

Capital Structure and Its Determinants: Empirical Evidence from Pakistan's Pharmaceutical Firms

Dr. Rashid Saeed^{1*}, Hafiza Mubeen Munir^{2*}, Rab Nawaz Lodhi³, Ayesha Riaz⁴, Amber Iqbal⁵

¹Head of Management Sciences Department, COMSATS Institute of Information Technology Sahiwal, Pakistan

^{2,4,5}M.S Scholar, COMSATS Institute of Information Technology Sahiwal, Pakistan

³Lecturer, COMSATS Institute of Information Technology Sahiwal, Pakistan

Received: October 22 2013

Accepted: November 16 2013

ABSTRACT

The purpose of this study is to conduct an empirical study on the determinants of the capital structure of pharmaceutical firms of Pakistan listed at KSE. This study has used data from 2004-2011 from the statement of balance sheet analysis published by central bank of Pakistan. This study has employed a fixed effect panel data methodology using different variables related to firm characteristics (firm size, profitability, tangibility, growth, liquidity, earning volatility, non debt tax shields) and corporate governance (CEO duality, CEO Tenure, Board size) and their effect was seen on the debt ratio, which acted as the proxy variable for the capital structure. This study has added value to the existing literature as all the variables used in this study are proven to be significantly affecting the capital structure and bring about new area of research in Pakistan's context using corporate governance. Results show that except size, tangibility and CEO duality all variables are significant at given significance level. However, their coefficients signs are confirming to the literature. Among corporate governance variables, board size and CEO tenure are negatively associated with the debt level which indicates that governance avoids debt usage to avoid the larger performance pressure. Moreover, this model is overall significant.

KEY WORDS: Capital structure, corporate governance, Models with panel data, KSE, Pakistan

JEL Codes Classification: G32, G34, C33

INTRODUCTION

Capital structure depicts how a firm finances its operations by employing different sources of funds i.e. Liability or Equity. Capital structure usually refers to a firm's debt-to-equity ratio, which shows how risky a firm is to put investment in and thus helps the investors in their investment decisions. It employs that if a company has debt as major portion of its capital structure it has high leverage and thus higher degree of risk. This puts pressure on the debt and equity constituting capital structure to be stable and optimal for the firm and investors as well. Capital structure had also been defined by two different measures i.e. Market and book leverage. The difference between the two is that market leverage is measured by book value of debt while the latter is calculated by book value of debt and market value of equity as well (Kayo & Kimura, 2011).

Contrasting theories like traditional, trade off, Pecking order, free cash flow theory and theory of irrelevance have been developed to determine the optimal combination of capital structure. Capital structure, its determinants and its effect on firm's value are the areas that have attracted many authors' attention. However, only a few studies have been conducted to test the effect of stock return and capital structure choices (Yang, et al., 2010). Researchers that first generated the debate on these issues were Modigliani and Miller (1958). At that time, they were of the view that firm's value is not affected by a firm's capital choices. However, later they again conducted research on the same area and found results contrary to their previous findings (Al Najjar, 2011). Now decisions about capital structure are considered important for organizations to maximize their return. An optimal combination of Capital structure is one that not only maintains the stability but also enhance the firm's wealth. In addition, a wrong turn may lead the firm to financial instability or distress. A question arises if such decisions are so important then which main drivers of the capital structure need to be addressed while making decision? How does the optimal level of the capital structure be achieved? A substantial research has been conducted on this topic but still the scenario is vague and no optimal combination of debt and equity has been determined. Firm related factors that can affect its capital structure choices have got major importance among many other factors affecting these decisions including country specific, institutional factors (Masnoon & Anwar, 2012).

The aim of research on such areas is twofold i.e. which factors can affect the firm's capital structure. In addition, how do such decisions can optimize the firm's wealth and value? Different variables related to the firm's characteristics, ownership structure and corporate governance have been identified that can help to choose the appropriate proportion of debt and equity which in turn can optimize the firm's value. In context of Pakistan, only a few researches are found that have attempted to determine the factors that can lead to the different choices for

*Corresponding Authors1: Dr. Rashid Saeed, Head of Management Sciences Department, COMSATS Institute of Information Technology Sahiwal, Pakistan. e-mail: rashidsaeed@ciitsahiwal.edu.pk

*Corresponding Authors2: Hafiza Mubeen Munir, M.S Scholar, COMSATS Institute of Information Technology Sahiwal, Pakistan. Email: mubeenmunirciit@gmail.com

capital structure. Moreover, these studies showed that all those variables that had been found to be significant in developed countries are found to be significant here as well. In general, all studies and theories differ in their emphasis so no single level of debt is determined that can help the firm to optimize its value. Moreover, previous findings have no consensus about the significance of the factors determining the capital structure. A little research in Pakistani context, no consensus about the factors' significance evoked the need for research in Pakistan on this topic and specifically for Pharmaceutical firms. In short, the main driving factor of this study is to find factors affecting the capital structure of Pharmaceutical firms in Pakistan. As capital structure determination is purely finance problem/area, so all data is quantitative and historical in nature. Data was collected from annual reports of the related companies listed at Karachi stock exchange. Data is panel in nature i.e. cross sectional and time series at the same time. This study employed fixed effects Panel regression model for the data analysis. Based on these results inferences will be drawn.

LITERATURE REVIEW

Modigliani and Miller laid the foundation for research in this area. At that point, they were of the view that firm's value is not affected by firm's capital choices provided the perfect market assumptions are fulfilled (Modigliani & Miller, 1958). Simply putting, in perfect markets capital structure choices do not matter. This proposition got the name "MM theory of irrelevance". Right after the establishment of this theory, researchers focused capital structure as area of research to find that whether market imperfection can lead capital structure to optimize the value of the firm. Later on previous assumptions were relaxed and tax was added in model. Study concluded that more debt can help increasing the value of a firm (Modigliani & Miller, 1963). Here tax shield let the more debt constituting firms to be more valued. Differences in the cost of external financing forms (market imperfection) make a company to choose different proportion of debt and equity to get the optimal level of capital structure (Bevan, Danbolt, 2002).

