

Debt and Profitability: An Empirical Analysis of Listed Firms in Pakistan

¹Yousaf Abbasi, ²Hifsa Sabeen, ³Shahbaz Khan, ⁴Talha Jalees

¹Research Scholar, Department of Business Administration Hazara University,

²Research Scholar, Department of Business Administration, AIOU Islamabad,

³Research Scholar, Department of Business Administration Muslim College of Commerce and Management,

⁴Research Scholar, Department of Business Administration Muslim College of Commerce and Management,

Abstract: This study seeks to investigate the issues related to financing decision and the profitability of the listed firms at the Karachi Stock Exchange (KSE). By performing this investigation we try to find out that is Pakistani listed firms at KSE follow any capital structure theory during the period 2000-2010.

The study is based on the panel data of 40 non financial listed companies at Karachi Stock Exchange for the period of 2000-2010. Comprehensive descriptive analysis was conducted to find out mean, median and standard deviation for better understanding of readers. OLS Regression analysis is used to analyze the relationship between profitability and financing by debts. The relationship is found for short term debts, long term debts and total debts. Size and growth are used as control variables in the study.

The results regarding leverage and profitability reveal that there is an inverse relationship between the use of debt in capital structure and profitability. The over usage of debt in the capital structure is responsible for these results. Size and sales growth has positive relationship with the profitability.

This study investigates the issues relating to the capital structure and firms performance in terms of profitability. All firms need operating capital to support their sales. To acquire operating capital, funds must be raised in the form of a combination of equity and debt. For any business organization the financing decision is very critical because of the need to maximize the profit to the financing constituencies, and also for the survival of firm in its competitive environment with that optimal capital structure. The choice among the best proportion of debt and equity can affect the value of the firm, as well as the rate of return.

The most of the factors that are used in this research study is based on previous researches to analyze the relationship among debt financing and profitability of the firms. Basically, we selected the attributes identified by Abor (2005) and planned to test few other variables that are used in various studies. But, there is lack of financial data in the selected sample space and therefore, we include just two additional variable is this research study.

This research identified need, to examine use of different capital structures used by the listed companies and its impact on profitability capabilities of these companies. This study is based on the data collected from the sample of 40 listed companies of Karachi stock Exchange (KSE).

Keywords: Capital Structure, Profitability, Debt, Equity, Return on Assets, Leverage, Growth, Size

1. INTRODUCTION

The term Capital structure is widely used for the mixture/combination of firm's long term debt, preferred share, and equity share. (Van Horne, 2001). All firms need operating or working capital to manage their turnover. To arrange operating capital, the finance managers, emphasis to used mixture of equity and debts for this purpose. This mixture of debt and equity instruments are said to be capital structure (Brigham, 2003). The proportion of debt and equity may vary in the capital structure according to the difference in the industries. It is also depend upon the nature of business operation and its daily activities. But, the organizations try their best to manage their operating or net working capital according to

their capital structure. The choice for optimal capital structure depends upon two things. First the need to maximize the profit to the financing constituencies and secondly the risk involved in that optimal capital structure. The use of debts in the capital structure provides tax deduction which increases the profitability but in turn the use of debts in capital structure increases the bankruptcy risk, agency cost and other business and financial risks (Brigham and Ehrhardt, 2003).

It is also true, that some time, capital structure going to be complex due to involvement of different type of debt and equity instruments like, ordinary share, preferred shares, hybrid securities, lease, warrants etc (Dimson and Staunton, 2011).

Most of the current theories of capital structure or cost of capital is based on the Modigliani and Miller's (1958) research work which was the influence of capital structure on the value of the organization. The theory of capital structure of Miller's irrelevance constructs on the ideal situation of perfect market in which the all relevant information is available to the stakeholders without paying any price. On other hand, in this market the organizations also operate without taxes and transaction cost (Mcinnis, 2011).

However, we cannot apply these assumptions in the reality and in practice. In the real market these factors such as taxes, agency cost, information cost and many others would exists (Easton, 2009).

Modigliani and Miller (1963) review their previous theories and consider tax benefits and other factors for determination of capital structure of the firm with different choices in a mind. They find out that mostly the firms prefers the debt instrument for maximizing the wealth of share holders due to the benefits connected with the attainment of this instrument. The preference this instrument because, interest expense is allowable by the tax authorities of any state of the whole world (Gow, Ormazabal and Taylor, 2011).

Trade off, Pecking, information asymmetry and agency cost are the most common theories on capital structure that explain the relevance of capital structure. The neutral mutation hypothesis, market timing hypothesis and accelerated investment effects are discussed in it (Khan and Watts, 2009).

The argument from the researchers who develop the theories on the base of tax advantage due to using debt instrument for financing purpose, that if the firm enjoy huge profit than the organization must use debt and replace equity with it, to take the benefit of deduction of interest from the tax amount. On the other hand, it is also true that cause of this the trade off among tax gains increases insolvency cost, which will tends to increase the firms cost of capital and decrease the firm's profitability (Gow, Ormazabal and Taylor, 2011).

Myers (1977) explained the conflicts of interests between stockholders and bondholders in agency cost theory. Bondholders try to provide shelter to interest by restricting new investment opportunities. It is also evident by him that bond holders also pay lot of attention especially on restricting the high growth opportunities in terms of returns and assets. Myers (1984) also proposed the Pecking Order Framework (POF) in which he suggests that firms full fill its financing needs in following order of preference:

1. At very beginning, the firms try to manage its fiancés by generating funds internally (Equity).
2. If the firm could not mange its finances by using internal sources, than the finance manager go up to the debt instrument for rising funds from the general public.
3. It the market conditions are not according to the environment needed for generating funds through issuing debt and people would not interested in the investment in long term debts, than the firm go for issuing the equity instrument for managing finances.

On other hand it is also observed from the literature review that issuing debt is more economical than issuing equity without losing the management control of the organization (Mcinnis, 2011).

