The Effects of Capital Structure on Profitability

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Abstract: The issue of capital structure gained much interest in the corporate business world since the path breaking paper by Miller & Modigliani in 1958.This research study attempted to solve the dearth of research on capital structure. Particularly, its effects on firm's profitability. This research study was conducted using total 84 sample firms of cement and textile sectors, of KSE which was break down as sample 9 firms from cement out of 21 and 75 of textile firms out of 184 for a period of 2003 to 2008. Two major set of variables were used i.e. capital structure, variables and profitability variables. Capital structures variables were comprised of Debts/Equity Ratio, Debt Ratio, funded capital ratio, funded Debts ratio, financial leverage ratio, Current Debts Ratio, and funded assets ratio. The Profitability variables were comprised of return on Equity, Earning per Share, Return on investment and Profit before Tax. The Pearson Product movement correlation to generate empirical evidence. The results showed that Profitability is significantly related to capital structure. This study also found an evidence of the existence of an optimal capital structure among the listed firms in both sectors of Karachi Stock Exchange. Firms of both sectors were found adjusting their capital structure regularly in order to achieve an optimal combination of debt and equity. The trend analysis showed that most of the listed firms of both sectors of KSE using a capital structure comprise of a mix of Debt and Equity, and this was a trend found in this research study.
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1. Introduction

Capital structure represents the combination of equity and debts of any firm. The capital structure has long been a major subject for academic study in the area of corporate finance and financial management. Chudson(1945) conducted a research in the area of capital structure in which he argued that the relationship between capital structure and profitability may exist.

Furthermore the importance of capital structure was internationally recognized when Franco Modigliani and Morton Miller got prizes from the Nobel prize committee in 1985 and 1990 respectively They got the reward for their work in the field of capital structure by publishing a paper which is known as miller-modigliani propositions. This MM showed that capital structure shows irrelevant nature in any perfect market world. Ever seen this proposition came into practice it played a pivotal role in the area of financial management and corporate finance. Most of the researchers tested and retested this propositions as canda (1991),Lamothe (1982) and Barges (1962).Pakistan is a third world country with having three Stock exchanges i.e. Karachi, Lahore and Islamabad stock exchange. Karachi stock exchange is the largest stock exchange having more than 34 sectors and approximately 650 listed firms. Very limited research exists in the area of capital structure in the context of Pakistan like booth etal (2001) studied ten developing countries in his research including Pakistan. The area of capital structure has not been widely exercised by the researcher, specifically relationship between capital structure and profitability with an evidence from listed firms in cement and textile sector of KSE.

2. Literature Review

2.1 Review of Related Literature

The term capital structure has become the most important topic in the core area of corporate finance. Capital structure can be defined in the view of some glimmer personalities as under,

" Capital structure represent financing through the sources like debt, common stock and preferred stock. " (Van Horne & Wchowicz, 1995, P.470)

The firm capitalization also called as the mix of funds sources used by the firm in long terms. (Petty. Keown, Ocottand Mrtin, 1993,P932)

Just for convenience & simplicity many well known theorists have restricted the capital structure issue just to debt equity choice (Schlosser 1992).

As profitability is considered to be the key for a firm's success that is why it is related in one way or another way with a firm.(Ahmad, 1994).

2.1.1 Concerned Studies on Capital structure

The time wise contributions in the field of corporate finance specifically in the area of capital structure are mentioned below.

The first and path breaking research on capital structure was carried by Chudson (1945) on cross section of manufacturing, mining, trade and construction companies in the US. He studied the area from 1931 to 1937.

His research is considered relevant though half a century has gone on his research. It is all due to his seven questions which be endeavored to answer then.

1. What is the likelihood of assets and liabilities of a firm in capital structure and how this reflects the kind of industry and co,s earning and size?
2. What kind of differences we find keeping in view the firm's different sources of financing like long term, equity finance and short term sources?
3. Are the uses of banks focus on some sectors than the other?
4. The dependency of different firms on trade credit?
5. The relationship between short term assets and short term liabilities is significant or not?
6. Is there relationship between the corporate liquidity and industry size or firm profitability?
7. Do the optimal capital structures exist?