Another dominating theory is trade off theory, which assumes the tradeoff between the tax advantage and the bankruptcy cost of debt financing. This theory assumes that the optimal capital structure is one that is determined by the tradeoff between cost and advantages of debt financing but keeping investment constant. Under this theory a firm is considered to be substituting equity for debt and vice versa until a level is achieved where capital structure is optimized (Myers, 1984). Another view of this theory is; company has its benchmarked capital structure where the benefits offset the cost. Firms weigh the benefits of tax shield versus cost of financial distress first in accordance with the trade off theory (Beattie, et al., 2006). Conversely, firms that expect lower cost of distress employ more debt (Graham & Harvey, 2001). Even trade off theory has established foundation for capital structure determinants but corporate behaviors to the increased or decreased debt level are unanswered (Chen, 2004).

Another theory named, Pecking order theory puts its emphasis on the differences in information. This theory assumes that a firm has its own preferences of choosing internal or external source of financing. Information asymmetry between insiders and outsiders decides the financing choices. Firms prefer equity as a source of financing to debt and have tendency to finance their investments first from the internal funds and then may from the debt. However, recent research has also shown that still in the presence of asymmetric information firms issue more equity. This may be due to the fact that prevailing asymmetry would be less than the past (Autore & Kovacs, 2010). Both trade off and Pecking order theory help explaining the factors affecting the capital structure of the firms and theory of irrelevancy has emphasized the capital structure optimization and its impact on the value of firm. New shares are issued at lower price than explained by the value of the firm. Thus, issue of new equity negatively affects the firm as this notion implies that the existing owners have overvalued shares and stock price brings down (Myers, & Majluf, , 1984). This becomes the reason for the firms to follow the Pecking order. Lenders' ability to reclaim their wealth leads to the conflict between the shareholder and lenders with asymmetric information in markets (Miguel & J, 2001). The preference of internal funds over debt means that a firm will have a less target debt level than implied by trade off theory. Cumulative requirements for external finance are reflected by debt and no target ratio is defined (Beattie et al; 2004). Pecking order theory have shortcoming to explain bankruptcy cost and other factors affect on firms capital choices. Agency cost phenomenon is also ignored by this theory (Quan, 2002).

Theory of free cash flow assumed that as the debt proportion increases it adds value to the firms irrespective of the potential threat of the financial distress provided operating cash flow of the firm exceed the profitable investment opportunities. Here issue is to motivate managers to distribute FCF and not to invest in the low yielding projects (Myers, 2001). Traditional theory of capital structure is paradoxical to the MM theory of irrelevance. This theory assumes that use of debt add to value of firm to only a certain extent, if debt level is kept on increasing it does not add value to the firm and after a certain level it may bring a financial distress to the firm. It employs that where WACC is minimum, optimal capital structure is achieved thus the value of firm is improved.

Two agency costs are identified i.e. agency cost of debt and agency cost of equity. Debt can help reducing these costs as interest payments put compulsion on the managers to generate cash flows and add value to the firm (Jensen, 1996). Literature suggests that Directors and managers, due to their personal incentives cause the firms to use less debt. The reason is twofold i.e. managers have their large sum of money invested in the business and to avoid the additional bankruptcy threats. Thus, CEO and directors may put their personal interest's head. Dual

leadership structure is more effective to control such opportunistic behavior (Fosberg, 2004). Growth opportunities of the firms are negatively associated with the debt proportion as high growth firms have more demand for internal funds (Abor, 2007)(Karadeniz, et al., 2011)(Dimitrios; 2007, Mouamer 2011). These results are maintained by the Pecking order hypothesis.

Debt constitutes the large portion of capital structure of the firms that are having large board size, non-executive board, CEO duality and small tenure of the CEO (Abor, 2007). Researchers found the determinant of capital structure and investigate that how do the optimal levels of the capital structure be identified? Negative relationship of debt ratio with growth, Acid-test ratio and interest coverage ratio was found in UK, Greece and Ghana (Al Najjar, 2011) (Eriotis, et al., 2007)(Arko et al; 2009). Nigerian firms finance their operations mainly with current liabilities. Short-term debt and long-term securities are highly positively correlated with TD. Larger and old firms do not rely on long-term debt financing. Due to the friction in the country's financial system companies has higher tendency to use short term financing than the long term. Larger firms also use the same pattern to take the advantage of their size and repute to use the long term debt (Ezeoha, 2008). High profitability and institutional ownership means low debt level. Debt level is independent of dividend policy. High assets tangibility, firm size and liquidity mean higher debt level(Al-Najjar, Taylor, 2008). Firm size and its relationship with the capital structure are not decisive. Trade off theory predicts a positive association while pecking order theory has accounted for negative relation (Saeed & Mahmood, 2102).

Corporate governance can also be explained as a method of reducing agency cost as good governance can help to bring into line the managers' interest with the interest of the shareholders (Michelle, 2012). Research conducted by Jiraporn, et al has shown that firms with good corporate governance have negative association with the debt usage by the firms. This shows that firms with better governance have less cost of agency to bear (2011). Arko and Bopkin (2009) found a negative relation of CEO duality with the debt level. Larger board size has positive influence on long-term financing. Return on assets and FA proportion to be negatively correlated to debt ratio. FCF, growth and firm size found to have no significance relationship with debt ratio. EAT was found to have negative relation that is contradictory to the previous theories but it was found statistically significant. (Kandir, et al., 2009) Researchers suggested that locally owned firms are more capable of getting External financing but that is Short term in nature. Foreign firms are mature, large and profitable so they are largely financed by long-term debts(Ezeoha, Okafor, 2010). Commercialization of microfinance institutes lead to the high level of debt availability but then cost of capital would increase that may cause funds to be out of the reach to poor. Therefore, debt level has negative effect on outreach to poor(Halloway, et al., 2011).

Assets availability and firm age positively correlates to the long-term high debt level. Firms' growth and Firm size show negative association with the debt financing. Researchers conducted studies to find the factors of Capital structure of Pakistani firms and see whether developed countries' factors have the same significance in Pakistan or not. They found that debt ratio shows the mean value more or less equal to the mean of western countries. Pecking order, Trade off and agency theory are more apposite in Pakistan. Most of the determinants are the same as that of the developed countries. Unlike others, growth(Myers, 2001) opportunities were insignificant. Profitability, tangible assets and liquidity negatively affects the debt ratio. Firm size is in direct effect to capital structure(Sheikh & Wang, 2011).