A literature review on practical studies shows that major determinants of capital structure are optimal (or target) debt ratios, bankruptcy risk, asset structure, tangibility of assets, fixed assets/total assets, inventory management, profitability, effectiveness of assets and liquidity (Van der Wijst, 1990; Jordan et al., 1998; Philisophov and Philosophov, 1999; Eldomiaty, 2009; Gaud et al., 2005).

The important factor which are use to determine capital structure found mostly in many empirical studies that restrict a firm to use debts as a financing alternative or compels to use debt as a proportion of capital structure are agency costs, taxes, non-debt tax shield, growth, firm size, collateral value of assets, tangibility of assets, profitability, cash flows, liquidity, degree of operating leverage, dividend policy, change in value of company and earning volatility (Nekrasow and Ogneva, 2012).

Debt financing decision is one of the most crucial decision and most firms should make. Debt financing decision not only affects cost of capital and variation of financial risk, but also different debt financing contracts enforce different restrictions, which will affect the other decisions of a firm. After fifty years of MM proposition of capital structure irrelevance the debate is still without conclusion because of the complexity of the problem and the differences that exists in the world economic environments (Richardson and Wycoccki, 2011).

2. LITERATURE REVIEW

In developing countries like Pakistan where economic and political conditions are always unpredictable the risks are much more than in the developed countries.

In Pakistan, the listed firms are operated in both private and public sector. In Public sector organization, it is observed that there is lake of operating and investment decision capabilities, due to the less administrative efforts and lake of professionals in these organizations. But, in private sector organizations there are lot of activities and expertise exists and these firms are popular in this field due to these resources. They were also thought to have advantaged access to public sector dominated debt market (Khan and Watts, 2009).

The major sources of debt in Pakistan are commercial banks, and these banks would not prefer the long term debts, having almost no reliance on market based debt. In 1994, the company law is modified and government repealed most of the constraints and allow corporate sector to raise funds directly from the market in the form of TFCs (Term Finance Certificates) (Mazhar and Nasr, 2009).

On the other hand the Pakistan's has very short history about the corporate bond market. Only in 1984, the Water and Power Development Authority (WAPDA) issue bond, nor any other example is available in the financial history of Pakistan regarding managing finances by issuance of bonds/debentures. Due to this reasons most of the firms in the Pakistan have short term debt financing rather than long term (Azeem and Azid, 2006).

The results of empirical studies carried by Mazhar and Nasr (2009) suggest that asset tangibility and profitability are inversely related with debt. Whereas size, growth rate and tax rate is positively correlated with leverage in Pakistan. They concluded that public sector companies in Pakistan use more debt as compared to the private companies.

Study carried out by Shah and Khan (2007) have shown the debt ratio for the different sectors of Pakistan and the highly levered sector is textile sector with debt ratio of 72.3 % and the lowest debt ratio is 50.5% for chemical industry. The proposition of debt in other sectors is in engineering 69.8%, sugar 60.1%, paper 61.8%, power sector 66.2% and cement 59.6%.

Mahmud (2003) analyze that the most of the firms in Pakistan surprisingly have very high leverage ratios with total debt to capital ratio amounting to more than 70 percent, this is due to undeveloped capital market which encourages firms to opt for debts as opposed to raising new equities. They found that GNP per capita has insignificant relationship with the leverage for Pakistan.

We can conclude from the above results that in Pakistan companies are using more debts not because of the benefits debt provides but because of the shortfalls in the recovery system in case of refusal of payment.

We have to make stronger, legal and judicial reform laws to permit financial institutions to foreclose on guarantee in the case of unpaid loans without going through time consuming long court procedures (Azeem and Azid, 2006).

Mostly the firms' uses the combination of debt and equity instruments to generate the finances and for their capital structure. Generally the firms have different options for their capital structure from which the firm can select a suitable one (Abor, 2005). Capital structure consist of long term liabilities and equity of the firm or company, or you can say that

capital structure consists on the total obligations of the business, both inside and outside the organization (Brealey and Myers, 1992; Gitman, 1997; Weston & Brigham, 2000; Mesquita, 2003).

Capital structure choice and the use of debt as a financing instrument is a hot issue in finance for the last fifty years. The debate for this issue started with the valuable work of Modigliani and Miller (1958) as irrelevance proposition, in this they define that in the perfect market situation, the capital structure has no relation with firm's value. On other hand, it is also very clear that taxes and other related costs are exists in the market to justify its relevance, till now, the finance personals have not clarified the relation among the capital structure and the firma value.

Modigliani and Miller (1963) rearrange their previous finding by considering the tax advantage as determinant of capital structure of the organization. The main reason for including it is the interest on long term debt is a tax deductible expense. A firm that pays taxes receives somewhat offsetting interest "tax-shield" in the form of lesser taxes paid. So, they suggest, that to maximize the value of the firm the finance decision must involve the use of debt instrument for its capital structure. Stiglitz (1972) indicated that when there is a chance of default of firm on financing, than it creates a bankruptcy cost that can affect the capital structure decision. It is also noticed in this research that if the debt level of the firm is increased than the probability or chance of bankruptcy also increased this risk might be also a main factor of the firm's capital structure decision. It is also observed that the firm also hesitates to use debt instrument due to the repayment of loan with interest that can affect its profitability (Poster and Swaminathan, 2009).

Jensen and Meckling (1976) analyzed that due to the owner and agent interest the agency cost is arises that can effect the capital structure decision. It is also noticed that agency cost is created due to the difference between ownership and management personal, owner of the firms are not the controlling authorities of the firms and this is the main reasons of occurrence of agency cost. Miller (1977) identified three pillars of tax laws of the United State of America that are the main component of determination of the total value of the firms. These are:

- (1) The corporate tax rate.
- (2) The tax rate on dividend income.
- (3) The tax rate on income from interest received.

Pecking order theory POT developed by Myers (1984) on the basis of information identify the order of financing alternatives for capital structure.