All of the seven questions of chudson can be interpreted into the probable research questions important to this research which are structure and the existence of an optimal capital structure and the ordinary capital structure being practiced by the sample firms.

This chudson research showed a relationship between corporate financial structure and three major variables i.e. industry, profitability and size of the firm.

Chudson study really proved that profitability relationship exist with the capital structure variables like current assets and current liabilities, fixed capital assets and long term debts and equity capital.

Though it is a prominent study but will not be very wise attempt if the finding of chudson study is applied to Pakistani firms due to two major obstacles.

1. Most of the Pakistani firms are relatively younger to American firms.
2. Pakistani firms face a very different business environment and culture as compared to US firms.

After chudson study Modigliani & Miller (1958) conducted a comprehensive research in the same capital structure area., which got very importance at that time as will as right now. Their work on capital structure is also called M&M propositions.

Their research evidenced that the importance of capital structure has derived from market imperfection, like taxes or cost associated with trading securities.

M & M made two major propositions.

Propositions I: States that the value of any firm shows an independent nature to its capital structure.

Propositions II: States that a firm's equity capital has a positive relation to a firm's capital structure.

The M&M proposition is very famous which tells us that the cost of equity is dependable on three key variables i.e. the cost of debt, rate of return and debt to equity ratio.

The Miller Shortly concluded as, "Our propositions showed that the average cost of capital will remain the same regardless of what ever the combination of financing sources the firm chooses from the available sources " (Miller, 1988, P.307).

M&M propositions were tested by Barges (1962). Barges tested their propositions just after four years of their work and found (P143).

" Due to empirical methods used by MM, it was found that under encountering conditions, the MM will result in biased ".

Thus Barges had empirically concluded and moved some weaknesses in the research methodology conducted by Modigliani and Miller in their research study.

Barges concluded from his study that " Thus, due to the basis of the evidence presented herein, it was found that there appears no clear interdependency between average cost and capital structure ". (1962 P. 147)

Jensen and Meckling (1976) conducted a research study in the field of capital structure. They identified the possible conflicts between managers and shareholders due to the reason that managers have low level share in the firm.

Jensen Suggests that agency problem solution can be find by simply either increasing the stake of management or increasing the proportion of debt in capital structure. He identified that agency problem may rise due to free cash flow hypothesis.As per Jensen free cash flow is part of cash flow which is remained after funding all projects successfully and positively.Those managers who have less than hundebt ratioed percent stake in the affair of the business use these free cash flow for their own

advantage. If their stake is increased then this agency problem can be solved.

Ahmad Funded Assets ratioid (1980) carried out a study on capital structure in the context of Malaysia. He conducted his study on the relationship between profitability and the degree of sophistication in a firm's capital budgeting practice. He evidenced his study from Malaysian context.

Ahmad Funded Assets ratioid found evidence that profitability measured by RETURN ON INVESTMENT and earning per share (EARNING PER SHARE) was relatively correlated with capital structure which was indicated by the debt ratio.

Lamothe (1982) did a research in the area of capital structure and suggested that the firm,s bankruptcy, profitability and firm liquidity are related to its capital structure. In his study Lamothe concluded through a mathematical model the existence of an optimal capital structure.

Myers (1984) conducted study on the capital structure area. Myers named his research work as static trade off theory (STT) which explains that every firm use a desired target level of debt and equity and then exhibit in the same fashion. a target debt to equity ratio and then behaves in the same fashion or simply because of the benefits and costs associated with the option of the debt. These benefits may be like financial distress, taxes and agency cost. Myers Funded Assets ratio explains his work as follow.

1. Interest expense is usually providing tax shield benefits and because of this nature, it causes an enhancement of cash savings. Due to this reason firms will use a higher level of debts to take this particular tax advantage. If they suffer losses then this tax advantage will make a trade off. So if the firm has abundant earning earnings than it should prefer debt because of tax advantage..