Financial growth cycle determines the capital structure in restaurant industry and they concluded that total debt and operating cash flow has high correlation with O-score. And firms keep more debt but more preferably the ST debt. Firm age is positively significant to debt use (contradicting the previous theories). However, when it was combined with profitability, the results were supported. Restaurant firms tend to balance the use of ST and LT debt. Firms with high CF use more debt may be due to more opportunities(Upneja & Dalbor, 2001). Large size companies with high tangibility and growth opportunities utilize more debt in their capital(Le & Ooi, 2012).

A pile of data is found on capital structure and its determinants but no consensus among the researchers is found on the empirical validity of the theories. One of the reasons may be given as all the theories differ in their emphasis and differences among the industries and country structures do exist. No universally applicable theory of capital structure determination has been developed yet and of course there is no reason to accept the 'one' (Myers, 2001). This created the need to bring more investigations to validate the empirical results of the relevant theories. For this study, Pharmaceutical industry is chosen and the significance of firm size, profitability, tangibility, liquidity, growth, board size, CEO duality and tenure is observed.

RESEARCH BACKGROUND:

Capital structure has perhaps become the most debated area in finance after the presentation of MM theory of capital structure irrelevance. Firms need finance to run their operations, for this they can generate internal funds or borrow from the external sources. Managers need to make firms profitable and wealth maximizing with their actions. Therefore, they need to be concerned about the sources of the funds they are going to employ in firms' operations. This put larger pressure on the fact that firms need to choose such arrangement of debt and equity that cannot only back their operations but boost value of the firm as well. This study aims at finding the determinants of capital structure of Pharmaceutical firms in Pakistan.

PROBLEM STATEMENT:

Capital structure or financing decision is the most debated area in finance. It largely affects and is affected by the firm characteristics and corporate governance. Corporate governance weakness can not only lead to poor performance but also the inefficiencies due to risky financial patterns (Claessens, 2002). Importance of corporate governance has increased in recent years due to a wide number of reasons of which trend of privatization, takeovers, integration of capital markets and corporate mishandling of information are of major concerns (Becht, et al., 2002). Thus, it has now become important to incorporate the corporate governance as determinants of financing decisions along with firm related factors. A little research in Pakistani context, no consensus about the factors' significance evoked the need for research in Pakistan on this topic and specifically for Pharmaceutical firms. This study aims at determining the significance of different firm specific and corporate governance factors on the capital structure of pharmaceutical companies of Pakistan listed at KSE.

SIGNIFICANCE OF THE STUDY:

This study would be the first research on Pharmaceutical firms in Pakistani context with both firm specific factors and corporate governance and may become the doorstep for many other researches. This study will help firms to get to know the factors that should be the major factors needed to be taken into account while taking capital structure decision. Taking into the account those factors will help firm to enhance the value of the firms by optimizing the capital mix. This study will also add value to the on hand literature on this topic in Pakistani Context.

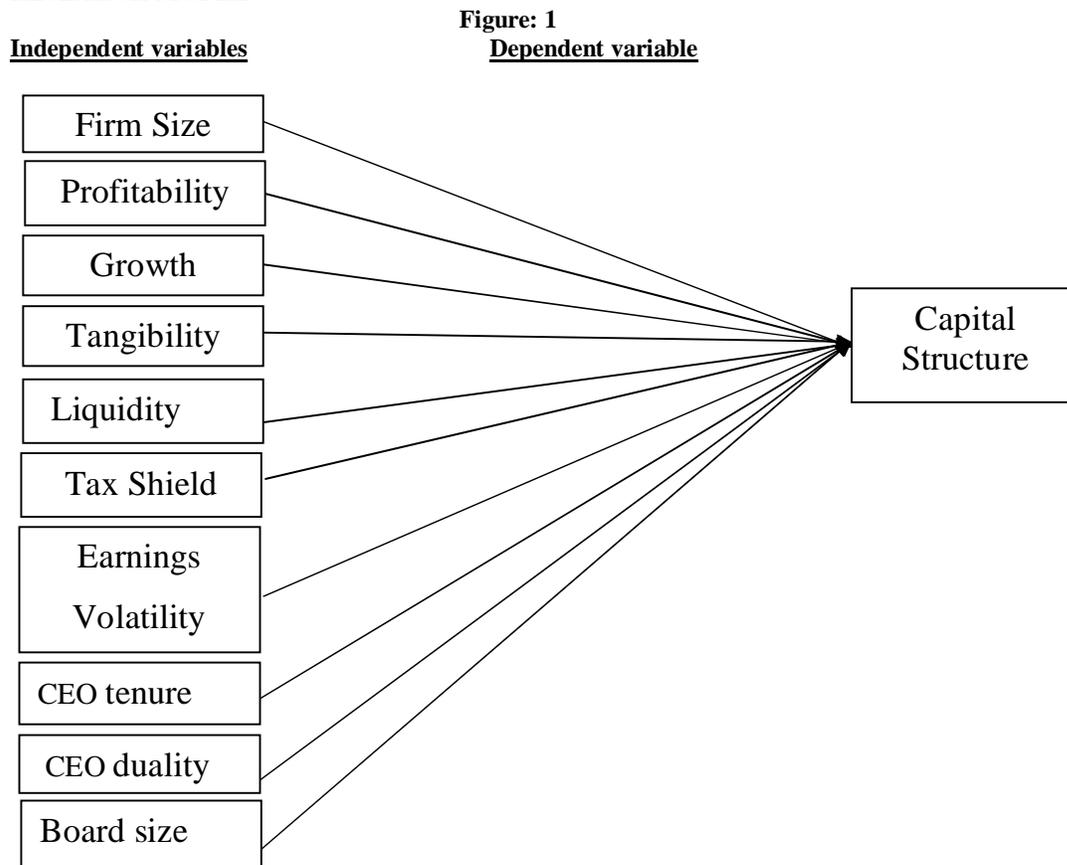
RESEARCH MODEL:

Figure-1 shows the research model employed in this study. Here capital structure is the dependent variable and ratio of debt to total assets is the proxy variable for this used in the study. Firm size, profitability, tangibility, liquidity, growth, board size, CEO duality and CEO tenure acted as independent or explanatory variables.