The hypothesis of free cash flow states that in capital structure there is a positive relationship among the productivity of assets and proportion of debts, or if other things remain same, firms with large free cash flows are expected to have high levels of debt and vice versa. The relationship between debt and free cash flow has been empirically supported by the findings of Agarwal et al., (1994), Jaggi et al., (1999), and Filbeck et al., (2000).

3. DATA SOURCE AND METHODOLOGICAL FRAMEWORK

The relationship between profitability and leverage has been a hot issue for financial studies for the last sixty years. Both profitability and leverage are used as cause and effect of each other alternatively. Use of leverage in the capital structure provides tax benefits, that increases the profitability of the firm but in turn the use of debts in capital structure increases the bankruptcy risk, agency cost and other business and financial risks (Brigham and Ehrhardt, 2003). According to Gaud et al., (2005) Profitable firms will use more debts as the probability of paying back the loans is high. Abor (2007); Huizinga et al., (2009) and Jong et al., (2009) found the significant relationship between capital structure and profitability.

In this study, we use the same model, as used by Abor (2005); (2007) and Mesquita, Lara (2003) which examines the relationship between profitability with leverage and uses size and growth as control variables. However, the difference between their study and present study is that the Abor (2005) and Mesquita, Lara (2003) have use return on equity as the proxy of profitability but we use the return on assets as used by Gaud et al., (2005); Baum (2007); Waliullah and Nishat (2009) and Azeem and Azid (2006).

ROA is used in this research study because, in Pakistan there is no any use of long term debts (Both in Public and Private sector) such as bonds and debentures for managing finances and also discussed in literature review. Therefore, we

use ROA instead of ROE, because, ROQ is consider as best proxy or tool to determine the profitability in such type of markets as compare to ROE.

3.1. Population:

The population of this research work is all the listed firms of Karachi Stock Exchange.

3.2. Data Collection:

The panel data is collected from the official documents of Karachi stock exchange (KSE) 'yearly analysis' and financial statements with maximum of 40 listed companies on the Karachi stock exchange for the period of 2000-2010, excluding all firms in financial sector from our analysis as the capital structures of these firms are not similar to the capital structures of firms in non-financial sector.

Panel data is the pooling of observations on a cross-section of units for several time periods. Panel data approach is much valuable than either cross-section or time-series data alone. One benefit of using the panel data set is that, due to the many data points, degrees of freedom are enhanced and the second benefit is that collinearity among the explanatory variables is decreased; therefore the quality of financial estimates is enhanced. (Baltagi, 1995; Abor, 2007). The panel data is also used by Gaud et al., (2005); Mesquita (2003); Voulgaris (2002); Abor (2005); Abor (2007); Waliullah and Nishat (2009); Azeem and Azid (2007); Shah and Khan (2009) and Ezeoha (2009) for the relevant issue.

Some variables are not available in the 'yearly analysis' report of KSE so we used the audited financial statements of the firms for the missing variables and values. Two years financial statement, financial statement of that year and the financial statement of previous years are used for the calculation of one year variables. Financial statements for the year 2009, 2005 and 2004 were not available for all the firms so the firms vary in different years. There are 40 firms used in the analysis from the non financial sectors of KSE listed firms for ten year period 2000-2010. The final sample thus comprised 200 observations. The whole sample is also analyzed on the basis of sectors in the market and there are ten sectors for the sample.

4. RESULTS AND DISCUSSION

Panel annual data is used from 2000 to 2010 regarding profitability, leverage, growth and size from the sample of non-financial firms of Pakistan. The data is in Pak million rupees. The data is taken from the official documents of Karachi stock exchange (KSE) 'yearly analysis' and financial statements of the non-financial firms of Pakistan. The all variables are first analyzed for the normality test to assess the shape of a distribution, specially our interest centers on whether the distribution of each variable is bell shaped or skewed. Normality tests are used to determine whether a random variable is normally distributed or not. We use regression analysis by using Ordinary Least Square (OLS) Method as done by Abor (2007); (2005); Mesquita, Lara (2003) and Carpentier (2006) to analyze the relationship between profitability and leverage. In net we can say that three tests were done for this purpose. Which are:

Normality test

Regression analysis

Correlation matrix

4.1.1 Normality test:

In most of the studies, researchers are interested in the shape of a distribution of random variables involved in the study. Especially there focus is on whether the distribution of the random variable is bell shaped or skewed. Normality tests are used to find out whether a random variable is normally distributed or not. The assumption of Normality is a prerequisite of many inferential statistical techniques including regression analysis. There are several tests of normality discussed in the literature like (1) Histogram (2) Normal Probability plot (3) Detrended Normal Plot and (4) Box Plot (Gujrati, 2003).

We use histogram with normal curve to see whether the random variables are normally distributed or not with the help of Statistical Package for Social Sciences (SPSS 12.0).

4.1.2 Regression analysis:

The general purpose of multiple regression, first used by Pearson, 1908 is to learn more about the relationship between several independent or predictor variables and a dependent or criterion variable. One of the more simple methods of linear Ordinary Least Squares (OLS). The goal of OLS is to closely "fit" a function with the data. This is done by minimizing the sum of squared errors from the data. So least squares can be interpreted as a method of fitting data. The best fit in the least-squares sense is that instance of the model for which the sum of squared residuals has its least value, a residual being the difference between an observed value and the value given by the model. The method was first described by Carl Friedrich Gauss around 1794. The following are regression equations for three hypotheses

$$ROA = \alpha_0 + \alpha_1\left(\frac{TL}{TA}\right) + \alpha_2(SG) + \alpha_3(SZ) + \varepsilon_1 \quad \text{-----1}$$

$$ROA = \beta_0 + \beta_1\left(\frac{LTL}{TA}\right) + \beta_2(SG) + \beta_3(SZ) + \varepsilon_2 \quad \text{-----2}$$

$$ROA = \gamma_0 + \gamma_1\left(\frac{CL}{TA}\right) + \gamma_2(SG) + \gamma_3(SZ) + \varepsilon_3 \quad \text{-----3}$$

We use OLS to find the relationship between ROA criterion variable and predictor variables leverage, growth and size.

