

## **Capital Structure Determination, a Case Study of Sugar Sector of Pakistan Faizan Rashid (Leading Author) University of Gujrat, Pakistan**

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**ABSTRACT:** *Capital structure decisions are among the most important and vital decisions for any business because of their effect on value and cost of the company. In this paper we have discussed the determinants of capital structure of Pakistani firms. The sample comprised 27 Pakistani Sugar companies. Size, growth, liquidity, profitability, tangibility, non-debt tax shield and inflation are used as independent variables, while leverage is the dependent variable. For analysis purpose descriptive statistics, correlation and regression analysis are used. The results imply that the sugar companies are mostly large in size and capitalization so these companies prefer both internal as well as external financing.*

**KEY WORDS:** *Capital Structure, Leverage, Sugar Sector of Pakistan, Non Profit tax shield*

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### **I. INTRODUCTION**

The capital structure of the company is basically the combination of debt, equity and other long term funds that are used to acquire long term assets. The main components of capital structure of the company are debt and equity. The debt is arranged by financial institution as well as general public in the form of bonds or other debt instruments. The measurement of debt finding is by gearing and leverage. There are different factors that affect the overall capital structure of the firm. In the corporate world the discussion of capital structure is as old as the industrial revolution in the world. In recent years at international level several authors work on the capital structure and proposed and identify many great attributes that influence the capital structure of the firm. Capital structure remains the controversial issue in the modern finance. A link between capital structure and firm factors that influence the debt and equity took an importance as a result of the path breaking debate pioneered by Modigliani Miller (1958). The work of Modigliani and Miller in the irrelevance of theory served as a great foundation for the subject and pointed the direction to the theories to prove that the capital structure is irrelevance. Theories have been developed to explain the debt and equity combination for a firm to adopt I order to achieve the optimum level of capital structure. Traditional theory is in favour of borrowing more for financing. This is mainly because of the tax advantage that is enjoyed by debt whereas equity is not. This makes equity more expensive to consider. According to Myers and Majluf (1984), managers are reluctant in the issuing of equity because of the indisposition of investors as equity yields a return that is counted to the investors of scarce resource as their opportunity cost, thus the issuing of equity should only occur if equity is moderately priced or overpriced. In Pakistan the firm's capital structure is generally decided by the funds available in the financial sector of the country. The domestic savings are not so much huge which can be used to fulfill the financial needs of the different sectors of the economy. So ultimately the economy is dependent on the foreign debts and aids related funds available in the financial market. The determinants of the capital gets change over the time on the condition of available funds in the economy.

In general, this study covers each and every aspect of the subject but specifically it related to capital structure of sugar sector companies listed in Karachi Stock Exchange and their financing decision making. It explores a variety of factors that influence the determinants of capital structure and manipulate the financial decision taken by the manager as weak as the success to the failure to these decisions. This study is based on the data collected by the Chamber Of Commerce Lahore, from state bank of Pakistan and the annual reports of the sugar companies listed in the Karachi Stock Exchange. The research initially includes the 27 firms out of 81 firms of sugar sector of Pakistan. These 81 firms include all public and private firms. Public firms having issued capital is more than 50 million and sells their shares publically. It means that capital structure of private firms is small. Size, growth rate, Liquidity, profitability, tangibility, non-debt tax shield and inflation are used as independent variables, while leverage is the dependent variable.

#### Objectives of the study

- To identify the determinants of capital structure in the different sectors of Pakistan economy.
- To analyze which are the main determinants that influence the financing decision in the choice of capital structure in Pakistan economy?
- To explain the relationship between leverage and the determinants of capital structure in Pakistan economy.
- To suggest some determinants which are of considerable attention for financial leverage decision Pakistan economy.