RESEARCH OBJECTIVE:

The underlying objectives of this study are:

- To find the relationship between profitability and Capital structure in Pharmaceutical firms of Pakistan.
- To find out the effect of growth on Capital structure of pharmaceutical firms in Pakistan.
- To explore the relationship between tangibility and Capital structure in Pharmaceutical firms of Pakistan.

- To determine the effect of earning volatility on capital structure decisions pharmaceutical companies.
- To see whether non debt tax shield is a substitute for tax advantage of debt.
- To find the effect of liquidity on the Capital structure on Pharmaceutical firms.
- To determine the effect of firm size on Capital structure of Pharmaceutical firms in Pakistan.
- To describe the Relation of CEO duality and Capital structure in pharmaceutical companies.
- To determine the effect of CEO tenure on capital structure decisions pharmaceutical companies.
- To explore the relation of board size and capital structure pharmaceutical companies.
- To make some recommendations that can help the Pharmaceutical organizations to optimize the capital structure combination.

HYPOTHESES DEVELOPMENT:

In order to determine the factors affecting the capital structure of the Pharmaceutical firms following hypotheses were developed:

Firm Size:

There is no conclusive agreement among researchers about the effect of firm size and the level of debt. Trade off theory predicts a positive association while pecking order theory has accounted for negative relation (Saeed & Mahmood, 2102). However, larger firms are relatively more diversified than smaller. Thus, threat of bankruptcy is less and firms may have more funds available. In addition, larger firms offer more information than smaller (Rajan, Zingales, 1995) and have good credit ratings thus more debt is accessible (Bevan 2002). Therefore, positive relationship between the firm size and debt level is anticipated. Log of sales is the proxy variable used for this.

H₁: Firm Size has positive association with the Debt level or debt ratio.

Growth:

Literature suggests that capital structure and growth opportunities are negatively related. Firms with more opportunities tend to raise funds by equity than debt, which implies negative relation (Cunny 1995). Firms with more opportunities may face more agency problem so a negative relation is predictable. A high growth firms signal better performance and thus high level of institutional funds can be generated which again predicts negative relationship. Sales growth ratio i.e. percentage change in Assets from previous year is the proxy used for growth.

H₂: Growth opportunities have negative relation with the debt ratio.

Liquidity:

Literature suggests the contradicting result about the affect of liquidity on debt level ratio of the firms so net effect is unknown. A firm with high liquidity implies relatively higher debt ratio as they have the ability to meet short-term obligations easily. So a positive relationship is expected. Alternatively, higher liquidity let firms to finance their investment itself. This implies an inverse relation. However, more results support the negative relation. Current ratio acted as proxy variable for liquidity in this study.

H₃: Liquidity has negative relationship with the debt ratio.

Profitability:

Profitability is the ratio of net income to the total assets i.e. NOPAT/ TA. In accordance with the trade off theory, firms that are more profitable employ more debt as interest payment of debt is tax deductible. Moreover, debt suppliers lend more to the profitable firms (Rajan, Zingales, 1995). Pecking order theory foretells the negative relationship between debt level and profitability (Myers, 1984). Profitable firms do not tend to raise external funds so an inverse relation is expected (Deesomsak, et al., 2004 ;Chakraborty, 2010). Empirical studies support both relations between the variables. As per trade off theory,

H₄: Profitability has negative relationship with the debt level.

Tangibility:

Tangibility is one of the major factors affecting the capital structure decisions (Harris M., 1990). A firm with more tangible assets can use them as collateral for debts and can reduce the lenders' risk. This implies a positive relationship between debt ratio and tangibility (Jensen, 1976). A negative relation between tangibility and debt level is also found in context of Pakistan (Afza & Hussain, 2011)(Sheikh & Wang, 2011) Turkey and India. It may be due to the manager's tendency to consume more than optimal level of advantage. This indicates that fixed assets tend to get financing through internal sources, as there is less asymmetric information between managers and investors of the firm. A firm with fewer tangible assets may employ more debt to make managers account for. Thus, agency problem view shows negative relation (Booth, et al., 2001). Moreover, negative relationship is found in developing countries while positive relation in developed countries (Sheikh & Wang, 2011). Proxy variable used for the tangibility is ratio of fixed assets to total assets.

H₅: Tangibility has positive relationship with the Debt level.

Earning Volatility:

An increased volatility in firm's earnings poses higher degree of risk to the firm that could may result into financial distress (Masnoon & Anwar, 2012). Thus, lenders may feel reluctance to provide debt to the firms with higher volatility in earnings and thus less debt will be available to those firms. These firms will have to use

internally generated funds till they end up. In this way, risk is managed by the lenders (Omran & Pointon, 2009). Thus negative relationship between the earning volatility and debt usage is expected. Deviation of firm's earning from the average value acted as proxy for earning volatility.

H₆: Earning Volatility has negative relationship with the Debt level.

Non Debt Tax Shield:

It is argued that a tax deduction by the interest is not the only way of reducing the tax load. Tax deductions by depreciation can act as alternate for tax benefits from debt financing (Bowen, 1982; Allen, 1995; Mackie-Mason, 1990). Thus, a negative relationship between non-debt tax shields and debt usage is predicted by trade off and pecking order theory (Myers, 1984; Myers, & Majluf, 1984; Upneja & Dalbor, 2001). Proxy variable used for this is the ratio of depreciation to total assets.

H₇: Non debt tax shields have negative relationship with the Debt level.

Board Size:

Literature suggests that no consensus is found about the relationship between the board size and capital structure. On one-hand researchers found negative relation between the above two (Mehran, 1992) (Abor, 2005) and others have shown positive relationship (Jensen, 1996). Few researchers have reported no association (Najjar & Hussainey, 2009). This study has used Natural log of the number of board members as a measure of board size.

H₈: Board size has negative relationship with the Debt level.