4.2 PRE-MODEL SCREENING:

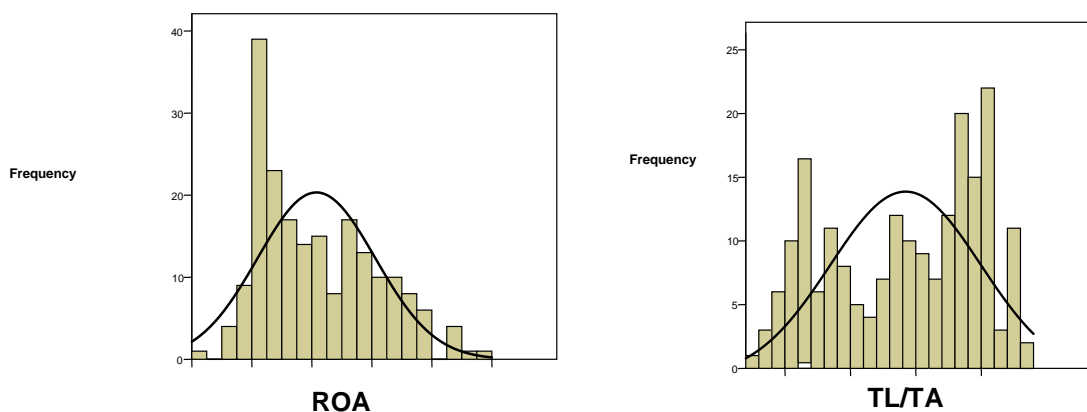
Pre-Modeling Tests are helpful in making sure that data have been appropriately entered and that the distribution of variables that are to be used in the analysis are normal, reliable and do not have any econometric problem. If variables distribution is deviating significantly, then this may affect the validity of the results that are produced.

Normality Test

In many studies, researchers are interested in the distribution of the random variables whether distributed normally or not, whether a distribution is bell shaped or skewed. We have used histogram with normality curve to assess the shape of the distribution.

4.2.1.1 Histogram:

A histogram is a simple graphical device that is used to learn something about the shape of the probability density function of random variable. The value on vertical axis shows the frequency of cases. The values on the horizontal axis are midpoints of value ranges. Bell shaped curve shows the distribution of data. For this study histograms ROA, TD



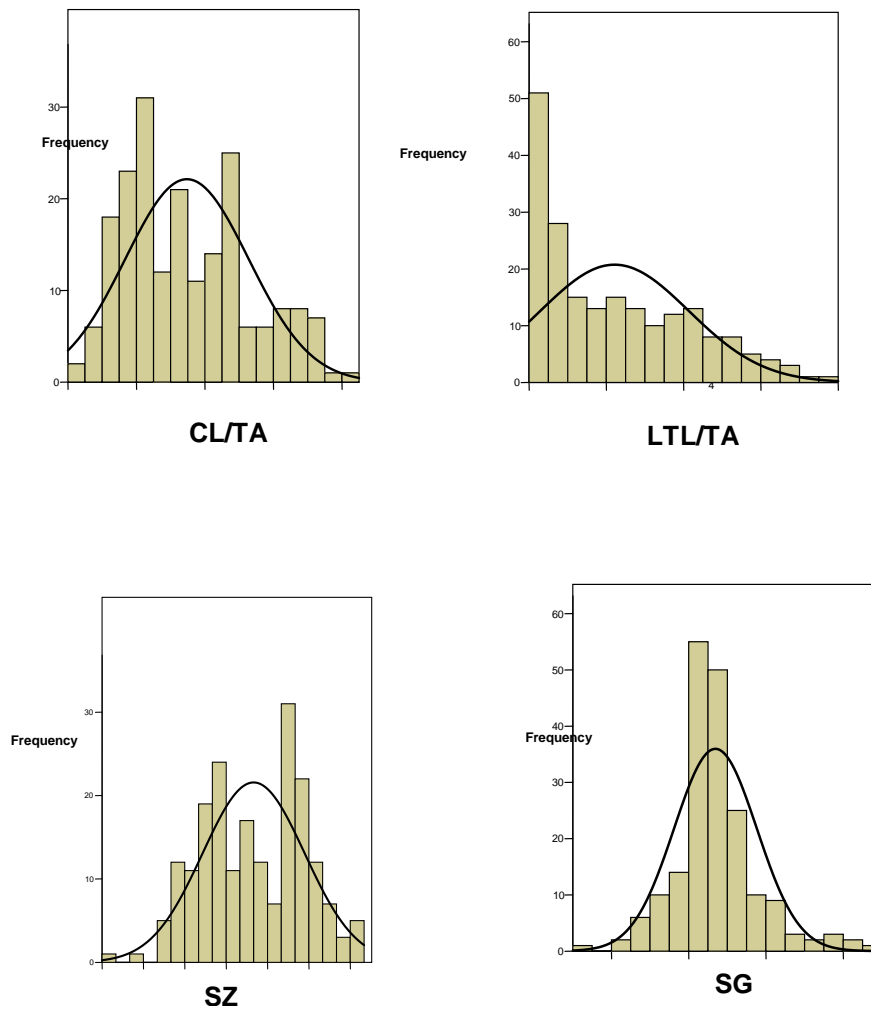


Fig.4.1

Ratio, CD ratio, LTD ratio, Size and growth are obtained by using Statistical Package for Social Sciences (SPSS 12.0). From the normal curve on the histograms graphs it is quite clear that the random variables ROA, TD ratio, SD ratio, LTD ratio, SG and size are normally distributed with the perfect shape. Jarque-bera test statistics shows that the variables are normally distributed with 99% significance level for ROA, TD ratio, SD ratio, LTD ratio and SG. SZ is normal with significance level of 90% with probability 0.06 (see table 4.1).

