Determinants of capital structure: Empirical evidence from Pakistan

Master Thesis

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Abstract

This study investigates capital structure of nonfinancial firms registered on Karachi Stock Exchange (Pakistan) from 2003 to 2008 to find which independent variables determine the capital structure of Pakistani firms. We find statistically significant coefficients for profitability, size, tangibility, growth, dividend and inflation. The negative relationships between profitability and leverage; positive relationships between growth and long term debt and dividend and total debt of firms confirm the presence of pecking order theory in determining the financing behavior of Pakistani firms. The strong positive relationships between tangibility and leverage and size and leverage support the theortical predictions of trade-off theory. The positive relationship between expected future inflation and current borrowing supports market timing theory. The research finds significant change in financing behavior of firms across industries. We find partially different results from other studies in Pakistan as well as in developing countries. Conclusion from perior research from developed world is also valid in Pakistan.

Chapter 1
Introduction

1.1. Objective of the chapter

This chapter offers a brief introduction to objectives of this research. Furthermore the chapter gives introduction to capital structure and answers the question that why is it interesting and important to do research in the area of capital structure of company?

1.2. Objective of this study

Corporate financing is one of the most important decisions made in financial management because these decisions ultimately affect the wealth of stockholders. Therefore financial manager's one of the prime objectives is to ensure the lower cost of capital to maximize the value of the company (Shah & Khan, 2007). Financial managers strive to find the optimal corporate capital structure where company could meet its financial requirements (current and expected future requirements) (Tong & Green, 2005). The task of maximizing the firm value can be achieved once financial mangers identify the determinants of capital structure.

It has been unanimously observed that most of the empirical research on corporate capital structure is conducted in developed world (Mazur, 2007) and a relatively little research work on firms' financing decision has been done in developing countries (Graham & Harvey, 2001), (Tong & Green, 2005), (Shah and Khan, 2007). After the great findings by Modigliani and Miller in their paper published in 1958, the validity with little research work on capital structure in developing country is still in question mark because the developing countries are quite different from the developed world. I am not sure that the conclusion carried out from the research in the developed world is valid too for the developing country such as Pakistan. Berk & DeMarzo (2007) argue that most of the research work on corporate finance is US-oriented (Drobetz & Fix, 2005). If Europe itself is arguing limited research in Europe on corporate finance due to nonexistence of databases as compare to US having two databases for facilitating the research in US (Berk & DeMarzo, 2007), then least research work in developing world in Asia on corporate finance should be obvious. Even many studies in developed world itself conclude evidences supporting different capital structure models (pecking order, trade-off, market timing etc) from time to time and country to country. European countries and US are regarded developed world but studies conclude the different financing policies of European firms and their counterpart in US (Bancel & Mittoo, 2004).

Therefore the main objective of this study is to investigate the capital structure of firm in an effort to find what variables determine capital structure of the firm in Pakistan. This study is aimed to answer the following question:

1. What are variables that determine capital structure of Pakistani firms? Are the predictions of pecking order, trade-off and market timing theories also valid in Pakistan?

To answer the main question of this study we need to answer the following questions:

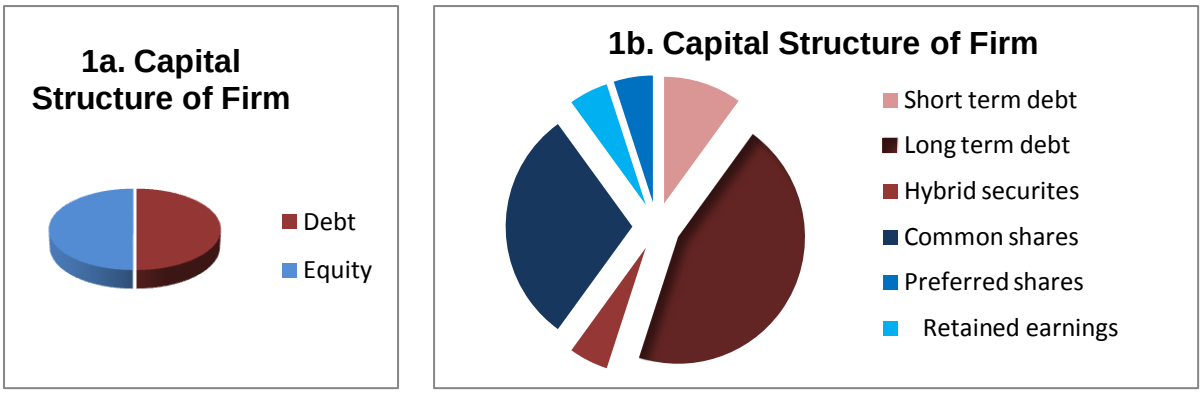
- What is capital structure?
- What are theories available in the literature of capital structure?
- To what extent may these theories be expected to hold in developing countries and in particular in Pakistan?
- What variables can be derived from the theories of capital structure?
- What are the results that can be achieved from testing of variables identified form theories?

1.3. Introduction to capital structure

Capital structure refers to the way in which a firm is financing its total assets, operations and growth through issuing equity, debt and hybrid securities. Financing is process of collecting money through certain sources to be used on purchasing or maintain total assets, current operations of firm and any expected growth. Equity comes from issuing common stocks, preferred stocks and retained earnings while debt can be classified into long term debt e.g. long term note payable, bonds, debenture and short term debt i.e. short term bank loan, account payable. Beside these sources of finance, firms issue some hybrid securities—securities that possess the characteristics of both equity and debt such as income bond.

When we are talking about capital structure, we mean the mix of debt and equity as it is shown in figure (1a). These parts of capital structure in figure (1a) can be subdivided into different categories as given in figure (1b). We stick with figure 1a throughout the study because all the parts in blue shade in figure 1b represent equity portion and likewise pieces with brown shade show the leverage part of capital structure. Sources of equity that constitute the equity part of capital structure are quite different from each other. Common stock is major source of equity. Investors who buy common stock are called common shareholders. If firm earns net profit then it usually pays dividend to common shareholders. Common stocks do not have any maturity. Common shareholders have voting power to elect firm's board of directors in this way they enjoy the control on organization. In the condition of liquidation common shareholder have claim on residual value after paying to creditors and preferred stockholders. From above discussion we can conclude that common stocks do not have any fixed income and maturity—it means after they issued in primary market they can be traded in secondary market i.e. stock exchanges, over the counter market.

