493	0.279
ROE							1	0.800	0.980
ROA								1	0.821
ROCE									1

Table 2.1 Boom Phase: Time Period 2001/02-2006/07

Variables	Pearson correlation signed (2 tailed)	DAR	DER	LTDER	NP	NPM	ROE	ROA	ROCE
DAR		1	.824	.820	0.031	0.072	-0.221	-0.234	-0.220
DER		.824	1	.953	0.007	0.012	-0.168	-0.303	-0.198
LTDER		.820	.953	1	0.009	0.047	-0.160	-0.271	-0.186
NP					1	0.061	-0.042	-0.036	-0.023
NPM						1	0.298	0.519	0.305
ROE							1	0.804	0.983
ROA								1	0.823
ROCE									1

Table 2.2 Recession Phase: Time Period 2007/08-2008/09

Variables	Pearson correlation signed (2 tailed)	DAR	DER	LTDER	NP	NPM	ROE	ROA	ROCE
DAR		1	.743	.716	-0.027	-0.194	-0.300	-0.439	-0.382
DER		.743	1	.928	-0.065	-0.165	-0.237	-0.387	-0.310
LTDER		.716	.928	1	-0.031	-0.095	-0.210	-0.352	-0.285
NP					1	0.140	0.081	0.137	-0.096
NPM						1	-0.061	-0.012	-0.043
ROE							1	0.800	0.980
ROA								1	0.821
ROCE									1

Table 2.3 Recovery Phase: Time Period 2009/10-2013/14

Variables	Pearson correlation signed (2 tailed)	DAR	DER	LTDER	NP	NPM	ROE	ROA	ROCE
DAR		1	.874	.845	0.018	-0.091	-0.440	-0.439	-0.520
DER		.874	1	.967	-0.012	-0.075	-0.335	-0.387	-0.418
LTDER		.845	.967	1	0.012	-0.041	-0.286	-0.352	-0.374
NP					1	0.157	0.168	0.116	0.168
NPM						1	-0.085	0.493	-0.083
ROE							1	-0.163	0.984
ROA								1	-0.171
ROCE									1

Regression Analysis

The regression analysis of the study is divided into four tables each reflecting a different time phase. Table 3 with its sub tables show the results for regression analysis over a time period from 2001-2014. For Net Profit as an independent variable, the Beta is negative with DER and positive with DAR and LTDER. It shows that when DER goes up by 1, NP goes down by .460 and vice versa for DAR and LTDER. Similarly the values of beta for other independent variables such as NPM, ROE, ROA and ROCE are negative for DER and positive with DAR and LTDER. This depicts that when DER will go up by a certain percentage, the value of independent variable will go down by their respective betas and vice versa. The regression weight for DER in the prediction of NP is significantly different from zero at the 0.05 level (two-tailed). The ‘p’ value is less than .05 for DER and LTDER so they have a significant impact on NP. The value of R² very low, this explains that the independent variables can’t really explain the dependent variable. It is estimated that the predictors (independent variables) of NP explain 1.2 percent of its variance. In other words, the error variance of NP is approximately 98.8 percent of the variance is explained by variables not captured by the model. Moreover, ‘p’ value is less than 5% as in case of DER & LTDER it implies they have significant impact on ROA. As per the beta value of LTDER -.349 for a given 1% change in LTDER, ROA will change by 34.9% in opposite direction and this is a significant change because ‘p’ value is less than 5%. The ‘p’ value for them is also greater than .05 showing insignificant impact on independent variables. The value of R² is very low for NPM and ROE at 2.3 percentages and 9.8 percentages respectively. However the value of R² for ROA and ROCE is slightly higher at 15.1 percentages and 20 percentages respectively.

Time Period 2001-2014

Table 3

Table 3.1: Regression results for Net Profit and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
NP	DER	-50586.322	-.460	20813.394	-2.430	.015
NP	DAR	43927.563	.125	31621.037	1.389	.165
NP	LTDER	44707.617	.354	21730.163	2.057	.040
R ²			.012			

* S.E is standard error, C.R is critical ratio

Table 3.2: Regression results for NPM and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
NPM	DER	-26.600	-.447	11.208	-2.373	.018
NPM	DAR	-20.421	-.108	17.027	-1.199	.230
NPM	LTDER	32.955	.482	11.701	2.816	.005
R ²			.023			

* S.E is standard error, C.R is critical ratio

Table 3.3: Regression results for ROE and Independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
ROE	DER	-9.350	-.177	9.560	-.978	.328
ROE	DAR	-65.867	-.391	14.524	-4.535	***
ROE	LTDER	17.699	.292	9.981	1.773	.076
R ²			.098			