4.3 DESCRIPTIVE STATISTICS:

To assess the market average and measure of dispersion we used the descriptive statistical technique so that the trend of the data can be analyzed table 4.1 shows the description of the overall market and table 4.1 shows statistics of variable used in the analysis for different sectors of the market.

It is obvious from the table 4.1 that the total debt ratio (TL/TA) is 57% out of which 35% are in the form of short term debts (CL/TA). Long-term debt (LTL/TA) contribution is 22% which shows that firms are using more short-term debt than long term debt. The profitability (ROA) is 10.8% during the ten years period showing that the firm’s performance is low in term of utilization of its assets. The sale of the firms is growing (SG) with the rate of 60% per year showing a good progress in the sale but this can be due to devaluation of the currency and inflation .

Table 4.1 Descriptive statistics

	ROA	TL/TA	CL/TA	LTL/TA	SZ	SG
Mean	10.78	56.89	34.76	22.13	3.83	60.09
Median	8.48	60.12	31.07	16.28	3.83	15.15
Maximum	37.89	94.41	82.24	76.13	5.13	2489.6
Minimum	-8.52	10.78	3.05	0	2.11	-74.40
Std. Dev.	9.81	23.01	18.03	19.24	0.62	279.38
Probability	0.0011	0.0004	0.0025	0.0001	0.061	0.000
Observations	200	200	200	200	200	200

Standard deviation in relation to the average values for ROA, TD ratio, SD ratio, LTD ratio and sale growth shows that these measures are consistent in the ten years period and there are no big variations in the variables, indicating a relatively low dispersion of data showing a good sample for analysis. The standard deviation of sales growth is a bit high which shows inconsistency in the sales growth and it is due to the economic and financial crises also the inflation has given this variation a magnification.

The probability shows that ROA, TD ratio, SD ratio, LTD ratio and sale growth are 99% significant while size is 94% significant.

Table No. 4.2 Descriptive Statistics for ROA, TL/TA, LTL/TA and CL/TA

Firms	ROA			TL/TA			LTL/TA			CL/TA		
	Mea n	Media n	SD	Mea n	Media n	SD	Mea n	Media n	SD	Mea n	Medi an	SD
Textile	2.80	1.41	4.85	72.9	78.05	15.9 3	31.9	33.10	18.7 7	41.01	42.95	11.86
Sugar	2.69	1.70	5.19	74.37	80.70	18.5	27.37	22.01	15.8 3	47.0	40.12	17.42
Cement	8.34	8.19	4.35	56.31	60.39	14.5 6	38.15	40.15	16.2 9	18.15	19.55	4.75
Oil & Gas	20.74	22.25	12.1 9	50.67	51.01	25.2 0	21.23	13.43	20.3 5	29.44	25.56	19.27
Food & Goods	21.40	22.94	7.58	50.62	53.55	21.0 0	11.31	6.39	11.2 0	39.31	33.14	19.01
Chemical & Pharma	13.13	15.70	7.21	42.17	37.13	22.1 6	19.28	8.18	22.5 1	22.89	21.66	8.98
Engineeri ng	7.80	6.77	6.43	64.69	70.68	15.2 6	9.99	3.79	16.6 3	54.69	60.21	18.63
Energy & Power	11.58	11.76	4.51	35.68	35.34	15.3 2	17.23	19.66	10.2 5	18.44	14.43	12.02
Other	16.11	18.18	7.30	33.96	27.66	18.0 5	12.25	6.69	12.8 6	21.70	20.13	11.67

The table 4.2 shows the average values and standard deviation of ROA, TL/TA, LTL/TA, CL/TA, for different sectors of the market. It is obvious from the average of ROA for textile and sugar sector 2.9% and 2.6% respectively, that the profitability in this sector is very low as compared to the overall market average 10.7%. The textile sector is in big crises for the last eight years which is responsible for such low figures. The sugar sector is also facing the crises for the last four years due to high production cost. The most profitable sectors during the ten years period are food and goods sector and

oil and gas sectors with average ROA of 21.4% and 20.7%.this is because of the high marketing price of the products for the end users. The ROA for cement sector 8.3% and engineering sector 7.8% are bit low than the market average 10.7%.the profitability measure for chemical and Pharma sector 13.3%, energy and power sector 11.58% and others sectors 16.1% shows better average than the market average 10.7%. Considering the standard deviation measure it is obvious that standard deviation for textile sector4.85% is quite high with respect to its average 2.9%.this shows inconsistency in the profitability of the sector. Similarly the deviation for sugar sector 5.19% is high than its average 2.7% showing the big variations in the profitability. Engineering sector has standard deviation of 6.4% with respect to its average 7.6% a bit high. The standard deviation for cement sector 4.35%, oil and gas sector 12.9% foods and goods sectors 7.58% chemical and Pharma 7.21%, energy and power 4.51% and others sectors 7.3% is showing consistent figures with respect to the ROA average for the respective sectors. So there is a bit consistency in the profitability of cement, oil and gas, foods and goods, chemical, energy and power and others sectors.

The total debt ratio TL/TA statistics for sugar and textile sectors 74.4% and 72.9% respectively shows that these sectors are more leveraged than all other sectors. This high use of debt is due to low profitability and the crises on the sectors. The use of debt in cement sector 56%, oil and gas sector 50.6%, foods and goods 50.6% and engineering sector is normal and in agreement with the market average. The use of debt in energy and power sector and other sector is 35% and 34% respectively lower than market average 57% this may be due to the use of internally generated funds. The standard deviation for oil and gas sector and foods and goods sector for TL/TA is a bit high with respect to their average of 50.6% for both. This shows that both sectors are using total debt a bit inconsistently. The measure of dispersion for textile, sugar, cement, chemical, energy and power, engineering and others sectors shows the consistency in the use of total liability in the capital structures of the firms.