Figure 1.Capital structure of firm



Preferred stock can be defined as category of ownership in a corporation that has more claims on total assets and net income than common stock. Preferred stock has fixed dividend at the end each period usually a fiscal year irrespective to whether firm earns net profit or not. Some time preferred stock may be regarded as hybrid security because it possesses the characteristics of no maturity property of equity and fixed income property of debt. Unlike common stockholders, preferred stockholders do not have any voting power to elect board of directors. Retained earnings are third important source in equity portion of capital structure. Retained earnings refer to the portion of net income that firm reinvests into business. Retained earnings enhance the stake of common shareholders because it is regarded as property of common stockholders.

Debt is amount borrowed by a firm to finance its business by issuing debt instruments. Firms usually pay interest on their debt at the end of each period e.g. annually, semiannually, quarterly etc. Interest is cost of debt for firm and fixed income for creditors. Debt has maturity—refers to time period until particular debt remains outstanding such as a 10-year bond, 20-year bond etc. Debt can be categorized as short term debt and long term debt. Short term debt is borrowing of firm that have maturity of one year or less such as short term bank loan, T-bill etc, while long term debt represents the debt that remains outstanding for more than one year for example, note, debenture, bond etc. Debt can also be classified as secured and unsecured debt. Secured debt is borrowing that pledge certain asset of firms as a security in condition of financial distress such as collateral. Unsecured debt is borrowing that does not pledge any asset of firm such as note and debenture (Ross et al 2008). Hybrid securities are particular type of securities that possess the characteristics of equity and debt i.e. convertible bond, income bond. Convertible bonds are bond that can be converted into equity before maturity and any change in price of shares affects convertible bond. Income bonds have fixed maturity but are paid interest if firm earns sufficient income. We regard

hybrid securities as debt because they possess characteristics of either fixed income that is tax deductible and fixed maturity.

Leverage refers to debt ratio in total financing of firm. Capital structure varies from firm to firm based on set of characteristics a firm has. Some firms issue only equity are called unlevered firms while other issue equity along with debt and are branded as levered firms. Some firms use 20 percent debt and 80 percent equity while other firms use 80 percent debt and 20 percent equity. The different behavior of financing by firms gives birth to a question that why do some firms use more leverage while other use less or no leverage in their capital structure? What does exactly motivate the managers to use leverage? Does holding the debt in the capital structure maximize the value of the firms or wealth of stockholders? To answer these critical questions lets discuss the two popular propositions of Modigliani and Millers (also called M&M). M&M's proposition-I assumes a condition in which there is no taxation, perfect capital market, no transaction costs, no financial distress cost, there will be no effect of leverage on firm's value. But M&M's proposition-II embraces the importance of leverage decision on value of firm. According to M&M's Proposition-II, using debt can maximize the value of firm because in real world corporate taxation exists and firms are bound to pay the tax on the each unit of currency earned in operating income/ earnings before tax. When a firm borrows it must pay interest and according to generally accepted accounting principles the interest is paid before paying any tax, it means interest payment is tax deductible therefore interest payment decreases tax obligation and protect firm from some tax burden. Firm can save the tax rate for example 35 or 40 percent on each unit paid in interest (Arnold, 2008).

Arnold (2008) argues that recapitalization has no effect on the value maximization (Berk & DeMarzo, 2007). As the company starts to use the debt, the debt associated risk (interest and principal payment, financial distress) is increasing. In this condition it is logical that shareholders demand additional return for holding additional risk. It means the benefit from using debt is offset by demand for additional return by shareholders, thus leaving no effect on the firm value (Ross et al 2008). The leverage does not decrease the weighted average cost of capital (WACC) hence does not affect the firm value (Arnold, 2008). But in real world, firm is not bound to pay equity risk premium instead it is subject to net income. When firms earn more profit the chances of paying more dividend increases.

1.4. Why is this study interesting?

According to M&M's proposition-II, each euro company paying in interest can save say 0.35 euro (assume 35 percent tax rate) then each company should 100 percent be financed with debt (Berk & DeMarzo, 2007). But in real world it does not exist as suggested by M&M's Proposition-II, perhaps because of the main reason of costs of financial distress. Financial

distress is the situation when company does not generate enough cash flow to cover the interest and or principal payment of debt outstanding (Ross et al 2008). Financial distress can turn into bankruptcy when creditors file the case against firm for liquidation. Bankruptcy costs can be direct bankruptcy costs e.g. fee to advocate for defending bankruptcy case, management time, and indirect bankruptcy costs such as decline in sale, decreased market share, reduction in share price etc (Berk & DeMarzo, 2007). Beside holding large amount in leverage is cheaper for the companies, it is also riskier. If debt is producing the benefit of diminished agency cost of equity e.g. free cash flow (see in chapter two), then holding too much debt in the capital structure also enlarges agency cost of debt such as underinvestment and overinvestment (see in chapter two).

As mentioned above, Leverage offers some benefits as well as some detriments so it can be interesting to see that what variables actually determine the capital structure of firm. Are the managers of firm inclined to advantages of leverage or restricted by the disadvantage of borrowings? What does actually motivate the firm to borrow? How does firm decide about the leverage? These questions have been giving birth to the series of research work on capital structure of firm since 1958 after introduction of M&M proposition-II. This research is also one from chain of research work on the capital structure in an effort to find the determinants of capital structure.

Chapter 2
Literature Review

2.1. Objective of the chapter:

The puzzle introduced by Modigliani and Miller in their paper in 1958 has been challenging the economists, scholars and researcher to solve it. While struggling to answer the question posed by Modigliani and Miller about tax benefit of leverage, researchers gave many theories. Unfortunately researchers have not agreed upon one satisfactory answer. Therefore the aims of this chapter are: firstly, to explain the main theories that contribute a lot in the literature of capital structure. Secondly, to determine what does each theory predict? Thirdly, to compare empirical evidence from all around the world with predictions of these theories those validate or reject each of them.

2.2. Theories of capital structure

How can the capital structure be determined that maximizes the firm's value? This puzzle is introduced by Modigliani and Millers (1958). Whether the costs and benefits of leverage drive the managers to decide leverage in capital structure or they are market opportunities that guide managers to issue debt or equity? Do firms have any target leverage that changes overtime for which manager adjust debt equity ratio continuously or they don't have any target leverage to maintain? To answer these questions three popular theories of capital structure are available in literature are trade-off theory, pecking order theory and market timing theory. Because there is no formula given to find the exact capital structure to maximize firm value, many studies have been conducted to collect the empirical evidence from all over the world to test the hypothesis given by these theories (Ross, et al 2008).