2. Myers also found that as the chances of default proportionate directly to the level of debts. As it increases it will increase the chances of default as well. So his study concluded that there is existence of an optimal level of debts level. Any firm if reaches or goes beyond that level then there are chances that firm will not make repayment of the loan and will be considered as a default firm.. As a result of such kind of situation the control of the firm will goes into the hands of bondholders from shareholder who will try their best to lequadate the firm in order to recover back their investments. Myers, this research study is known as ST theory in the field of corporate finance.

Myers and Majluf (1984) conducted study in the area of capital structure which is known as packing order theory (POT) in corporate finance world. This theory tells that firms use a through level of corporate and financial decisions when ever they establish capital structure.

Every firm,s initial choice is equity financing which means providing funds from internal sources for instance retained earning. In case the firm needs external funds they go to get bank loan and then for other available options.

Thus according to POT the financially strong firms have low tendency towards debts for new project or expansion of the existing one as they have the internal sufficent availability of funds which can meet the purpose.

Myers and Mujluf also found that under pricing will obviously result in less information on the course of investors and management on the part of the expected cash flows from both current and future assets.

Ross (1977) conducted a research study in the field of capital structure. Specifically in the area of capital structure which is known as signaling theory.

In his theory he explained that debt is primarily to motivate investors and to develop their trust. Considered as a way to highlight investor's trust in the firm. If a firm issues any debt then it is a signal to the market that the firm is looking for positive cash flows in the future and firm will pay interest on these loans in future along with the principal amount from the available resources it has. Managers are being motivated by these cash flows.

Baskin (1985) suggested that capital structure is related with the liquidity of a firm. However he did not agree with the existence of an optimal capital structure.

"Other hypothesized factors in corporate structure such as operating risk, intangible assets, non debts tax. This indicates that previously financial theorists have inappropriately defined the focus of decisions making in the firm, in term of static "optimal" capital structure. It is not clear how this concept (Capital structure) ever assumed such a central position in the theory of finance " (Baskin, PP. 134-135).

Baskin concluded and argued that managers were more concerned with maintaining historical dividend policy, making desired fund investment and was trying to avoid new equity issues. As per his finding, capital structure issues were only of secondary consideration to mangers.

Kamma (1986) conducted a research study in the area of capital structure on the relationship between capital structure and compensation practiced by a firm. In has study Kamma hypothesized that

managers would like an optimal capital structure to be practiced not only to maximize the value of the firm but more seriously for their personal wealth? Kamma developed model suggesting that manger has opportunity of 'tampering' with the firm capital structure. The manger has to induce by stockholders via an optimal compensation scheme to maintain such a level of debt which is preferred by shareholders. Hence Kamma hypothesized that (P.73).

"In a cross section, the market based compensation and debt value ratio goes in the same direction.. Therefore we should observe a inverse correlation between incentive compensation and debt – value ratios".

The Kamma had actually developed a capital structure model in a principal agent framework. This research study proved the role of managers' incentives in choosing the optimal capital structure. Thus, this study proved that an optimal capital structure does exist but may not be practiced by the firm due to the self interest of the managers.

2.1.2 Similar Studies on Capital structure and Profitability Relationship

As a very few studies have been conducted to explore the relationship between capital structure and a firm's various characteristics i.e. growth, non debt tax shields, volatility, systematic risk, internal fund availability, assets structure, profitability and firm size in industry. The major studies conducted in the recent years which really proved that significant relationship exists between capital structure and profitability were long and Malitz (1985), Kester (1986), friend and Lang (1988), Titman and Wessels (1988) EL- Khouri (1989) and Canda (1991).

These studies had mainly concluded that capital structure measured by debt/equity ratio had an inverse relationship with profitability and measured return on investment

Myers (1995) had written that " The strong inverse type correlation between profitability and debt is one of the most striking facts about corporate finance." (P303).

It is vital to mention that the above studies were the most comprehensive in US for instance Long and Malitz used ordinary squares to analyze data of 544 manufacturing firm for a period of 3 year (1978-1980).