The LTL/TA average shows that cement sector is using long-term liabilities 38.5% highest from all other sectors and engineering sector is using lowest long-term debts in comparison to the other sectors. Textile and sugar sectors have high long-term debt ratio than market average 22%.oil and gas, food and goods, chemical and Pharma, energy and power and other sectors have low long term debt ratios than market average standard deviation of LTL/TA shows a bit inconsistency in the use of long-term debts especially in chemical and Pharma sector with 22% SD.

The average for the short-term debt in different sectors of the market and it is obvious from the averages that engineering 56% sugar sector 47%, textile sector 41% and foods and goods sector 39.3% use more short term debts than market average 35%. This is because of the size of these sectors which provide them market. The lowest level of short term debt is maintained by the cement 18.15%.Oil & gas 29.5%, chemical & Pharma 22.9%, energy & power 18.5% and others sectors 21.7% have low level of short-term debt as compared to the market average 35%.Standard deviation of all sectors shows less variation in the use of short-term debt for all sectors easy access to money

Table No. 4.3 Descriptive Statistics for Sales Growth (SG) and Firm's Size (SZ)

Firms	SG			SZ		
	Mean	Median	SD	Mean	Median	SD
Textile	57.22	9.56	331.9	3.47	3.32	0.54
Sugar	2.69	11.89	44.52	3.14	3.23	0.47
Cement	34.70	34.09	28.63	3.66	3.57	0.26
Oil & Gas	41.17	25.98	68.94	4.72	4.77	0.30
Food & Goods	87.09	15.17	433.06	4.03	4.23	0.388
Chemical & Pharma	39.61	9.17	159.8	3.84	3.90	0.45
Engineering	112.9	23.13	371.56	4.11	4.38	0.60
Energy & Power	27.23	22.04	27.13	4.19	4.33	0.48
Other	165	17.49	277.8	3.75	3.54	0.75

The table 4.3 shows the average values and standard deviation of sale growth and size of the firms, for different sectors of the market.

It is observed from these statistics that the sale growth is high in others sectors 165%, engineering 112.5% and foods and goods 87%.the lowest sale growth is in sugar sector 11.55 % this is because they are already utilizing their assets in full capacity. SD measure shows big variations in the sales growth of textile, foods & goods, chemical and other sectors. This is due to potential of growth in engineering, chemical and food sectors and crises in the textile sector.

The averages for size of the firms are proxies by log of sales of the firms for different sectors. The highest size is in oil and gas sector and the lowest is in sugar sector. Standard deviation shows consistency in all sectors of the market with respect to their respective averages for size.

CORRELATION ANALYSIS:

Correlation measures the degree of relationship or association between two sets of variables to describe how closely they track or are related to one another.

The table 4.7 has the same number of rows as columns with each column and row being labeled by the name of one of the variables (ROA, TL/TA, LTL/TA, CL/TA, SG and SZ). The variable heading up a column can be referred to as the column variables while the variable labeling the row is the row variable. Intersection of column and row gives the correlation data relevant to the relationship between the column variable and the row variable.

Table 4.7 Correlation Analysis

		ROA	TL/TA	LTL/TA	CL/TA	SG	SZ
ROA	Pearson Correlation	1	-.654(**)	-.555(**)	-.243(**)	.148(*)	.480(**)
	Sig. (2-tailed)		.000	.000	.001	.037	.000
TL/TA	Pearson Correlation		1	.649(**)	.584(**)	-.038	-.309(**)
	Sig. (2-tailed)			.000	.000	.595	.000
LTL/TA	Pearson Correlation			1	-.239(**)	-.018	-.307(**)
	Sig. (2-tailed)				.001	.795	.000
CL/TA	Pearson Correlation				1	-.029	-.067
	Sig. (2-tailed)					.689	.346
SG	Pearson Correlation					1	.130
	Sig. (2-tailed)						.066
SZ	Pearson Correlation						1
	Sig. (2-tailed)						

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

In Table 4.7 ROA is significantly negatively related with TL/TA, LTL/TA and CL/TA with 99% significance level. ROA is significantly positively related with SG and SZ with significance level of 95% and 99% respectively.

Table 4.7 shows that TL/TA is significantly negatively related with ROA and SZ with significance level of 99%. TL/TA is negatively related with SG but insignificantly. TL/TA is significantly positively related with LTL/TA and CL/TA with significance level of 99%.

In Table 4.7 LTL/TA is significantly negatively related with ROA, CL/TA and SZ with significance level of 99%. LTL/TA is negatively related with SG but insignificantly. LTL/TA is significantly positively related with TL/TA and ROA with significance level of 99%.

Table 4.7 also shows that CL/TA is significantly negatively related with ROA and LTL/TA with significance level of 99%. CL/TA is negatively related with SG and SZ but insignificantly. CL/TA is significantly positively related with TL/TA with significance level of 99%.

In Table 4.7 SG is negatively related with all types of leverage but insignificantly. SG is significantly positively related with ROA and SZ with significance level of 95% and 90% respectively.

Table 4.7 shows SZ is significantly negatively related with TL/TA and LTL/TA with significance level of 99%. SZ is negatively related with CL/TA but insignificantly. SZ is significantly positively related with ROA and SG with significance level of 99% and 95% respectively.