2.2.1. The trade-off theory (TOT)

An important motive of trade-off theory of capital structure is to explain the way in which firms can typically be financed partly with debt and partly with equity. Trade-off theory states that there are benefits of financing with debt i.e. tax shield benefit, agency benefit and there are also costs of funding with debt e.g. costs of financial distress, agency costs. Therefore the firm that is maximizing its value will focus on offsetting costs against benefits of debt when making decision about how much debt and equity to use for financing its business. Ross et al (2008) argue that firm can optimize its value at a point where marginal costs of debt and marginal benefits of debt are balanced.

According to Myers (1984), each firm that follows trade-off theory has target debt and it gradually moves toward its target debt. Target leverage is determined by balancing the cost and benefits of leverage but structure of target leverage is not clear. (Frank & Goyal, 2009)

argue that this target debt can be classified into two ways. First the target debt may be static which might be identified by single period trade-off between costs and benefits of debt and is called static trade-off theory. Second the target debt may be adjusting over time with change in magnitude of costs or benefits of debt. While examining the US firms, Huang and Ritter, (2009) say that US firms moving toward their target leverage with moderate speed. US firms take 3.7 years average period to achieve their targeted capital structure in the condition of any deviation from the target debt. The UK firms adjust to their target debt ratio relatively quickly (Ozkan, 2001). Leary and Robert (2005) showed the behavior of US firms, in time of market friction, adjusting their leverage as if they follow dynamic trade-off policy. Consistent with trade-off model, Cook and Tang, (2010) argue that firms moving faster toward target debt rate in the county where economic condition are good as compared to country where economic conditions are bad. Graham and Harvey (2001) indicate that about 80 percent of chief financial officers confirms having target leverage. Antoniou et al (2008), report that firms have target leverage ratio. Firms that are experiencing higher market to book value ratio, tend to have low target debt ratio (Hovakimian et al 2004).

Next we discuss the possible benefits and costs of leverage that can be balanced, according to trade-off theory, while making financing decision.

2.2.1.1. Tax shield benefit

Including debt in the capital structure of firm decreases the tax obligation of firm because interest payment on the debt is tax deductible, thus paying each euro in interest can save 0.35 euro (assume 35 percent tax rate) for shareholders. It means if a firm has more debt in its capital structure it must pay more interest and more the interest can save more tax for shareholder. This suggests direct relationship between debt and tax benefit.

2.2.1.2. Agency benefit and distribution of the operating and business risk

Leverage plays vital role in diminishing the agency cost and in diversifying the operating and business risk. Issuing debt means allowing outside investors to finance firm's operations for interest. This process of issuing debt not only diversifies the operating and business risk borne by shareholder to creditors but also it decreases the agency costs. On the one side allowing outside investors to finance business leaves shareholder with less stake in business, on the other side interest payment on debt leaves less amount in free cash flow to manager to decide on, therefore this process of recapitalization trim down agency cost of equity. Once firm issues debt, it is bound to pay the interest with regular interval such as annually, semiannually, quarterly etc and principal on maturity. These cash out flows keep the managers alert and cautious to generate the enough cash flows to cover debt obligations

thus pushes the managers to reduce the expenses such as purchasing corporate jet, or other luxuries for their own use (Ross et al 2008).

Most of the time shareholders regard increasing gearing is good news and diminishing leverage as bad news because issuing debt reflects both: confidence of investors in firm and confidence of firm to generate enough cash flows to pay interest and principal. Majority of empirical research produces the evidence that whenever companies decide to increase their leverage, the price of share increases in the market (Berk & DeMarzo, 2007)

If the debt is increasing the tax shield, and reducing the agency cost of equity, then why do companies not 100 percent finance their capital with debt? To discuss this important point we need to focus on the costs that limit use of debt in capital structure.

2.2.1.3. Financial distress and bankruptcy costs

One of two primary reasons that limit the gearing/leverage is costs of financial distress. Raising the leverage ratio increases the probability of financial distress. Financial distress refers to condition in which a firm can't pay off its debt obligations. The common example of cost of financial distress is bankruptcy costs and non bankruptcy cost. The cost of financial distress may occur even firm avoids bankruptcy for example decline in sale, decreased market share, reduction in share price, loss of human resources etc are also called indirect bankruptcy costs. Bankruptcy is a condition in which legal proceeding involving a firm that is unable to repay financial obligations of creditors. Bankruptcy condition demands some direct costs—refers to direct out-of-pocket cost such as legal fee, management time etc. Bankruptcy may be initiated by debtor for liquidation or reorganization (most common) is called voluntary bankruptcy but when creditors file a bankruptcy petition against corporate debtor in an effort to recover some portion or full amount they lent, it is called involuntary bankruptcy.

These direct bankruptcy costs can be small and/or large for the corporations as compare to their respective value. For large firms bankruptcy costs are less important because it is small portion of overall company value and vice versa. Warner (1977) estimates the bankruptcy costs in the magnitude of 1%. Andrade and Kaplan (1998) argue that bankruptcy cost can be negligible for those companies that do not experience adverse economic shock, but they estimate 10 to 20 percent bankruptcy cost for those companies that experienced adverse economic shock. On the other side the indirect bankruptcy costs can significantly be equal in their effect for small and large firms. Drobetz and fix (2005) argue that due financial distress company changes the investment policy for example firm may look at short-range cutback in research and development expenses, advertisement expenses, maintenance and educational expenses which ultimately decrease the firm value. Furthermore, financial

distress creates fear of impaired service and loses trust in the mind of customers and suppliers that further deteriorate the situation for the firm to survive.

2.2.1.4. Agency costs

Agency cost is amount that a firm uses on techniques to align management goal with organization goal (maximizing the wealth of shareholders). There are two main sources of agency costs: separation of ownership from management and cost associated with using agents. Separation of ownership from management creates agency problem—refer to conflict of interest (between shareholder and managers) that managers will use organization resource for their own benefits instead of maximizing the wealth of shareholders. Cost associated with using agents are indeed agency costs such as monitoring cost, cost of producing financial statements, use of stock option etc. Firms usually issue the debt in order calm the conflict of interest but appearance of leverage into picture creates an other potential conflicts of interest between managers, shareholder and creditors because each of them has different goal.