Titman and Wessels Employed linear structural modeling to analyze data of 469 manufacturing firms for the period of 9year (1974-1982).

Canda analyze data of 820 firm from all US industries for the period of 16 year (1972-1987).

Bradley. Jarrell and Rim (1984) conducted research. They used ordinary least squares to analyze the capital structure of 20 years (1962-81). They

concluded in their research that an optimal managers of the firms.

EL-Khouri(1989) supported the findings of Bradley, Jarrell and Kim and conducted a search study on capital structure and profitability by analyzing sample from 27 different industries by analyzing the data of these firms for 19 years (1968-1986). He found through his research the existence of an optimal capital structure and profitability was significantly negative related to capital structure.

Mohammad Khan Jamal(1994) Conducted a research on the relationship between profitability and the capital structure of listed industrial firms of Kuala Lumpur stock exchange (KLSE). The researcher used OLS and correlation analyses to analyze the data which consisted of two stets. Profitability was measured by the return on investment, where as capital structure had two indicators debt to equity ratio and debt to total assets ratio. The empirical results suggested that is significant negative relationship between debt and equity size with profitability.

Jasir Ilyas (2006) conducted a research study on the determinants of capital structure by analyzing non financial listed firms in Karachi stock exchange. He found that profitability was negatively related with capital structure. As the debt financing of a firm increased the profitability was fund on decreasing.

Hijazi and Shah (2004) conducted a research study on determinants of capital structure by analyzing non financial firm of KSE. They concluded that the lighter the profitability the lower the leverage and also found hat a high growth firm uses more debts.

Hijazi and Yasir Bin Tariq (2006) conducted a research on determinants of capital structure analyzing Cement industry of KSE. They found that a firm with higher fixed assets will have higher debts ratio. They also found through their research that the lesser profitability is due to more debts.

3. Research Methodology

3.1 Type of Reaserch

This is a secondary research. The data collected was from different already available sources.

3.2. Sources of Data

For this research study the basic source of information was drawn from individual companies of both sectors which were listed on KSE for a period of six years (2003-2008), for the study purpose both two sectors i.e. cement and textile were focused. The annual reports were analyzed.

3.3 Population

The population as per this study is defined as all firms of Cement and Textile sectors listed on Karachi stock exchange. Thus the frame of population was the list of all firms in both sectors i.e. Cement and

Textile on Karachi stock exchange between the periods of 2003-2008 as founded in the KSE annual companies hand book.

There were a total of 205 firms identified for this research study from both sectors. 21 firms of cement sector and 184 firms of textile sector.

3.4 Sample Size

Random sampling used in this research study. Following is the breakdown of sampling

    A. Cement sector contains total 21 firm 9 firms were taken as sample

    B. Textile contains 184 firms.75 firms were taken as sample.

The total sample size of the study was 84 firms of both sectors.

3.5 Data Analysis Techniques

Three major statistical analysis techniques have been used in this research study.

    a. Descriptive statistics techniques such as the standard deviation, mean, skew ness and kurtosis to determine the trend and behavior of variables.

    b. Pearson product moment correlation to investigate the strength, direction and significance between variables.

Capital Structure	Profitability

3.6. Research Hypothesis

The following hypothesis used in this research study.

    Hi: The profitability is significantly related with its capital structure of a firm.

    Ho: The profitability in not significantly related with its capital structure of a firm.

3.7 Research Questions

1 Is a firm's profitability is significantly related with its capital structure?

2 Is an optimal capital structure exists in the listed firms in cement and textile sectors?

3 What kind of capital structure's trend is being exercised by the listed firms in cement and textile sectors of KSE?

3.8 Research Model

On the biases of objectives of this study and the literature the following research model was developed.