**Literature Review :** Objective of this paper is to examine the existing studies and research conducted in different times of capital structure and its determinants and financial leverage in different industrial sectors of Pakistan and also the theoretical models presented by the different researchers on capital structure and financial leverage. Literature review is the best way to understanding the theories of capital structure and financial leverage and look at its determinants. How they influenced and how they implemented. Priority will be given to the most recent work, with reference to the earlier works. In 50 years since the pioneering work of Modigliani and Miller (1958). Vast amount of academic effort of research has been devoted to models explaining capital structure. The extensive literature on the subject matter is of high interest and has shown its popularity in the corporate finance circles. The origin of the theory of capital structure received maximum attention of the work of Modigliani and Miller (1958) on 'capital structure irrelevance theory' referred as MMI. This theory explains that there is no effect on the overall firm value by term change in the capital structure or firm increase or decrease its financial leverage. The trade-off theory states that a firm selects how much debt finance and equity finance needs to employ by evaluating the costs and benefits of each type of finance. Certainly such preference is not contemporary; it is rather familiar to researchers and managers (Butters 1949). In this theory, the management of the firm must evaluate the different types of costs and benefits of the optional leverage strategy and must aim at a level of debt to value, such level is depends on establishing a balance between debt tax and costs of bankruptcy (Myers 1984). The pecking order theory is when firms favor internal to external funding and if external funding is inspected; if external debt funding is used rather than equity Myers (1984). The theory also demonstrates that financing can be obtained from three different sources, the first source is internal funding which is the least expensive, the second sources is debt which is more expensive and finally is external equity sources which is the most expensive of all. Firms rather have their source of funds raised internally as their first choice, the second choice would be through raising debts form external sources, and the last choice would be through external equity. Ranked one of the most significant forms of cost, asymmetric information theory included in the work of Modigliani and Miller (1958) contends that the management has more inside information than invertors. Furthermore, Jensen and Meckling, 1976; Harris and Raviv, (1991) emphasized that a dispute may occur between equity holders and debt holders on the one hand and between equity holders and the management on the other. Consequently, creates agency cost. However, if the right type of capital structure is selected then there would likely be a decrease in agency costs resulted from such dispute. Furthermore, when share prices are overvalued, then the management is forced to raise funds through equity issue at discounted rates rather than internally funded or debt financing; Myers ad Majluf (1984) also supposed that managers have an insider information advantage. Furthermore, according to the pecking order theory, large firms are more likely to have low asymmetric information making new equity issues more appealing to new interested investors.

An attempt to avoid bankruptcy, Robichek and Myers (1966) propose that the addition of debt may force a firm to have its future strategy in order to finance promised payments on outstanding debt. However, the firm is likely to incur costs which are associated with sort of action. According to Stewart (2000), equity financing is better option when cash flows and assets are not predictable. This means that investors have enforceable rights to the firm's assets, but cannot prevent insiders (managers or entrepreneurs) from capturing cash flow. Insiders must co invest and pay in each period a dividend sufficient to ensure outside investors participation for at least one more period. Shah and Hijazi (2004) found that the larger firms employ more debt because they have more strength to absorb the risk of bankruptcy. If larger firm defaults in any case the bankruptcy costs for such firm will be low as proportion of their total worth, which is the prime reason of taking more debt by larger firms. The smaller firms take less debt because of their fear to become bankrupt if they unable to repay their debt on time. The firm's size has been the critical point of capital structure decision. According to Muradolgu (2009) as the small firms have restricted access to the funding that's why, they face higher interest rate as compare to larger firms and their growth is ultimately influenced. In developing countries the larger firms can easily access the debt financing whereas the availability of finds for smaller firms is dependent on the economic conditions of the country. There is also difference in the capital structure of private and public owned firms. Dewaelheyns&Hulle (2009) argue that in private sector companies the capital structure of the firms is not driven only by the internal financing but the external financing do have an impact on the decision.

Although the private firms have limited access to debt financing but still they continue to expand in many parts of the world because they follow pecking order theory (Mayers 1984), which suggests that firms prefer internal financing until they funds are sufficient to meet their needs. Determinants of Capital Structure and variables Leverage refers to the extent to which firms use of their money borrowings (debts financing) to increase profitability and is measured by total liabilities to equity. Firms that borrow large sums of money during a business recession are more likely to default to pay off their debts as they mature; they will end up with high leverage and are more likely end up with a potential risk of bankruptcy. On the contrary, the lower the firm's borrowings, the lower the leverage and the risk of bankruptcy will eventually be lower which signifies that business will continue operating. This study examines the influence of the following seven variables that were selected from previous literature on leverage; namely firm size, growth, profitability, liquidity, tangibility, non-debt tax shield and inflation. Leverage is calculated by total long term debts to total assets (Pahuja&Sahi, 2012; Khalid Alkhtib, 2012; Majeed et al, 2010; Daniel Borgia, 2013; FlorinitaDuca, 2011; Han-Suck Song, 2005; Shah & Khan, 2007; Joy Pathak, 2008; JashuaAbor, 2008).