According to Jensen and Meckling (1976), monitoring expenditures by principal, cost of management time and residual loss constitute the agency costs. It has been clearly recognized by literature that agency cost is important determinant of capital structure (Harris & Raviv, 1990), (Pushner, 1995). There are three problems associated with the agency cost: I) overinvestment, II) underinvestment and III) Free cash flow.

- **Underinvestment and overinvestment**

Leverage can produce the conflict of interest between shareholder and creditors. Conflict of interest between shareholders and creditors arises when shareholders influence managers to take particular decision in the favor of shareholders at the cost of creditors. This influenced behavior of manager is outcome of two situations called underinvestment and overinvestment. Underinvestment can be defined as propensity of manager to avoid low risk projects with positive net present value because holding safe project does not generate excess return to shareholders. Firms prefer to take risky projects with high risk in order to generate excess return to shareholders but holding risky project does not promise any excess return to bondholders. Furthermore if firm couldn't perform as expected and turns bankrupt then entire loss may be borne by creditors. Brealey and Myers (2000) argue that underinvestment is theoretically affecting all levered firms, but most prominent for highly levered firms that are facing financial distress. Underinvestment problem is likely for the firms whose value primarily depends upon the investment and growth opportunities (Drobetz & Fix, 2005). Myers and Majluf (1984) argue that equity may be mispriced under the asymmetric information and if firm finances its new project by issuing equity, under-pricing of

new equity may be harsh thus new investors will gain more from project with positive net present value (NPV) at the loss of existing shareholders. This condition may lead to underinvestment problem and may reject such project with positive net present value. Myers (1977) argues that agency conflict between manager and shareholder advocate high leverage can create underinvestment problem.

Overinvestment refers to tendency of managers to take more risky projects—in which the probability of generating excess return is less. Any decrease in firm value diminishes the debt value but if project turns successful it increases the equity value. While investigating underinvestment and overinvestment problem with Dutch firms, Degryse and de Jong (2006) argue that overinvestment problem is more important than underinvestment problem, because the probability of failure is more that may even remove the chance of survival for the firm.

- **Free cash flow (FCF)**

Free cash flow is another important part of agency cost because it increases conflict of interest between agent (manager) and principal (owner). Firms experiencing stable free cash flows may face agency conflict between the managers and principals. Conflict of interests arises due to the probability of misuse of free cash flow by managers that does not parallel to basic goal of maximizing the wealth of stockholder and or firm value. Free cash flow can be defined as cash flow that is available to managers after funding all the projects that have positive net present value. Jensen (1986) argues high leverage can add the value to firms that largely have assets and generate stable cash flow. Managers may invest excess FCF just to increase the size of firm or purchasing corporate planes and other luxuries for personal use. To avoid such problem the firms issue the debt as disciplinary device, because with the issuance of debt company pledge to pay interest and principal when it is due. If the managers do not maintain their promise, the creditors can file petition against firm into bankruptcy court. Interest payment on debt diminishes not only free amount of managers' discretion but also forbid the managers from high risk investment.

Agency cost has got obvious empirical evidences since 1976. Margaritis and Psillaki, (2007) investigate more than 12000 firms in New Zealand and provide the evidence consistent with agency cost model (Jensen and Meckling, 1976). Berger and Patti (2006) argue that due to difficulty in finding the measure of firm performance that directly support the agency cost hypothesis, researchers could not produce the conclusive evidence in the support of agency cost hypothesis. Pushner (1995) argues ownership structure and agency costs are two important determinants of leverage in Japan. His findings are consistent with the agency theory on the basis of both conflict between manager and shareholder and conflict between shareholder and bondholder/creditors.

2.2.2. Pecking order theory (POT)

Pecking order theory of the corporate capital structure has long root in the literature given by Myers in 1984. Pecking order theory predicts the hierarchy of preference in which firms prefer internal financing e.g. retained earnings to external financing and prefers debt to equity. There are two parts of definition given by Myers (1984). First part of definition emphasizes the preference of internal financing to external financing and second part enlightens the preference of debt to equity. What does it mean to prefer internal financing? Does this mean that firm uses all available sources of internal funding before switching to debt or equity? Or does it mean that other things remain constant; firm will mostly use internal financing before any external one? (Frank & Goyal 2009) argue that last two questions produce strict and flexible modes respectively to interpret first part of definition. If we take strict interpretation, the theory could be more testable. But taking flexible interpretation, any testing of theory will depend on change in other things.

The second part of POT's definition is even more difficult to interpret because it relates to the preference of debt to equity. If we apply the strict mode of interpretation, then we will say that firm will never issue any equity if the debt is feasible (Frank & Goyal 2009). But it has become crystal clear that researchers have rejected the strict interpretation of POT's definition and recent papers have stuck with flexible mode. Now a question arises that how does firm decide about debt capacity? Or what are the indicators that determine boundary of debt? To determine the limit of debt in pecking order theory many recent papers have used factors commonly used in testing of trade-off theory (Frank & Goyal 2009). If we start from second part of POT's definition, we may not be able to differentiate between POT and TOT.

A question may arise in the mind of reader that why do firms prefer in the way that identified by pecking order theory? To answer the question we need to focus on pros and cons of these sources of funds.

- **Retained earnings:**

The portion of net income that company reinvests into business is called retained earnings. It is at top of preference in pecking order theory. There can be certain advantages and disadvantages if firms prefer to finance their business with retained earnings.

Advantages of retained earnings:

- It is the cheapest source of financing because it does not pledge fixed payment and repayment of principal on maturity thus decreasing the bankruptcy costs.
- Readily available with no cost to acquire it.
- It abstains from issuing either debt or equity thus controls their prices from fluctuation that firms experience in response to their issuance in financial markets.

Disadvantages of retained earnings:

- Retained earnings can enhance free cash flow problem because additional reinvestment may generate additional free cash flow.
- Retained earnings increases the stake of shareholder in the organization thus enlarges the agency problem of equity therefore it can increase agency cost.
- It ignores advantage of tax shield that could be achieved if firm is financing its business with debt because reinvestment decreases need for external financing.

❖ **Debt:**

Borrowing of firm is denoted by debt and according to preference of pecking order theory it is in between retained earnings and equity. Like retained earnings debt offers some advantages and disadvantages.