Independent Variables   Dependent Variables

Independent Variables	Dependent Variables
(1)Debt/ Equity ratio (DER)	(1)Return on Equity (ROE)
(2)Debt ratio (DR)	(2)Earning Per Share (EPS)
(3)Funded Capital Ratio (FCR)	(3)Return on Investment (ROI)
(4)Funded Debt Ratio (FDR)	(4)Profit Before Tax (PBT)
(5)Financial Leverage Ratio (FLR)	
(6)Current Debt Ratio (CDR)	
(7)Funded Assets Ratio (FAR)	

4. Data analysis

Table 4.1 Descriptive Statistics	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
EARNING PER SHARE	466	-822.2	600	-0.7521	71.93012	-1.887	0.113	65.646	0.226
DER	469	-36.41	232.46	2.5827	14.93355	10.485	0.113	146.06	0.225
DEBT RATIO	469	0.06	8.82	0.7942	0.56065	7.484	0.113	93.068	0.225
FUNDED CAPITAL RATIO	469	9.17	26.54	0.7241	1.30844	16.765	0.113	326.021	0.225
FDEBT RATIO	469	0	7.49	1.6639	1.66126	1.254	0.113	1.203	0.225
FINANCIAL LEVERAGE RATIO	469	20.95	56.51	10.2204	10.26193	1.926	0.113	3.597	0.225
CDEBT RATIO	469	0.14	40.2	5.4598	6.21941	2.673	0.113	8.927	0.225
FUNDED ASSETS RATIO	469	0.04	4.9	1.5272	1.02463	1.102	0.113	0.563	0.225
RETURN ON EQUITY	469	-5.41	7.28	0.0743	0.91083	0.898	0.113	17.471	0.225
RETURN ON INVESTMENT	469	-0.73	3.23	0.0092	0.21186	9.126	0.113	126.979	0.225
PROFIT BEFOR TAX	469	-0.73	3.23	0.0092	0.21186	9.126	0.113	126.979	0.225

4.1 Descriptive statistics

EARNING PER SHARE is earning per share and is equal to total earning divided by no of shares outstanding. Debt to equity represents total debts divided by total shareholder equity. Debt ratio is summing total liabilities and dividing by summation of the current and fixed assets(total assets). Funded capital ratio is the sum of long-term debts and owner equity and then dividing by total fixed assets. Funded debt ratio represents the long term debts divided by shareholders equity.

Financial leverage ratio is the value of total fixed assets dividing simply by shorts terms liabilities of the firm. Current debt ratio total current liability divided by shareholders equity. Funded asset ratio is thtotal value of firm,s fixed assets simply dividing by short term liabilities of the firm. RETURN ON EQUITY is return on equity

and is equal to net income divided by shares outstanding.RETURN ON INVESTMENT refers to return on the investment.

Table 4.2 Pearson Correlations Matrix

	EARNING PER SHARE	DER	DEBT RATIO	FUNDED CAPITAL RATIO	FDEBT RATIO	FINANCIAL LEVERAGE RATIO	CDEBT RATIO	FUNDED ASSETS RATIO	RETURN ON EQUITY	RETURN ON INVESTMENT	PROFIT BEFOR TAX
EARNING PER SHARE	1	-0.011	-0.015	0.016	-0.008	0.045	0.031	-0.043	.110*	0.083	0.083
DER	-0.011	1	-0.031	-0.048	-0.041	0.022	0.058	-0.077	-0.076	-0.07	-0.07
DEBT RATIO	-0.015	-0.031	1	.684**	0.007	-.185**	0.004	-.298**	-0.017	.460**	.460**
FUNDED CAPITAL RATIO	0.016	-0.048	.684**	1	-0.059	-.195**	-.171**	-.095*	0.065	.676**	.676**
FDEBT RATIO	-0.008	-0.041	0.007	-0.059	1	.541**	.372**	.112*	.202**	0.05	0.05
FINANCIAL LEVERAGE RATIO	0.045	0.022	-.185**	-.195**	.541**	1	.902**	-.222**	.181**	-0.01	-0.01
CDEBT RATIO	0.031	0.058	0.004	-.171**	.372**	.902**	1	-.408**	0.038	-0.054	-0.054
FUNDED ASSETS RATIO	-0.043	-0.077	-.298**	-.095*	.112*	-.222**	-.408**	1	.123**	0.072	0.072
RETURN ON EQUITY	.110*	-0.076	-0.017	0.065	.202**	.181**	0.038	.123**	1	.561**	.561**
RETURN ON INVESTMENT	0.083	-0.07	.460**	.676**	0.05	-0.01	-0.054	0.072	.561**	1	1.000**
PROFIT BEFOR TAX	0.083	-0.07	.460**	.676**	0.05	-0.01	-0.054	0.072	.561**	1.000**	1