CEO Tenure:

It measures the length of duration for which CEO is serving the organization. CEO has the authority to run the business and thus a firm's value is largely affected by the CEO's actions (Abor, 2007). Literature suggests negative relation between CEO tenure and Debt usage (Ofeck, et al., 1997). CEO with more years in organization uses lower level of debt. The intention may be to avoid the performance pressure while employing more debt as debt puts pressure to perform well to make the fixed payments of debts when become due. Natural log of CEO tenure is taken as proxy variable.

H₉: CEO tenure has negative relationship with the Debt level.

CEO Duality:

A two tier leadership has no CEO duality i.e. CEO and chairman are different persons (Fama, 1983). CEO duality has negative relationship with the use of debt (Fosberg, 2004). Nevertheless, this relationship was not found to be significant. Positive relationship between CEO duality and use of debt is also found (Abor, 2007). For the duality, dummy variable has the value of 1 if CEO is the chairman of BOD's and 0 otherwise.

H₁₀: CEO Duality has positive relationship with the Debt level.

METHODOLOGY

Data Collection Methods:

Quantitative approach is considered as more effective for the financial and historical data. All of the previous studies on this topic have used the quantitative techniques. Data was gathered from the annual reports of the respective companies and from the financial statement analysis of companies listed at KSE, a publication of State bank of Pakistan. All the Pharmaceutical firms Listed in KSE constituted the Population. Nine Pharmaceutical firms are listed at KSE. Out of which IBL Health Care Company is not included in the sample as till 2011 it was the part of other services economic group. In addition, it is also a subsidiary of Searle Pak for which consolidated statements have been used. Data is panel in nature and thus it has enhanced the number of observation for results validity. Data from 2004-2011 was gathered and analysis was done.

Data Analysis Methods:

Hypothesis testing through Regression analysis was employed to see the effect of independent variables on dependent variable (Debt level Ratio). This method was employed to confirm to the previous literature and find out the factors determining the capital structure i.e. whether they are significantly affecting the capital structure decisions or not. Here data is panel in nature and all the observations for the variables were in hand. Thus, this study has used fixed effect panel regression by using E-Views VI. 5 % significance level is used in this study for hypothesis testing. Moreover, this study assumes that annual reports of the companies incorporate all the true information and no adjustments are needed. Destruction of this assumption can lead to the different results.

REGRESSION MODEL:

The effect of different factors on debt level ratio is estimated by employing the following equation. Here debt ratio acted as proxy variable for debt level.

$$DR = \beta_{0it} + \beta_2 SIZE_{it} + \beta_3 TANG_{it} + \beta_1 PROF_{it} + \beta_4 GROW_{it} + \beta_5 LIQ_{it} + \beta_6 VOL_{it} + \beta_7 TAXSH_{it} + \beta_8 BSIZE_{it} + \beta_9 DUALITY_{it} + \beta_{10} TENURE_{it} + \mu_t$$

DR = debt ratio of firm i at time t.

PROF = profitability of firm i at time t.

SIZE = size of firm i at time t. (natural log of sales)

- TANG = tangibility of firm i at time t.
- GROW = growth opportunities of firm i at time t.
- LIQ = current ratio of firm i at time t.
- VOL = Earnings volatility of firm i at time t
- TAXSH = Non debt tax shields of firm i at time t
- BSIZE = No. of Board members (Natural log of board size)
- DUALITY = 1 If CEO is chairman, otherwise zero.
- TENURE = no. of years a CEO is with the firm (natural log of tenure)
- β_0 = common y-intercept.
- β_1 - β_{10} = coefficients of the respective explanatory variables.
- μ = Error Term

Proxy variable used for the size is log of sales. Percentage increase in total assets from previous year is the proxy used for growth. Current ratio acted as proxy variable for liquidity. Profitability is the net income divided by total assets. Proxy variable used for the tangibility is proportion of fixed assets with respect to total assets i.e. Fixed Assets/Total assets. Change in the net income is the variable for earning volatility and ratio of depreciation to total assets is the variable used for non debt tax shields.

Natural log of the number of board members is used as a measure of board size. Natural log of number of years a CEO is with the organization is taken a proxy variable. For the duality, dummy variable has the value of 1 if CEO is the chairman of BOD's and 0 otherwise.

FINDINGS OF THE STUDY:

This section includes the reporting of the results generated from the regression analysis. Fixed effect panel regression analysis is used to see the relation between debt level and the said variables. For multicollinearity, VIF test has been employed to find the correlation among independent variables along with the ordinary correlation analysis.

Table I shows a descriptive statistics summary. This table shows the average indicator of the used variables. Here mean or average value of the debt ratio i.e. total debt/ total assets is 0.48 which indicates that about half of the financing is done via debt in pharmaceutical industry of Pakistan. More specifically, on average debt constitutes 48% of total assets while equity has 52% of its share. This table has summarized the data for 8 variables for 9 years (2003-11). However, for fixed effect panel methodology E-views took into consideration a balanced panel of 8 years i.e. 64 observations. Regression analysis is based on the assumption that there is no multicollinearity among all the explanatory variables. Thus, for the regression results to be meaningful there must be no correlation.

Table I: Descriptive statistics of the Variables											
	D_A	Tenure	Taxsh	Tang	Prof	Lsales	Liq	G_Ta	Dual	Board	Vol
Mean	0.48	2.35	3.54	33.47	0.17	7.96	2.23	1.74	0.56	2.05	0.00
Median	0.33	2.64	3.62	31.19	0.15	7.85	1.75	0.20	1.00	2.08	0.05
Max.	0.80	3.37	10.13	93.20	0.39	9.99	1.29	6.46	1.00	2.30	1.04
Min.	0.24	1.00	1.15	7.71	-0.02	6.12	0.91	-0.59	0.00	1.79	-1.94
Std. Dev.	0.18	0.79	0.02	0.165	0.12	0.93	0.13	0.27	0.50	0.11	0.59
Skewness	0.38	-1.15	1.15	0.95	0.47	0.14	0.79	2.50	-0.22	0.23	-1.75
Kurtosis	1.97	3.70	6.01	4.53	2.29	2.37	2.54	7.71	1.05	2.01	1.48
Prob.	0.09	0.00	0.00	0.00	0.03	0.49	0.02	0.00	0.00	0.16	0.00
Count	72	72	72	72	72	72	72	64	72	72	72

Table II shows the results for Multicollinierity. Here non debt tax shield has some correlation with some of other variables. Thus, another test named VIF (variance inflation factor) for muticollinierity was run to confirm the results.