Advantages of debt:

- Debt offers tax shield benefit because cost of debt such as interest is tax deductible.
- Debt pacifies the free cash flow problem because interest payment leaves less free cash flow to managers to decide on[1].
- Repayments on debt make managers alert to generate enough cash flow to pay off financial obligations of creditors of firm.
- When firm issues debt, it is considered as good news and price of share increases in the market (Berk & DeMarzo, 2007) because issuance of debt shows both: confidence of investors in business and confidence of firm to generate enough cash flow.
- Issuance of debt leaving shareholders with fewer stakes in firm therefore it can decrease the agency problem.

Disadvantages of debt:

- Excessive debt issuance can be cause of cost of financial distress and bankruptcy.
- Debt issuance can generate conflict of interest between shareholders and creditors in conditions such as underinvestment and overinvestment.
- Debt makes a firm bound to pay interest with regular interval and principal on maturity irrespective to conditions a firm faces.
- Unlike retained earnings it is not easy to acquire it.

[1] Each unit of interest payment on debt can decrease the free cash flow in between 60 to 65 percent of interest because rest of 35-40 percent is adjusted by tax benefit on interest. Therefore we can say that debt can be used to address the free cash flow problem.

- It usually takes more time in collecting funds by issuing debt securities as compared to retained earnings.
- Unlike retained earnings, debt has transaction cost of selling debt instruments.

❖ **Equity:**

Stock that firms issue in order to raise the fund, form equity portion of capital structure. Certainly equity also brings some advantages and disadvantages to firms.

Advantages of equity

- Issuance of equity reduces the chances of bankruptcy therefore decreasing the cost of financial distress.
- Issuing more equity can pacify the conflict between shareholder and creditors because if firms have more equity and selecting risky projects will expose more risk to shareholders than creditors.
- There is no fixed cost and principal repayment of equity and dividend payment is subject to net income of firm.
- Dividend payment to shareholders can also address free cash flow problem like a substitute of debt.
- Equity gives its holder that control of organization in form of voting power.

Disadvantages of equity:

- Equity does not consider tax shield advantage.
- Equity increases the shareholder stake in business thus increasing agency cost.
- Unlike retained earnings equity is not readily available and takes time to be collected.
- Like debt, equity has transaction cost.
- It is more risky to issue equity because Kabir and Roosenboom (2001) argue that investor consider the equity issue as a bad news thus witness the decline in the price of stock.

If we analyze the pros and cons of retained earnings, debt and equity we can observe easily that the advantages of each later layer addresses the disadvantages of former layer in hierarchy of preference in pecking orders theory. It means disadvantages of retained earnings are advantages of debt and disadvantages of debt are advantages of equity likewise few cons of equity are pros of retained earnings. This make is cyclical process in which each source responding the detriments of former source of finance in pecking order theory. By referring to pros and cons of sources of finance there can be two possibilities for example firms either prefer advantages in pecking order sequence or vice versa. If we

analyze pecking order theory in the light of pros and cons mentioned above we can say that firms are risk averse and like ease to finance its total assets, operation and growth.

Although the investors are afraid of mispricing of both debt and equity, yet debt is considered as less risky as compared to equity because creditors' amount is secured with collateral in the condition of bankruptcy and they will get a fixed amount of return. So according to POT the company should issue the debt if necessary, and issue equity in last if the need for fund is not fully satisfied by retained earnings and debt (Ross, et al 2008).

Myers (1984) argues that company does not have any target debt equity ratio to maintain, instead the companies decide on the basis of their need for funds after looking to the internal financing. There are two kinds of equity one internal and at top and other is external and at bottom of preference as source of finance. Thus firms' gearing/leverage ratio depends upon past cumulative requirement of fund. It means if requirement for fund has been exceeding the retained earnings or if firm could not generate enough cash flow to reinvest then that firm should have more debt. Now the question is why profitable (less or unprofitable) firms tend to borrow less (more)? POT simply answers that it is because profitable firms have internal source of finance and vice versa. So they do not feel much need for external financing. Barry et al (2008), show that there is no any target debt equity ratio, leverage depends upon the need, level of leverage can be higher and lower depend upon change in other factors. Frank & Goyal (2009) suggest profitable and older companies have low leverage level because of good retained earnings history.

Tong and Green (2005) investigate the behavior of Chinese firm according to TOT and POT hypotheses and find results consistent with POT. Shyam-sunder and Myers (1999) argue on the basis of statistical power of hypothesis of POT, that trade-off model can be rejected. Chirinko and Singha (2000) argue that (shyam-sunder and Myers, 1999) generate misleading conclusion of their study. Fama and French (2002) argue that no single theory can explain the determinant of capital structure thus we cannot reject any of them. Myers (2003) claims "there is no universal theory of capital structure and no reason to expect one".

2.2.3. Market timing theory (MTT)

Market timing theory tells another way to answer traditional question about how firms decide whether to finance their investments with debt or equity. Market timing hypothesis explains that selection of specific fraction of debt and equity in capital structure is depending upon mispricing of these instruments in financial markets at timing the firm needs financing for investment. In other words, contrasting the explanation of TOT and POT, marketing timing theory elucidate that firms do not care about whether to finance with debt or equity but they just choose any form of financing that appears to be overvalued by financial markets at that point in time. The company issues the equity when stock prices are high (Hovakimian et al.

2004). Graham and Harvey (2001) depict that firms consider the price appreciation of share before issuing it, and debt rating and financial flexibility before issuing debt. They argue that stock price run-up increases the chances of issuing the equity as well as dual issue. Market timing theory assumes that mispricing of financial instruments exists and firm is able enough to detect any mispricing effectively. Even though MTT has been established by others but work of Baker and Wurgler (2002) is remarkable. They expressed first, the evidence of impact of market timing on capital structure is persistent in the US. Bie and Haan (2007) investigate the Dutch firms and find evidence consistent with MTT of capital structure. Firms purchase their own stock when they are perceived undervalued and call their callable bonds when interest rate is decreasing for re-issuance of bond at lower rate.

Market timing theory put emphasis on benefits from timing the firm needs financing for investment. Now two questions arise that is it only the mispricing of financial securities that offering benefits? What does make a firm able to effectively detect any misprice better than financial markets? We answer these questions in next paragraphs.