S.E is standard error, C.R is critical ratio

Table 3.4: Regression results for ROA and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
ROA	DER	-8.373	-.349	4.089	-2.048	.041
ROA	DAR	-32.603	-.426	6.213	-5.248	***
ROA	LTDER	9.546	.347	4.269	2.236	.025
R ²			.200			

* S.E is standard error, C.R is critical ratio

Table 3.5: Regression results for ROCE and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
ROCE	DER	-6.132	-.118	9.126	-.672	.502
ROCE	DAR	-77.596	-.469	13.865	-5.597	***
ROCE	LTDER	13.435	.225	9.528	1.410	.159
R ²				.151		

* S.E is standard error, C.R is critical ratio

Boom Phase: Time period: 2001/02-2006/07

Table 4, explains the regression analysis for boom phase. In table 4.1, the beta estimates are negative for DER and LTDER with NP at -.045 and -.012. It depicts that when NP goes up by 1 then DER and LTDER goes down by -.045 and -.012 standard deviation with a ‘p’ value greater than .05 showing that there is no significant change. Whereas when the NP goes up by 1 the DAR goes up by .080 standard deviation. The beta for DER is negative across all the dependent variables. The beta for LTDER is positive across all the dependent variables. The Beta for DAR is positive for ROA and NPM while negative for ROE and ROCE. The value of R² is almost negligible for NP. For NPM it will have significant change with beta -.454 as the ‘p’ value is less than .05. ‘p’ value when less than 5% as in case of DER and DAR it implies they have significant impact on ROA and ROE. As per the beta value of DER -.506 for a given 1% change in DER, ROA will change by 50.6% in opposite direction and this is a significant change because p value is less than 5%. The values of R² for NPM, ROE and ROCE is also slightly low at 2.1 percentages, 5 percentages and 5 percentages respectively. The value of R² is 9.6 percentages for ROA. This explains than the independent variables can’t really explain the dependent variable.

Table 4

Table 4.1: Regression results for NP and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
NP	DER	-8689.054	-.045	41735.281	-.208	.835
NP	DAR	35686.495	.080	51406.547	.694	.488
NP	LTDER	-2679.178	-.012	46846.745	-.057	.954
R ²			.002			

* S.E is standard error, C.R is critical ratio

Table 4.2: Regression results for NPM and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
NPM	DER	-78.493	-.454	38.447	-2.042	.041
NPM	DAR	69.551	.162	52.131	1.334	.182
NPM	LTDER	65.518	.332	42.279	1.550	.121
R ²			.021			

*S.E is standard error, C.R is critical ratio

Table 4.3: Regression results for ROE and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
ROE	DER	-2.318	-.016	31.606	-.073	.942
ROE	DAR	-99.441	-.278	42.856	-2.320	.020
ROE	LTDER	13.949	.085	34.756	.401	.688
R ²			.050			

*S.E is standard error, C.R is critical ratio

Table 4.4: Regression results for ROA and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
ROA	DER	-34.095	-.506	14.192	-2.402	.016
ROA	DAR	9.354	.056	19.244	.486	.627
ROA	LTDER	12.562	.163	15.607	.805	.421
R ²			.096			

* S.E is standard error, C.R is critical ratio

Table 4.5: Regression results for ROCE and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
ROCE	DER	-18.083	-.125	31.140	-.581	.561
ROCE	DAR	-67.513	-.189	42.223	-1.599	.110
ROCE	LTDER	14.770	.090	34.243	.431	.666
R ²			.050			

* S.E is standard error, C.R is critical ratio

Recession Phase: Time Period 2007/08-2008/09

During recession phase the value of Beta is negative for DER and DAR across all the dependent variables. The value of beta is slightly higher as compared to above mentioned time phase. This depicts that inverse relationship between dependent and independent variable. The recessionary phase in Indian market witnessed the low confidence on equity segment. As the markets were at lows, share prices plummeted and inflation rose to all time highs due to subprime crisis. The 'p' value is greater than .05 for all the dependent variables which does not explain any significant change except ROA with DER and LTDER. The beta for ROA with DER and LTDER is -.349 and -.347 which explains for a given 1% change in DER and LTDER, ROA will change by 34.9% and 34.7% respectively in opposite direction and this is a significant change because 'p' value is less than 5%. The value of R² is on the lower side, the maximum value of R² is for ROA at 20 percentages. This depicts that the independent variables can't really explain the dependent variable.