Table II: Correlation Matrix										
Covariance Analysis: Ordinary										
Sample (adjusted): 2004-2011										
Included observations: 64 after adjustments										
Correlation	Taxsh	Tang	Tenure	Prof	Lsales	Liq.	G_TA	Vol.	Board	Dual
Taxsh	1									
Tang	0.47	1								
Tenure	0.23	0.16	1							
Prof	-0.17	-0.22	-0.17	1						
Lsales	0.48	-0.02	0.12	-0.03	1					
Liq.	-0.45	-0.39	-0.37	0.56	-0.2	1				
G_TA	0.17	0.26	0.05	-0.34	-0.14	-0.33	1			
Vol.	-0.05	-0.09	-0.01	0.41	0.07	0.17	-0.01	1		
Board	0.26	0.26	0.41	-0.3	-0.09	-0.5	0.17	-0.05	1	
Dual	-0.47	-0.26	-0.1	0.31	-0.43	0.64	-0.41	-0.01	-0.3	1

Table III shows the results for this test. A VIF value greater than 5 detects the problem of multicollinearity. Here none of the variable has shown higher VIF value so this model fulfills the assumption of no multicollinearity.

Variables	collinierity statistics	
	Tolerance	VIF
Size	0.305751	3.270635
Growth	0.387008	2.583926
Liquidity	0.383991	2.604228
Profitability	0.330904	3.022025
Tangibility	0.308336	3.243215
Non-debt tax shields	0.311819	3.206989
Earnings volatility	0.310688	3.218663
CEO Duality	0.308267	3.243941
CEO Tenure	0.340797	2.934298
Board Size	0.341549	2.927838

Table IV has the summary of the Regression results. In this model, intercept has the value of 1.367257 indicating the average effect of all the explanatory variables on the Debt level. The results show positive relation between size of the firm, tangibility, non debt tax shields, earnings volatility and CEO duality. Literature also suggests Positive signs with the size of the firm. Larger firms being more diversified have more funds available. In addition, larger firms make available more information than smaller (Rajan, Zingales, 1995) and thus more debt is accessible (Bevan 2002). This relationship is not significant at 5 % level. Tangibility is also positively associated with the debt level which is not significant as well. Thus it can be said that both size and tangibility does not have significant impact on the level of debt. Pharmaceutical firms made less investment in the tangible assets and more of the total assets is constituted by the intangible assets like patents and human capital.

Positive relationship of tangibility to the debt level is consistent with the trade off theory which assumes that more fixed assets can bring more debt as fixed assets can be utilized as collateral against loans (Sabir & Malik, 2012; Shah & Hijazi, 2007). Positive sign with the coefficient of the non debt tax shield is significant. This result is contradictory to the hypothesis but supported by the literature, notifying that pharmaceutical firms in Pakistan do not consider non debt tax shields as substitute for the debt. However, literature suggests mixed results for the relationship between the non debt tax shields and debt level (Sheikh & Wang, 2011). Bradley et al (1984) also found positive association. Also this study has used ratio of depreciation to total assets, and depreciation is directly related to the tangible assets. Thus, non debt tax shield must have negative in accordance to the tangibility.

Positive sign with the coefficient of the earning volatility is significant. Positive sign of the coefficient is contrary to our hypothesis which indicates that managers do not manage the risk effectively. Earning volatility may be the result of poor management or poor performance in operations. Thus poor management could lead to the earning volatility and they may employ more debt as predicted by the agency cost theory (Masnoon & Anwar, 2012). Cool (1993) argue that earning volatility leads to the reduction in the under investment related issues and thus agency issues. (Cool, 1993). Negative relation between profitability and debt level is congruent to expectation and supported by the theory and is found to be significant. According to the pecking order theory, firms prefer equity over debt as tax payments are made after the interest payments. Thus more profitable firms adopt more equity as they have more internally generated funds available (Myers, 1984). Profitable firms do not tend to raise external funds so an inverse relation exists (Deesomsak, et al., 2004; Rajan, Zingales, 1995).

Coefficient of growth also has negative sign which is in accordance to our hypothesis. Agency cost and pecking order theory assumes negative relation between debt level and growth. As investments in projects do not promise immediate cash flows thus may have problem of paying back the contractual liabilities and (Rajan, Zingales, 1995; Shah & Hijazi, 2007). Negative sign assumes that firms with more growth opportunities have more internal funds available thus they can use retained earnings to finance those investments. Negative relationship between liquidity and debt level is shown by the coefficients and is found to be significant at given level. A higher liquidity let firms to finance their investment itself so more equity will be employed as more cash or cash equivalents are at hand. This implies an inverse relation. Its coefficient comes out to be -0.098314 that is significant at 5% level.

Table IV: Regression results

Table IV: Regression results				
Dependent Variable: D_A				
Method: Panel Least Squares				
Sample (adjusted): 2004-2011				
Total panel (balanced) observations: 64				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.367257	0.445158	3.068241	0.0036
TENURE	-7.450965	2.084474	-3.574507	0.0008
TAXSH	3.522304	1.359502	2.590879	0.0128
TANG	0.110572	0.110582	0.999910	0.3226
PROF	-0.901953	0.224323	-4.020776	0.0002
LSALES	0.865603	2.286337	0.378598	0.7067
LIQ	-0.098314	0.023236	-4.231169	0.0001
G_TA	-0.010777	0.003905	-2.759440	0.0083
DUAL	7.764461	4.907062	1.582303	0.1204
BOARD	-33.88096	16.54383	-2.047951	0.0463
VOL	0.006644	0.004430	1.499845	0.1405
R-squared	0.747317	F-statistic		8.002731
Adjusted R-squared	0.653934	Prob. (F-statistic)		0.000000
S.E. of regression	10.38708	Durbin-Watson stat		1.891690

Positive relation is found for CEO duality and level of debt. However, this relationship is not significant. It implies that if CEO is the chairman (Duality) then more debt is employed by the firm. Here agency problem may rise up as board members may not have the ability to effectively monitor the top management. However, holding both positions by the same person may help to reduce the conflicts if two persons are different (Abor, 2007). Negative relationship between board size, tenure and debt level is shown by the coefficients which is significant as well. This relation for board size and tenure is consistent to our prior expectations suggested by the literature. A CEO with more years in an organization will tend to use less debt to avoid the performance pressure associated with the experience with that organization and with fixed repayments of debt (Ofeck, et al., 1997; Wen, 2002). The same way, larger board can put pressure on the management to employ less debt and thus to increase the performance (Ofeck, et al., 1997; Mehran, 1992). This also indicates that leverage as corporate capital structure policy and board size is alternative to one another to minimize the agency cost (Al Najjar, 2011; Abor, 2005).