It is not only mispricing of financial securities but also the expected costs of these financial instruments in future that offer some opportunities. Besides mispricing if a firm expects that due to rising inflation the interest (cost of debt) will increase in future as compare to existing interest rate then it seems profitable for firm to issue the debt now because if firm's expectation appears to be true yet firm will pay low interest on debt capital. Barry et al (2008) show that decision of issuing the debt is affected by the time in which the interest rate (direct cost of debt capital) is low as compare to its historical level of debt. The survey finds that the financial managers issue debt securities when the interest is low as compare to historical level (Harvey et al 2004). Barry et al (2008) argue that firms issue more debt as compare to equity when interest rate are low.

Equity risk premium (cost of equity) also playing a vital role in decision of issue because in timing of low risk premium as compared to cost of debt, it will be beneficial for firms to issue equity instead of debt. Huang and Ritter (2009) show that low equity risk premium leads US firms to issue equity. They also argue that market timing is an important determinant of capital structure. They put light on long-lasting effect of equity risk premium on capital structure through their past impact on leverage decision. Firms cover the larger portion of deficit with debt issuance when the ERP is higher (Huang & Ritter, 2009).

The ability of a firm to detect any misprice depends upon asymmetric information and continuous scanning of secondary financial markets. Information asymmetry refers to the condition in which managers have more relevant information than investors for example about share price, bond price etc. This creates imbalance of power based on knowledge and is common in financial markets. Asymmetric information crisis is more problematic in developing countries than in developed countries (Cobham and Subramaniam, 1998).

Loughran and Schultz (2008) argue that urban firms are more likely to issue equity than debt and associate it with decreased level of information asymmetry because in urban areas the potential investors are more familiar with firm than those who belong to rural/farther areas.

2.2.4. A brief note on signaling theory

Issuance of debt or equity can be treated as signaling indicators. As mentioned above issuance of debt is considered as good news and price of share increases in the market (Berk & DeMarzo, 2007) because issuance of debt shows both: the confidence of investors in business and confidence of firm to generate enough cash flow to cover interest and principal therefore it is serving as signal of sound health of expected cash flows. On the other side issuance of equity is considered as bad new because it signals lack of confidence and overvaluation of stock price. As mentioned above Kabir and Roosenboom (2001) argue that investors regard equity issue as a bad news thus witnesses the decline in the price of stock. Ross (1977) argues that interpreting the firms that hold larger level of debt show higher quality, because it is signaling that the firms are confident enough to generate the stable cash flow to cover the interest and debt obligation when they are due.

2.3. Empirical evidence

After knowing theories of capital structure we need so see how much research work has been done on capital structure with regard to justify the predictions of these theories by collecting empirical evidence from all around the world. Is there any difference between developed and developing world with regard to source of finance? As mentioned below all the empirical evidence in the literature of capital structure subject to specific condition in which prediction of some theories work while hypothesis of other theories do not. Likewise the behavior of firms to adjust the capital structure is changing when they are confronted certain internal (company specific) and external (outside of the firm) situation. Myers (2001) states all three theories of capital structure are conditional because they work under their own set of assumption. It means none of three theories can give vivid picture in practicing the capital structure. Eldomiaty and Ismail (2009) argue that in practice, business conditions are dynamic that cause firms changing their capital structure thus moving from one theory to another, for example, when the tax rate increases firms issuing debt for taking advantage of tax shield (TOT). When debt becomes less attractive to issue then firms may seek financing from retained earnings (POT). Likewise if market offers some opportunities of low equity risk premium firms may finance their project with equity (Market timing).

There can be many economic (country specific) factors such as GDP growth, interest rate, inflation, capital market development and situational factors which directly or indirectly affect the capital structure of the firm. Graham and Harvey (2001) depict that firms consider the

price appreciation of share before issuing it, and debt rating and financial flexibility before issuing debt. Miao (2005) claims to introduce competitive equilibrium model of capital structure and industry dynamics, and says firms make capital structure decision on the basis of peculiar technology shocks.

Cook and Tang (2010) posit well macroeconomic conditions help firm to adjust capital structure toward target quicker than that in bad macroeconomic conditions. Korajczyk and Levy, (2003) argue that "our results support the hypothesis that unconstrained firms time their issue choice to coincide with periods of favorable macroeconomic conditions, while constrained firms do not." Hennessy and Whited (2005) argue more liquid firms hold lower level of leverage. They say debt issue is more attractive when it is used to purchase back equity than when borrowed amount is distributed in shareholders. Barry et al (2008) argue that interest rate affects the leverage; firms issue more debt when interest rate is low as compare to its historical level.

2.3.1. Evidence from developed countries

It has been unanimously observed that most of the empirical research on corporate capital structure is conducted in developed world (Mazur, 2007). Margaritis & Psillaki (2007) investigate capital structure of 12,240 firms in New Zealand and find evidence consistent with agency cost model. Frank & Goyal, (2009) examine capital structure of publically traded American companies from 1950 to 2003 and find the evidence supporting some versions of trade-off model. Beattie et al (2006) conducted survey research in which they examine the capital structure of listed UK firms and evidence support the predictions of TOT as well as pecking order theories. Huang & Ritter (2009) argue that US firms finance their operations more with external equality than debt if cost of equity capital is low. Lipson & Mortal (2009) investigate the relationship between liquidity and capital structure of US firms and find negative relationship between liquidity and debt. Cook & Tang (2010) investigate the financing behavior of US firms in good and bad economic condition and find that US firm adjust their capital structure more quickly in good economic condition than bad. Antoniou et al (2008) investigate capital structure of firm and find the evidences supporting POT and TOT of capital structure. Bancel & Mittoo (2004) conduct survey in 16 European countries and find the evidences consistent with TOT of capital structure. Barry et al (2008) analyze capital structure of more than 14000 nonfinancial US firms and find evidences supporting MTT. Rajan & Zingales (1995) investigate the capital structure of firms in G7 countries and find the similar treatment of variables of capital structure in all seven industrialized countries. Brounen et al (2006) conducted survey to investigate the capital structure of firms in Europe and find the evidences consistent with POT. Allen & Mizuno (1989) examine the financing decision of the Japanese firms and find evidences consistent with POT. Pushner (1995)

analyses the capital structure of Japanese firms and finds evidence consistent with agency cost theory. Polish firms' financing choice is determined by POT (Mazur, 2007). Evidence suggests that financial choice of Spanish firms is determined by trade-off, pecking order and free cash flow theories. (Miguel & Pindado, 2001). The evidence from Switzerland also supports pecking order and trade-off (Drobetz & Fix, 2005).