Table 5.1: Regression results for NP and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
NP	DER	-22341.186	-.281	24783.207	-.901	.367
NP	DAR	8308.921	.034	41096.299	.202	.840
NP	LTDER	21044.205	.206	30727.818	.685	.493
R ²			.011			

* S.E is standard error, C.R is critical ratio

Table 5.2: Regression results for NPM and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
NPM	DER	-14.246	-.452	9.635	-1.479	.139
NPM	DAR	-18.138	-.186	15.941	-1.138	.255
NPM	LTDER	18.655	.457	11.956	1.560	.119
R ²			.067			

*, S.E is standard error, C.R is critical ratio

Table 5.3: Regression results for ROE and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
ROE	DER	-9.350	-.177	9.560	-.978	.328
ROE	DAR	-65.867	-.391	14.524	-4.535	***
ROE	LTDER	17.699	.292	9.981	1.773	.076
R ²			.098			

* S.E is standard error, C.R is critical ratio

Table 5.4: Regression results for ROA and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
ROA	DER	-8.373	-.349	4.089	-2.048	.041
ROA	DAR	-32.603	-.426	6.213	-5.248	***
ROA	LTDER	9.546	.347	4.269	2.236	.025
R ²			.247			

* S.E is standard error, C.R is critical ratio

Table 5.5: regression results for ROCE and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
ROCE	DER	-6.132	-.118	9.126	-.672	.502
ROCE	DAR	-77.596	-.469	13.865	-5.597	***
ROCE	LTDER	13.435	.225	9.528	1.410	.159
R ²			.191			

*S.E is standard error, C.R is critical ratio

Recovery Phase: Time Period 2009/10-2013/14

During the recovery phase, the beta coefficient for most of the dependent variables remained negative with independent variables. The beta estimate for LTDER is positive for all the dependent variable and the values are also slightly higher for increase as compared with abovementioned time phases. The 'p' value is less than .05 for NP with DER and LTDER, NPM with DAR and LTDER, ROE with LTDER, ROA with DAR and LTDER and ROCE with LTDER. This explains for any given change in beta the dependent variable will change and this change will be significant. The value of R² also rose with a maximum of around 31 percentages in terms of the predictors of ROCE explains its variance. The least R² value is for NPM at 6.4%. The highest value for R² is 31 percentages on ROCE, which is slightly higher to depict the explanation for independent variables.

Table 6.1: Regression results for NP and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
NP	DER	-50545.585	-.459	20937.907	-2.414	.016
NP	DAR	41624.057	.119	31810.206	1.309	.191
NP	LTDER	44998.580	.356	21860.161	2.058	.040
R ²			.044			

*, S.E is standard error, C.R is critical ratio

Table 6.2: Regression results for NPM and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
NPM	DER	-24.073	-.487	20.046	-1.201	.230
NPM	DAR	-66.102	-.389	30.370	-2.177	.030
NPM	LTDER	41.324	.758	18.857	2.191	.028
R ²			.064			

*, S.E is standard error, C.R is critical ratio

Table 6.3: Regression results for ROE and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
ROE	DER	-16.138	-.385	15.117	-1.068	.286
ROE	DAR	-114.925	-.798	22.881	-5.023	***
ROE	LTDER	37.051	.801	14.226	2.605	.009
R ²			.251			

*S.E is standard error, C.R is critical ratio

Table 6.4: Regression results for ROA and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
ROA	DER	-8.373	-.349	4.089	-2.048	.041
ROA	DAR	-32.603	-.426	6.213	-5.248	***
ROA	LTDER	9.546	.347	4.269	2.236	.025
R ²			.200			

* S.E is standard error, C.R is critical ratio

Table 6.5: Regression results for ROCE and independent variables

DV	INV	Estimate	Beta	S.E.	C.R.	P
ROCE	DER	-9.837	-.236	14.421	-.682	.495
ROCE	DAR	-120.094	-.840	21.828	-5.502	***
ROCE	LTDER	27.757	.605	13.571	2.045	.041
R ²			.309			

* S.E is standard error, C.R is critical ratio

V. Conclusion

The study investigates the relationship between capital structure and firm's performance for the 40 firms listed on Nifty on National Stock Exchange excluding financial services firms. The study used five dependent variables (NP, NPM, ROE, ROA and ROCE) to examine the relationship between capital structure and firms performance with three independent variable (DER, DAR, LTDER). The study proved that the relationship of capital structure with ROE, ROA, and ROCE is negative. However quantum of this negative relationship is not significant. Although during the boom phase relationship of NP and NPM is positively associated with capital structure. Moreover the relationship among the dependent variables such as ROE & ROA, ROE & ROCE and ROA & ROCE is significantly positive. The relationship for the aforementioned variables is negative during recession and recovery phases. Though it is not a sector specific study and includes various sector firms listed on Nifty excluding financial services firms. As the financial services sector includes Banks and banking related firms which are very sensitive to not only firm specific factors but also to macroeconomic factors. It shows that the relationship between capital structure and firms performance can not only be explained by internal/firm specific factors but also with external/macroeconomic factors. This analysis also demonstrated that the independent variables cannot explain the dependent variables significantly. It only covers the temporal movements in the variables. This study can be further extended by increasing the number of independent variables for the set of dependent variables.

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