**Firm size(SZ)** Size is measured by the natural logarithm of total assets. As stated in the trade-off theory firms decide how much debt/equity financing it requires by weighing the costs and benefits of such decision. Large sized firms normally have more business diversification than small firms in terms of credit ratings, constant cash flow, and lower risk of bankruptcy. Furthermore large firms are capable of decreasing transaction cost of issuing long-term debt at a favorable low rate of interest. Titman and Wessels, 1988; Rajan&Zingales, 1995; Akhtar & Oliver, 2009,; Qureshi et al, 2012; Bhaduri, 2002; Pahuja&Sahi, 2012; Khalid Alkhtib, 2012

**Growth (GR)** : Growth is defined as the annual percentage growth in the firm's total assets between two successive years divided by the preceding year. A rise in growth rate is regarded as an indication of a firm's financial strength and may cause higher demands for raising equity funds from external sources. Firms with large volume of growth rate need to raise additional financial support to back up their capital expenditure strategies. Growth is also described as intangible assets that is rather difficult collateralize, consequently monitoring granted debts will also be difficult for creditors (Titman and Wessels, 1988; Rajan&Zingales, 1995; gaud et al 2005; and Akhtar & Oliver, 2009; Qureshi et al, 2012).

**Profitability (PFT)** : Profitability is computed as the return on company's total assets. As it is suggested by the pecking-order theory, that highly profitable companies tend to reduce their external funding; which at the end signals to creditors that they have low bankruptcy risk (Titman &Wessels, 1988; Rajan&Zingales, 1995; Wald 1999; Chen, 2003). In other cases, profitable firms can issue debt at low rates of interest since they are seen as less risky by the creditors; furthermore, profitable firms are able to generate large earnings use a lesser amount of debt capital than firms that make little profit (Titman and Wessels, 1988; Mazur, 2007; Rajan and Zingales, 1995; Abor, 2005).

**Liquidity (LIQ)** : Liquidity is computed by dividing current assets by current liabilities. Liquidity represents the capital amount that is available for use as an investment and or expenditure. It also shows the ability of a firm to meet their current liabilities as and when mature. Ross, 1977; Daniel Borgia, 2013; FlorinitaDuca, 2011

**Tangibility (T)** Tangibility is computed by dividing fixed assets by total assets. It is fundamental element of determining the firm's leverage. Firms with little tangible assets generally have low leverage ratio and therefore would be difficult to collateralize such assets to raise additional funds accompanied with the risk of bankruptcy. On the contrary, firms with large volume tangible assets are more likely to collateralize their assets to raise additional funds with little risk due to the investments diversifications which at the end reduces the risk of bankruptcy (Jensen, 1976; Qureshi et al 2012; Rajan&Zingales (1995).

**Non-debt tax shield (NDT)**

Modigliani and Miller (1958), discuss that interest tax shields shows strong relations with the firm to increase leverage. Non debt tax shield includes earnings before depreciation and interest, total assets and investment tax credits. DeAngelo and Masulis (1980) describe that non-debt tax shields are replacements for the tax benefits of debt financing. Therefore, the tax benefit for leverage decreases when other tax deductions like depreciation increase (Wanzenried, 2002). Hence, we argue that an increase in non-debt tax shields will affect leverage negatively. Titman and Wessels (1988) use the ratio of tax credits over total assets and Shah & Khan (2007), Joy Pathak (2010), the ratio of depreciation over total assets as measures of non-debt tax shield. In this study, we have only data on depreciation and therefore, the ratio of depreciation over total assets will serve as a measure for non-debt tax shield.

**Inflation (INF)**

Inflationary pressures have a tendency to affect the real cost of capital. For instance, DeAngelo and Masulis (1980) prove theoretically that inflationary pressures reduce the real cost of debt. This has the implication of increasing debt ratios. Chipeta& D Mbululu (2013) argue that, in high inflationary periods, volatility of earnings increases, which increase business risk. Consequently, firms may take a step to issue equity replacement of debt. Given these dynamics, it can be hypothesized that inflation causes firms to modify their capital structures. This would have a positive effect.