ORDINARY LEAST SQUARE (OLS) REGRESSION:

To analyze the relationship between leverage and profitability three regression equations are computed with statistical package E Views 5.1, we analyzed that how much dependent variable ROA is affected by independent variables Leverage, size and growth and what is the direction of the relationship between them, the regression equations are as below

$$ROA = \alpha_0 + \alpha_1 \left(\frac{TL}{TA}\right) + \alpha_2 (SG) + \alpha_3 (SZ) + \varepsilon_1 \quad \text{-----1}$$

$$ROA = \beta_0 + \beta_1 \left(\frac{LTL}{TA}\right) + \beta_2 (SG) + \beta_3 (SZ) + \varepsilon_2 \quad \text{-----2}$$

$$ROA = \gamma_0 + \gamma_1 \left(\frac{CL}{TA}\right) + \gamma_2 (SG) + \gamma_3 (SZ) + \varepsilon_3 \quad \text{-----3}$$

Table No. 4.4 Regression Results (Equation 1, 2 and 3)

	Eq. 1 Dependent Variable: ROA				Eq. 2 Dependent Variable: ROA				Eq. 3 Dependent Variable: ROA			
Variables	Co Efficient	Std. Error	t-statistic	Prob .	Co Efficient	Std. Error	t-statistic	Prob .	Co Efficient	Std. Error	t-statistic	Prob .
C	6.167	3.799	1.623	0.106	-4.341	3.780	-1.148	0.252	-13.159	4.004	-3.286	0.001
LTL/TA	-0.239	0.022	-0.765	0.000	-0.231	0.029	-7.928	0.000	-0.114	0.033	-3.463	0.001
SG	0.003	0.002	1.765	0.079	0.003	0.002	1.763	0.080	0.003	0.002	1.3487	0.179
SZ	4.698	0.834	5.633	0.000	5.224	0.915	5.707	0.000	7.239	0.974	7.434	0.000
R-squared		0.521		0.423		0.281						
Adjusted R-squared		0.513		0.414		0.270						
Durbin-Watson stat		1.648		1.739		1.912						
F-statistic		71.012		47.833		25.595						
Prob. (F-statistic)		0.000		0.000		0.000						

Table 4.4 shows the results for equation 1, for total debt ratio, equation 2 for long term debt ratio and 3 for short term debt ratio. From equation 1, it is clear that total liability has statistically significant negative relationship with the return on assets. Profitability has positive relationship with the sales growth and size of the firm.

The negative relationship between total debt ratio and ROA is in agreement with the previous findings by Abor (2007); (2005); Huizinga, Laeven and Nicodeme(2009); Mesquita and Lara (2003); Jong, Kabir and Nguyen (2009); Wu (2007); Gaud et al., (2005); Voulgaris, Asteriou and Agiomirgianakis (2002); Waliullah and Nishat (2009); Shah and Khan (2007); Mazhar and Nasr (2009) and Azeem and Azid (2006). The statistically significant inverse relationship between profitability and leverage confirms the pecking order hypothesis.

Sales growth has a significant positive effect to ROA; this confirms the signaling theory growth is a signal of profitability. The positive relationship is also found by Abor, 2007 and Abor, 2005 between growth and profitability. Firm size has a very strong highly significant positive effect to profitability which shows that the large firms are more profitable than smaller firms this may be due to the low cost of production in large firms due to economies of scale and efficient utilization of assets (Richardson and Wysocki, 2011). The positive relation is agreement with Signaling Theory. This shows that when firm is using strategies which are growth oriented, and future predictions are favorable, the size is a signal of profitability (Khan and Whatts, 2009). This positive relationship is in complete agreement with the finding by Abor, 2007 and Abor, 2005 between size and profitability.

The adjusted determination coefficient (R²) shows that 51.3% of the variations of the return rate (ROA) were explained in conjunct by the independent variables, which, allied to the level of significance of the test F (1%), indicates a good adjustment degree. The

Durbin-Watson stat 1.65 indicates that there is no autocorrelation in the variables as 1.65 is above the critical value for Durbin-Watson stat 1.64 calculated for 200 observations and with three independent variables (Micinnis, 2011).

Equation 2 for long-term debt ratio clears that long-term debt has statistically significant negative association with the return on assets. Profitability has positive relationship with the sales growth and size of the firm (Gow, Ormazabal and Taylor, 2011).

The adjusted determination coefficient (R²) shows that 41.3% of the variations of the return rate (ROA) were explained in conjunct by the independent variables, which, allied to the level of significance of the test F (1%), indicates a good adjustment degree.

The statistically significant inverse relationship between profitability and long-term debt confirms the pecking order hypothesis that the firm first rely more on the internally generated funds and then on the debt. These results are in conformity with the conclusions of Booth et al., (2001); Fama & French (1998); Graham (2000); and Miller (1977); Abor (2007); (2005); Mesquita and Lara (2003); Waliullah and Nishat (2009); Gaud et al., (2005); Voulgaris et al.,(2002) ; Mazhar and Nasr (2009) and Azeem and Azid (2006). Sales growth has a significant positive effect to ROA, this confirms the signaling theory; growth is a signal of profitability. The positive relationship is also found by Abor (2007); (2005) between growth and profitability.

Firm size has a very strong highly significant positive effect to profitability indicating that the large firms are more profitable than smaller firms this may be due to the low cost of production in large firms due to economies of scale and efficient utilization of assets (Nekrasor and Ogneva, 2012).

The Durbin-Watson stat 1.74 indicates that there is no autocorrelation in the variables as 1.74 is above the critical value for Durbin-Watson stat 1.64 calculated for 200 observations and with three independent variables.

Equation 3 for short term debt ratio clears that short-term debt has statistically significant inverse relationship with the return on assets. Profitability has positive relationship with the sales growth and size of the firm.

This inverse relationship is in complete agreement with the previous empirical results of Abor (2007); Huizinga et al., (2009); Gaud et al., 2005; Waliullah and Nishat (2009); Shah and Khan (2007); Mazhar and Nasr (2009), and Azeem and Azid (2006).

These results confirm the pecking order hypothesis. The firms are utilizing more debts and increase from the target debt level is responsible for this negative association.

The adjusted determination coefficient (R²) shows that 27% of the variations of the return rate (ROA) were explained in conjunct by the independent variables, which, allied to the level of significance of the test F(1%), indicates a satisfactory adjustment degree. The Durbin-Watson stat 1.91 indicates that there is no autocorrelation in the variables as 1.91 is above the critical value for Durbin-Watson stat 1.64 calculated for 200 observations and with three independent variables. The low adjusted R-square value indicates the possibility of autocorrelation but the Durbin-Watson stat of 1.91 is very close to the ideal value 2 which eliminates the possibility of autocorrelation.