Discussion on the Results of the Pearson Correlation Matrix:

Table 4.2 shows the results PROF Of Pearson Correlation Matrix. The portion of the table above the 1 is for non parametric test while the coefficients of the different variables below the 1 are the Parametric Pearson Correlation Matrix test. Different proxies (PROFIT BEFOR TAX, RETURN ON INVESTMENT, RETURN ON EQUITY, and EARNING PER SHARE) are used to investigate the impact of firm profitability on the capital structure of the firm. Profit before tax and Return on investment are significantly positive correlated with the Debt ratio, Funded capital ratio, and also with Funded debt ratio and Funded asset ratio but the coefficient are not significant for Funded debt ratio and Funded asset ratio. Moreover P**rofit before tax** is negatively correlated with Debt to equity ratio, Financial leverage ratio and Current debt ratio but none of the coefficient is significant statistically. So thus we can suggested that their exist a correlation between the firm capital structure and profitability due to the significance of Debt ratio and Funded capital ratio. While the other variables coefficient are not statistically significant due to the short run nature of the data, if we consider data of wide span over time than these coefficients will also be statistically significant.

Similarly Return on equity is significantly positive correlated with the Funded debt ratio, Financial leverage ratio and Funded asset ratio and also with the Funded capital ratio, Current debt ratio but the coefficient is not significant while negatively correlated with the Debt to equity ratio and Debt ratio but the coefficients are not significant statistically due to the short run nature of the data, if we consider data of wide span over time than these coefficients will also be statistically significant.

5. Conclusions

Capital structure represents the mix of debts along with equity of any firm. The capital structure has long been a major subject for academic study in the area of financial management and corporate finance as early as 1945; chudson carried out a research into the area of capital structure and reported significant correlation among all capital structure and profitability variables. So for this research is concerned, we have consider one of the emerging markets Pakistan and tested the same relationship while considering two major contributing sectors; Cement and Textile Sector of the Karachi stock Exchange Pakistan. We consider seventy five numbers of firms from textile and nine Firms from cement as a sample. The results suggested that if the managers want to improve PROF and RETURN ON INVESTMENT than the firm must increase its DEBT RATIO, FUNDED CAPITAL RATIO, and also with FDEBT RATIO and FUNDED ASSETS RATIO ratios because of the fact that these ratios are positively correlated with the firm profit and return on investment. Moreover, it is also recommended that for increase in the firm profit DER, FINANCIAL LEVERAGE RATIO and CDEBT RATIO should be decreases due to the negatively relationship of the firm profit. We also verified the hypothesis that the firm profitability is related with the capital structure and thus the firm manger should concentrate on the capital structure decision and should used their best effort to achieve the optimal capital structure that would enhance the firm's earning and value which is the ultimate goal of the finance manager. The empirical results also shows that if managers wants improvement in the RETURN ON EQUITY so they should improve the FDEBT RATIO, FINANCIAL LEVERAGE RATIO and FUNDED ASSETS RATIO and also FUNDED CAPITAL RATIO, CDEBT RATIO. So Funded Assets ratio DER and DEBT RATIO are concerned, the manager should reduce these two for improve returns on equity due to the negative relation of the RETURN ON EQUITY with these variables. In the context of Pakistani firm the trend analysis suggested that the firm should enhance the level of the different type's debts for the achievement of optimal capital structure because the positive sign of the correlation shows that still there is a room for increasing the firm debts and to achieve

the firm capital structure. The trend analysis shows that majority of the firms in both sectors use combination of equity and debt and this is the trend found in this research study. So the results really found all the objectives of this research study.

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