This model has an explanatory power of 65.39% i.e. variables identified in the study can determine 65.39% change in the level of debt. In addition, this model is significant at 5% significant level. Here the value of Durbin Watson is 1.89 which is quite close to 2. Thus there is no problem of Autocorrelation as well.

CONCLUSION

This study aimed at finding the determinants of capital structure for the pharmaceutical firms in Pakistan. This study has drawn conclusion for 8 firms for the period of 2003-2011. Among the variables used in this study related to firm specific factors are profitability, tangibility, growth, liquidity, firm size, earning volatility, non debt tax shields and corporate governance factors include CEO duality, CEO tenure and Board size. 5% level of significance was used as criteria. As per the results except Firm size, Tangibility and CEO duality all variables are found to be significant at given significance level. Thus, nothing can be concluded about the relationship, as they are not significant at 5% significance level. In addition, this model is overall significant even at 1% level of significance. Among the corporate governance factors, board size and CEO tenure has shown negative and significant association with the debt financing. However, CEO duality has shown positive but insignificant relationship. It indicates that KSE listed Pharmaceutical companies uses more debt with small board size and less years of CEO with that organization to reduce the performance pressure that is accompanied by the high level of debt. This study also reveals the fact that one tier leadership is appropriate to get more funds as debt by avoiding the proposed conflict between CEO and board chairman.

Negative relation of liquidity indicates that a firm with more liquid assets has more cash or cash equivalents in hand to put into investment. Therefore, firms with higher liquidity will finance its operation by itself. Negative relationship between profitability and debt level is supported by Pecking order theory which states that firms that are more profitable shall have more internal funds available in the form of retained earnings so less debt will be employed. Tangibility has positive association with the debt level that is not found to be significant. Non debt tax shields in accordance to the tangibility have also show positive association. The implied logic is that pharma companies in Pakistan do not consider non debt tax shields as substitute to the tax advantage of debt. Size of the

firms is not found to be significantly affecting the financing decisions. However, positive sign of the coefficients is confirming to the literature indicating that large funds are more diversified, provide more information and thus more debt is available. Negative coefficient sign with the growth opportunities is consistent with the prediction of agency cost theory which states that firms with higher growth are flexible to invest sub optimally and seize wealth from debtors to the shareholders.

This study has found a significant number of factors that affects the firms' financing choices. However, further research needs to be conducted to verify the effect of corporate governance factors on capital structure in Pakistan. Their results are confirmable to the literature in international setting. However, further insight into the idea is needed to support the findings.

Acknowledgment

The authors declare that they have no conflicts of interest in this research.

REFERENCES

- Al-Najjar, Taylor, 2008. The relationship between capital structure and ownership structure: evidence from Jordanian panel data. *Managerial Finance*, 34(12), pp. 919-33.
- Abor, J., 2005. The effect of capital structure on profitability: an empirical analysis of listed firms in Ghana. *The Journal of Risk Finance*, 6(5), pp. 438 - 445.
- Abor, J., 2007. Corporate governance and financing decisions of Ghanaian listed firms. *Corporate governance*, 7(1), pp. 83-92.
- Afza, T. & Hussain, A., 2011. Determinants of Capital Structure across Selected Manufacturing Sectors of Pakistan. *International Journal of Humanities and Social Science*, 1(12).
- Al Najjar, K. H., 2011. Revisiting the capital-structure puzzle: UK evidence. *The Journal of Risk Finance*, 12(4), pp. 329-338.
- Allen, M., 1995. "Capital structure determinants in real estate limited partnerships".. *The Financial Review*, pp. 399-424.
- Autore, D. M. & Kovacs, T., 2010. Equity issues and temporal variation in information asymmetry. *Journal of Banking and Finance*, Volume 34, p. 12-23.
- Beattie, V., Goosacre, A. & Thomson, S. J., 2006. Corporate Financing Decisions: UK Survey Evidence. *Journal of Business Finance & Accounting*, 33(9,10), pp. 1402-1434.
- Becht, M., Bolton, P. & Rosell, A., 2002. *Corporate Governance and Control*, Cambridge, MA.: National Bureau of Economic Research.
- Bevan, Danbolt, 2002. Capital structure and its determinants in the UK. *Applied Financial Economics*, 12(3), pp. 159-70.
- B., Ofek, E. & Y., 1997. Managerial entrenchment and capital structure decisions. *Journal of Finance*, 52(4), pp. 1411-38.
- Booth, L., Aivazian, V., Demircuc-Kunt, A. & M., 2001. Capital structures in developing countries. *The Journal of Finance*, LVI(1), pp. 87-130.
- Bowen, R. L. D. a. H. C., 1982. "Evidence on the Existence and Determinants of Inter-Industry Differences in Leverage". *Financial Management, Winter*, pp. 10-20..
- Bradley, M. J. G. a. K. E., 1984. "On the existence of an optimal capital structure: theory and evidence". *The Journal of Finance*, 39(3), pp. 857-78.
- Chakraborty, I., 2010. Capital structure in an emerging stock market: The case of India. *Research in International Business and Finance*, Volume 24, pp. 295-314.
- Chen, 2004. Determinants of capital structure of Chinese-listed companies. *Journal of Business Research*, 57(12), pp. 1341-51.
- Claessens, S. D. S. F. J. a. L. L., 2002. 'Disentangling the incentive and entrenchment effects of large shareholders. *The Journal of Finance*, 57(6), pp. 2741-71.
- Cool, K., 1993. *Capital Structure Choice; Confronting: (Meta) Theory, Empirical Test and Execution Opinion*, The Netherlands: Tribur.
- Deesomsak, R., Paudyal, K. & Pescetto, G., 2004. The Determinants Of Capital Structure: Evidence From The Asia Pacific Region. *Journal of Multinational Financial Management*, 14(4,5), pp. 387-405.
- Eriotis, N., Vasiliou, D. & Neokosmidi, Z. V., 2007. How firm characteristics affect capital structure: an empirical study. *Managerial Finance*, 33(5), pp. 321-331.
- Ezeoha, Okafor, 2010. Local corporate ownership and capital structure decisions in Nigeria: a developing country perspective. *Corporate Governance*, 10(3), pp. 249-260.
- Ezeoha, A. E., 2008. Firm size and corporate financial-leverage choice in a developing economy: Evidence from Nigeria. *The Journal of Risk Finance*, 9(4), pp. 351 - 364.