MULTICOLLINEARITY:

Multicollinearity is an undesirable situation when one or more independent variables are a linear function of other independent variables. Classic symptom of Multicollinearity is high R square. Literature suggested that when R square is more than 0.90 than the chance of Multicollinearity exist (Gujarati, 2003). Table 4.5 shows the results of coefficient of determination are .513, .414, .270 for equation one, two and three respectively, which is less than the above mentioned value 0.90 of adjusted R square.

Table 4.5 Coefficient of Determination

Model	R Square	Adjusted R Square
1	0.52	0.51
2	0.42	0.41
3	0.28	0.27

a. Predictors:

(Constant), TL/TA, SZ, SG (1)

(Constant), LTL/TA, SZ, SG (2)

(Constant), CL/TA, SZ, SG (3)

b. Dependent Variable: ROA:

AUTOCORRELATION:

Correlation between different values of a series for different time is called autocorrelation, for any economic problem this situation is not desirable.

Table 4.6 Durbin-Watson

Model	Durbin-Watson
1	1.65
2	1.74
3	1.91

a. Predictors:

(Constant), TL/TA, SZ, SG (1)

(Constant), LTL/TA, SZ, SG (2)

(Constant), CL/TA, SZ, SG (3)

b. Dependent Variable: ROA:

One test for the existence of autocorrelation is Durbin-Watson test and the thumb rule for perfect data with no autocorrelation is Durbin-Watson stats value close to 2. Critical value for Durbin-Watson stat is 1.64 calculated for 200 observations and with three independent variables and in our analysis the value of Durbin-Watson are 1.65, 1.74, 1.91 for equation 1, 2 and 3 respectively, which indicates there is no autocorrelation as the all values are above the critical value 1.64.

5. CONCLUSION

For any business organization the financing decision is very critical because of the need to maximize the profit to the financing constituencies, and also for the survival of firm in its competitive environment with that optimal capital structure. The decision for capital structure becomes even more difficult when the economic environment has high degree of instability in which the company operates. Therefore, the choice among the best proportion of debt and equity can affect the value of the firm, as much as the rate of return do.

The best mix of debt and equity provide tax benefits and have less risks and costs associated with it. Our findings shows that total debt ratio is 57% out of which 35% are in the form of short term debts and Long-term debt (LTL/TA) contribution is 22% which shows that firms are using more short-term debt than long term debt. The profitability (ROA) is 10.8% during the ten year period showing that the firm's performance is low in term of utilization of its assets. The sale of the firms is growing (SG) with the rate of 60% per year. The highly levered and the less profitable sectors in the Pakistan are textile and sugar sectors. There is negative relationship between profitability and leverage confirming the packing order hypothesis and agency cost theory that use of debt creates agency problems. The positive relationship of size and growth with profitability confirms the signaling theory. The high debt ratio in the firm's capital structure is responsible for the low profitability and the negative relationship of profitability and leverage. The recession period on textile sector may also is responsible for the negative relationship.

It is also observed that the political conditions, investor's behavior and economic factors are also plays a vital role for creating inverse relationship among the profitability and debt. This relationship may be different in the developed countries due to the economic and political conditions, technology and investor behavior towards the investment.

6. RECOMMENDATIONS

One important financial decision firms are confronted with is the debt policy or capital structure choice. This decision becomes more crucial with the effect it has on the value of the firm.

By and large, the results indicate that capital structure with high leverage affect profitability of firms in KSE. The negative relationships imply that firms generally are averse to use more equity because of the fear of losing control and therefore employ more debt in their capital structure than would be appropriate. Apart from the problems firms face in acquiring equity, one reason for increasing debt use may be to avoid agency conflicts. Employing debt excessively is likely to result in high bankruptcy cost which negatively affects performance. In views of the above it is strongly suggested that in Pakistan firms must take the following steps

- (1) Market of Pakistan are also responsible (1) for the negative effect of debt on profitability the interest rates should be decreased.
- (2) There should be decrease in the debt ratio in both the industries and accountability for these firms should be reliable.
- (3) The firms should adjust their debt ratio to a target debt ratio or optimal debt ratio for different industries and high levered firms needs to decrease their debt to increase the profitability.
- (4) Short term debt financing have less negative affect than long-term debt on the profitability so the firms should rely more on short-term debt than long-term debt.

- (5) The negative profitability of many firms is responsible for the inverse relationship between profitability and leverage; the firms are mostly to deprive dressing.
- (6) There is the need of research to identify the optimal debt ratio for the different sectors of the markets so that the management should adjust their capital structure to that target debt ratio in order to have high profitability.
- (7) The financial markets in the Pakistan need more systematic regulations in order to utilize the issued debt effectively. The speculations in the capital market also increases the risk for the investors to invest in the firms as equity so the money market and capital market both should be regulated properly.
- (8) Debt issuance is closely linked to the political influence in the country so less profitable firms are eager to get more debt and after some time the debt is readjusted at lower value by applying political pressure.
- (9) Size is positively related with the profitability so firms should increase their size by applying more capital by investment this can be done by issuing new stocks rather than increasing leverage.
- (10) Sale growth is positively related with the profitability the firms with high growth opportunities are more profitable more managerial efforts are required to increase the sale and profitability.
- (11) Textile sector is a big industry of the country and the present crises in the textile industry should be overcome with the help of government to increase the sale and production in the textile sector.

7. FURTHER RECOMMENDATIONS

Due to the limitation of time the data used for the analysis is a chunk of the original population, if the data points are increased the results may be improved and differ. The time period can also affect the results as the global financial and economic crises is decreasing the profitability of the firms so using different time period may produce the different results so there is need to investigate this issue more deeply.

On other hand, it also very important that the future researcher must review the economic conditions of Pakistan at the time on which the research is made, than, they can attain any correct conclusion on this research thesis. Many other factors are also involved in the resulting figures of the report due to the bad economic and business environment of Pakistan. Political and economic factors are also very important in this analysis. Therefore, there is also a need for further analysis and improvement in this field.

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