2.3.2. Evidence from developing countries

Relatively little research work on firms' financing decision has been done in developing countries (Shah & Khan, 2007). The main difference between developing and developed world is that in developed world firms finance their leverage with long term debt and short term debt is mainly contributing in leverage of firms in developing world (Booth et al 2001). Tong and Green (2005) inspect capital structure of listed Chinese companies and find evidence in the support of POT (Cobham & Subramaniam, 1998). Huang and Song (2006) examine capital structure of 1200 Chinese firms and find the results consistent with TOT and POT of capital structure. Eldomiaty and Ismail (2009) examine the capital structure of Egyptian firms and find the evidence supporting TOT. 60% evidence of capital structure of Iranian firms support POT and rest 40% evidence support TOT of capital structure (Shahjahanpour et al 2010). Teker et al (2009) investigates capital structure of Turkish firm and find evidence supporting POT and TOT of capital structure. Qureshi (2009) investigates the capital structure of Pakistani firms and find the results consistent with POT. Gurcharan, (2010) examines the capital structure firms in selected four developing ASEAN countries and finds significant negative relationship between profitability and growth in all four counties but other determinants of capital structure are treating differently in each country. Booth et al (2001) investigate capital structure of 10 developing countries and argue that there is negative relationship between tangibility and leverage in Pakistan, Brazil, India and Turkey unlike the corresponding results in G7 by (Rajan & Zingales, 1995). While investigating capital structure of Pakistani companies (Shah and Hijazi 2004) also do not find significant relationship between tangibility and leverage. Chakraborty, 2010) argue the positive relationship between tangibility and leverage of Indian firms. Booth et al (2001) and (Shah and Hijazi, 2004) find evidence supporting POT. As mention above, evidences in developing world indicate the dominancy of pecking order theory as compared to trade-off theory. Evidence in favor of market timing theory in developing world could not go through my literature review.

Chapter 3

Institutional setting in Pakistan

3.1. Objective of the chapter:

Every country of world is distinct with different setting such as rule, regulations, religion, culture etc that have different effects on individuals and organization from country to country. The aim of this chapter is to put light on unique institutional settings such as fixed income market, corporate tax rate, inflation and interest rate, religion, recovery rate and bankruptcy cost that develop the conditions in which firms are making decision about capital structure. How can these possible factors in Pakistan affect the financing decision of firms?

3.2. Institutional environment in Pakistan

Every country of world such as Pakistan is special with regard to distinct set of features for example religion, governing rules, regulations, laws, policies, language, culture, tax rate, health facilities, literacy rate, GDP, inflation, vision, strategies, geographic location etc. These distinct country features certainly restrict and guide production and consumption behavior of individuals and institutions within certain situations. Especially corporations need large amount for production of goods and services for selling and consumption. Pakistan is developing country with distinct institutional setting affecting financing decision of firms. Specifically from financing decision perspective, institutional setting in Pakistan includes bond market/fixed income market, tax laws, inflation, bankruptcy cost recovery rate and economic conditions.

3.2.1. Bond/fixed income market in Pakistan

Corporate bond market has short history in Pakistan. According to Security Exchange Commission of Pakistan (SECP)—corporate regulatory body in Pakistan, corporation was restricted from issuing debt security to directly borrow from public until mid 1994. Companies have no choice except borrowing from commercial bank until mid of 1994, when government of Pakistan removed most of constraints and amended company law to permit corporation to borrow directly from market by issuing term finance certificate (Shah & Khan, 2007). Companies were allowed for the first time in the history to issue term finance certificate (TFC) for borrowing directly from general public from 1995 (Akhter[2], 2007). Banks in Pakistan do not motivate companies to borrow on long term basis (Shah and Khan, 2007). Akhter, (2007) argues that corporate needs for long term debt are financed by consistent

[2] Dr. Shamshad Akhter was former governor of State Bank of Pakistan

turnover of short term debt because of mismatch in maturity between bank's assets (lending to firms) and liabilities (borrowing from public).

Akhter (2007) points out that in contrast to East Asian countries, Pakistan's private corporate bond market remains underdeveloped. Pakistan's total corporate debt issue as a percentage of its GDP is below the one percent. At the end of fiscal year 2006, total amount of corporate debt outstanding was at Rs. 49.3 billion (0.64% of GDP) as compare to Korea at 21.1% and Malaysia at 38.2% (Akhter, 2007). This fact shows that TFC could not get good response from the public in Pakistan. The main reason can be late issuance of long term government bond that provides long term yield benchmark for pricing the private corporate debt instruments. Pakistan Investment Bonds (PIBs) were introduced in 2000 with maturity of 3, 5 and 10 years. The benchmark yield curve was more extended in 2004 by issuing PIB with 15 to 20 year maturity (Akhter, 2007) as compare to Government bond in China with 50 years maturity. Absence of regular issuance of long term debt instrument such as PIB created hindrance for corporate sector to price corporate bond as well as in getting good response from investors. Issuance of TFC has been affected by listing, issuance and taxation costs.

3.2.2. Corporate tax rate

Corporate tax rate has remained stagnant from 2003 to onward. Corporate income tax rate has decrease from 53% in 1992 to 35% in 2009 (doing business in Pakistan, 2010). According to Klynveld Peat Marwick Goerdeler (KPMG) international survey (2008), corporate tax rate has remained 35% from 2002 to 2008. According to official website of board of investment (BOI) government of Pakistan the corporate tax rate for public, private and banking companies is still 35% in 2010-11. An extensive report of Asian Development Bank (2008) shows that tax rates on bank earning were brought down from 50% to 35% that is in line with corporate tax rate. Corporate tax rate was 35% in Pakistan in 2008 as compare to 33.99%, 33%, 20%, 30%, 26% and 18% in India, China, Afghanistan, Bangladesh, Malaysia, and Singapore respectively (KPMG, 2008). While income tax on small corporations is 20% of taxable income. Small company in Pakistan is a company with less than PKR 250 million turnover and less than 250 workers (doing business in Pakistan, 2010). Corporate tax rate of 35% in Pakistan is higher as compare to average corporate tax rate of (106 countries) 31.4% in 1999 and 25.9% in 2008 (KPMG, 2008). This implies that many countries in world have decreased their corporate tax rate from 1999 to 2008 in order to attract the foreign direct investment.