- Fosberg, 2004. Agency problems and debt financing: leadership structure effects. *Corpratte governanace*, 4(1), pp. 31-38.
- Graham, J. R. & Harvey, C. R., 2001. The theory and practice of corporate finance: evidence from field. *Journal of Financial Economics*, Volume 60, pp. 187-243.
- Halloway, R., Chishty, M. & Hoque, M., 2011. Commercialization and changes in capital structure in microfinance institutions: An innovation or wrong turn?. *Managerial Finance*, 37(5), pp. 414 - 425.
- Harris M., R., 1990. Capital structure and the information role of debt. *journal of finance*, Volume 45, pp. 321-49.
- Jensen, M., 1996. "Theory of the firm: managerial behaviour, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), pp. 305-360.
- Jiraporn, P. e. a., 2011. Capital Structure and Corporate Governance Quality: Evidence from the Institutional Shareholder Services. *The Science Direct*.
- Kandir, S. Y., Karadeniz, E., Balcilar, M. & Beyazit, Y. o., 2009. Determinants of capital structure: evidence from Turkish lodging companies. *International Journal of Contemporary Hospitality Management*, 21(5), pp. 594-609.
- Karadeniz, E., Kandir, S. Y., Iskenderoğlu, Ö. & Onal, Y. B., 2011. Firm Size and Capital Structure Decisions: Evidence From Turkish Lodging Companies. *International Journal of Economics and Financial Issues*, 1(1), pp. 1-11.
- Kayo, K. E. & Kimura, H., 2011. Hierarchical determinants of capital structure. *Journal of Banking & Finance*, Volume 35, pp. 358-371.
- Le, T. T. & Ooi, J. T., 2012. Journal of Property Investment & Finance. *Financial structure of property companies and capital market development*, 30(6), pp. 596 - 611.
- Mackie-Mason, 1990. "Do taxes affect corporate financing decisions?". *Journal of Finance*, pp. 1471-1495.
- Masnoon, M. & Anwar, F., 2012. Capital Structure Determinants of KSE Listed pharmaceutical companies. *GMJACS*, Volume 2.
- Mehran, H., 1992. Executive incentive plans, corporate control, and capital-structure. *Journal of Financial and Quantitative Analysis*, Volume 27, pp. 539-560.
- Michelle, R. e. a. 2. C. F. W. M. M. 1. ". a. T., 2012. Debt and Taxes. *Journal of Finance*, 32(2), pp. 261-275.
- Miguel, D. A. & J, P., 2001. Determinants of capital structure: new evidence from Spanish panel data. *Journal of Corporate Finance*, Volume 7, pp. 77-99.
- Modigliani, F. & Miller, M., 1963. "Corporate income taxes and the cost of capital: a correction". *American Economic Review*, 53(3), pp. 433-443.
- Modilgilani, F. & Miller, M., 1958. "The cost of capital, corporation finance and the theory of investment. *American Economic review*, 48(3), pp. 261-297.
- Myers, & Majluf, 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, Vol. 12, pp. 187-221.
- Myers, 1984. The capital-structure puzzle. *Journal of Finance*, 39(3), p. 572592.
- Myers, 2001. Capital structure'. *journal of economic perspective*, Volume 15, pp. 82-102.
- Najjar, A. & Hussainey, K., 2009. *What drives firms' capital-structure and dividend policy*, London: Middlesex University.
- Omran, M. M. & Pointon, J., 2009. Capital structure and firm characteristics: an empirical analysis from Egypt. *Review of Accounting and Finance*, pp. 454-474.
- Quan, V., 2002. A Rational Justification of the Pecking Order Hypothesis to the Choice of Sources of Financing. *Management Research News*, 25(12).
- Rajan, Zingales, 1995. What do we know about capital structure? Some evidence from international data. *The Journal of Finance*, 50(5), pp. 1421-60.
- Sabir, M. & Malik, Q., 2012. "Determinants of Capital Structure - A Study of Oil and Gas Sector of Pakistan". *Interdisciplinary Journal Of Contemporary Research In Business*, 3(10).
- Saeed, A. & Mahmood, I., 2102. The Determinants of Capital Structure: Evidence from an Emerging Market. pp. 13-18.
- Shah, A. & Hijazi, T., 2007. Determinants of Capital Structure: Evidence from Pakistani Panel data. *International Review of Business Research Papers*, 3(4), pp. 265-282.
- Sheikh, N. A. & Wang, Z., 2011. Determinants of capital structure: An empirical study of firms in manufacturing industry of Pakistan. *Managerial Finance*, 37(2), pp. 117-133.
- Upneja, A. & Dalbor, M. C., 2001. An examination of capital structure in the restaurant industry. *International Journal of Contemporary Hospitality Management*, 13(2), pp. 54-59.
- Wen, Y. R. K. a. B. J., 2002. "Corporate governance and capital structuredecisions of Chinese listed firms". *Corporate Governance: An International Review*, 10(2), pp. 75-83.
- Yang, C., L., Ch., X. & Y., G. & L., 2010. Co-determination of capital structure and stock returns - a LISREL approach an empirical test of Taiwan stock markets. *The Quarterly Review of Economics and Finance*, Volume 20, pp. 222-233.