Conceptual Framework and Methodology

Dependent Variable

Leverage (Debt/Equity)

Independent Variables

1. Size
2. Growth
3. Liquidity
4. Profitability
5. Tangibility
6. Non-Debt Tax shield
7. Inflation

Hypothesis

Total five variables have been used in this study. The only dependent variable of the study is leverage and independent variables were hypothesized as follow:

- H1: Profitability is negatively related with Leverage.
- H2: Size is negatively related with Leverage.
- H3: Growth is negatively related with Leverage.
- H4: Liquidity is negatively related with Leverage.
- H5: Asset's Tangibility Is Negatively Related with Leverage.
- H6: Non-debt tax shield is negatively related with Leverage.
- H7: Inflation is negatively related with Leverage.

Sample, Methodology & Tool

This research study is based on the data taken from the Karachi Stock Exchange, and the annual financial statements of the companies taken from official sites as well as personally visited to Lahore Stock Exchange. The research initially includes 27 companies listed on Karachi Stock Exchange. Time period of the data is from 2001 to 2012. Descriptive statistics, correlation and regression analysis is used as a tool. These tools are implemented through Eviews. The following multiple regression model is formed.

$$\text{Leverage} = a + \beta_1 \text{pft} + \beta_2 \text{t} + \beta_3 \text{gr} + \beta_4 \text{sz} + \beta_5 \text{liq} + \beta_6 \text{ndt} + \beta_7 \text{inf}$$

Eviews Result Statistics

Detail	Growth	Inflation	Liquidity	NDTS	Profitability	Size	Tangibility	Overall
R-Squared	0.557	0.600	0.643	0.643	0.643	0.838	0.638	0.26533
Adjusted R-Squared	0.555	0.599	0.640	0.640	0.640	0.831	0.636	0.24722
S. E of Regression	0.587	42.673	1.398	1.398	1.398	0.459	13.938	0.30394
Sum Squared Resid	99.781	526.500	560.898	560.898	560.898	56.405	557.22	26.2364
Log Likelihood	-257.55	-1504.20	-507.143	-507.14	-507.143	-172.99	-1174.03	-62.528
F-Statistic	364.512	434.326	258.369	258.369	258.369	125.710	253.109	14.6526
Mean Dept Var	0.003	-0.024	0.002	0.002	0.002	0.002	0.048	0.25836
S.D dependent Var	0.880	67.395	2.331	2.331	2.331	1.116	23.092	0.35032
Schwarz	1.803	10.377	3.556	3.556	3.556	1.477	8.155	0.5838
Durbin Watson	2.027	2.016	2.049	2.049	2.049	2.006	2.048	1.03753
Standard Error	0.033	0.004	0.000	0.011	0.002	0.028	0.001	
T-Statistic	1.357	2.376	-3.376	3.481	-0.914	-3.526	2.329	
Probability	0.176	0.018	0.001	0.001	0.361	0.001	0.021	

II. RESULTS

Analysis of all firms shows that total 26% variation in dependent variable i.e. leverage or debt to total assets is related to the values of all seven independent variables of the study as evidenced in r-square value in other words 26.5 % variation in leverage decision of the firm is explained by profitability, size, tangibility, growth, and cost of financing. Rest of the 73.5% is due to extraneous variables. Overall significance and goodness of the model is relatively low just because of the unavailability of data or incomplete data available through different sources which is unable to use in this study.

### III. CONCLUSION

This finds that capital structure determination is not a science so the firms analyze a number of factors to choose a best mix of debt and equity. In Pakistan as well there are different factors that affect a firm's capital structure decision. The results suggest that in Pakistan most of the firms prefer internal funds over the external financing. In Pakistan the main source of funding is banking sector which generally prefers the larger firms while funding. So the larger firms can take loan very easily because of the banking sector preferences. As most of the Pakistani firms are of medium size, therefore these firms are unable to take loans for their future projects. One more possible reason of taking less loans can be the legal procedures and obligations involved in the process of debt financing.

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