3.2.3. Inflation rate in Pakistan

It is not only availability, liquidity and transparency of long term debt market and corporate

tax rate that affect the capital structure decision of firms, but Inflation is also affecting the corporate capital structure because main source of leverage in developing countries is short term debt (Booth et al 2001) any change in inflation promptly change the cost of debt in developing countries such as Pakistan. While responding the inflationary pressure, central bank of country i.e. State Bank of Pakistan (SBP) adjusts discount rate that affects cost of debt which usually borrower is bound to pay at the end of each period. According to ADB report (2008), while continuous tightening the monetary policy in responding rising inflation, SBP adjusted the discount rate from 7.5 in FY2005 to 9.5% in December 2007 to 15% by November 2008. We consider general consumer price index (annual) as measure of inflation and according to official web site of SBP; the inflation has increased almost many folds from 3.1% in 2003 to 12% in FY2008 to 20.8 in FY2009. This behavior of inflation shows enormous change in inflation in Pakistan overtime. Frank & Goyal, (2009) find that when firm expects that the inflation rate will be higher in future or realizing the current rate of inflation is low, the companies are issuing debt securities. Hatzinikolaou et al (2002) argue that inflation uncertainty put forth a strong negative effect on capital structure of the firm.

3.2.4. Religious aspect

Islamic republic of Pakistan got independence in 1947 on the name of Islam and more than 95% of population in Pakistan is Muslim. According to Islamic Laws (Shariah), interest is strictly prohibited. Fixed income market is considered as paying interest on investment. So Muslims in Pakistan may avoid investing in any financial instrument that offers interest. This may be cause of avoiding to invest with corporate bond. Extraordinary spread of banks in Pakistan has been observed because of monopoly of banks in financing corporate debt.

3.2.5. Bankruptcy cost of business and recovery rate in Pakistan:

The cost of insolvency in Pakistan is lowest in South Asian region. According to co-publications of World Bank, International Finance Corporation and Oxford University Press (Doing Business) from 2004 to 2009, bankruptcy cost in Pakistan is 4% of assets that is equivalent to those of Japan and Korea from 2003 to 2008 except 2005 and equal (only in 2003 in USA)/ lower than those in UK and USA. As table 1 shows the bankruptcy cost in South Asian countries is much higher as compare to that in Pakistan.

The bankruptcy cost in India is floating from 9% to 18% that is much higher as compare to 4% in Pakistan in mentioned period. Insolvency cost remains stagnant at 8% in Bangladesh and Nepal. Liquidation cost decreases in Sri Lanka from 18% in 2003 to 5% in 2008 and increases in China from 18% in 2003 to 22% in 2008. According to trade off theory, the cost of bankruptcy helps manager to choose appropriate leverage target.

If the cost of bankruptcy is high for a company then company need to borrow less and vice versa. Based on this theory, Pakistani firms should have higher leverage ratio.

Companies usually they pledge the asset of firm as collateral when they borrow. Recovery rate gives true picture of companies' average recovery within a particular country. Recovery rate of country build the confidence of creditor (specially crossed border creditors) to provide funds to company. According to co-publications of World Bank, International Finance Corporation and Oxford University Press (doing business) from 2004 to 2009 as summarized in table 1, Recovery rates in Pakistan is from 38.1 in 2004 to 39.2 in 2008 that is more than 300% higher than 12.5% in 2004 to 10.4% in 2008 in India. Average recovery rate in Pakistan stays significantly behind 92.6% in Japan, 81.26% in Korea, 85% in UK and 75% in USA.

3.2.6. Private debt market in East Asian countries (EAC)

At present, capital market has turned comparatively deeper and more liquid. Akhter (2007) argues that financial assets are growing more rapidly than world GDP and it is likely to go beyond $200 trillion in 2010. A significant shift from bank deposit to private debt securities has been observed as the largest component of global financial asset. Accompanying with it private debt issues has grown 3 times faster as compare to domestic issues, this reflects the international integration and globalization of capital flow (Akhter, 2007). She argues that East Asian financial crisis of 1997, taught EAC that how it risky and dangerous is to excessively depend on banks. By taking advantage of this valuable learning, EAC took aggressive measure to develop several national and regional bond markets. Beside significant growth in equity market EAC took efforts to promote debt market as a results now EAC yielding positive results.

3.2.7. Other challenges to Pakistan:

Economic conditions in Pakistan have been remaining exceptional since 2003. These economic conditions include rapid change in GDP growth, energy crisis, inflation, unemployment, fiscal deficit, war on terror, balance of trade deficit, foreign direct investment, earthquake of 08 October, 2005 etc.

GDP growth rate rapidly increased from 2.0 percent in 2001 to 9.0 percent 2005. Pakistan's economy has grown at 7.5 percent per annum during three years from FY 2003/04 to FY 2005/06 therefore it became one of fastest growing economy in the Asian region (Economic survey of Pakistan, 2005-06). Pakistan sustained this growth rate momentum because of dynamism in industry, agriculture, service with emergence of new investment attained new height at 20.0 percent of GDP.

Table 1

Cost of bankruptcy and recovery rate

Table 1 is summarized from "Doing Business" separate reports from 2004 to 2009, co-publications of World Bank, International Finance Corporation and Oxford press from 2004 to 2009. The bankruptcy cost in this table is percentage to total assets and Recovery rate is percentage of assets that claimants for example creditors, tax authorities and employees recover from bankrupt firm.

Item	Year	Pakistan	Bangladesh	China	India	Japan	Korea	Malaysia	Nepal	Sri Lanka	UK	USA
Cost of insolvency (%)	2003	4	No practice	18	18	4	4	18	8	18	8	4
Cost of insolvency (%)	2004	4	8	18	8	4	4	18	8	18	6	8
Cost of insolvency (%)	2005	4	8	22	9	3.5	3.5	14.5	9	18	6	7
Cost of insolvency (%)	2006	4	8	22	9	4	4	15	9	18	6	7
Cost of insolvency (%)	2007	4	8	22	9	4	4	15	9	5	6	7
Cost of insolvency (%)	2008	4	8	22	9	4	4	15	9	5	6	7
Average Insolvency cost (%)		4	8***	20.7	10.3	3.92	3.9	15.92	8.7	13.7	6	6.7
Recovery rate (%)	2003	..	..	…	…	…		…	…	…	…	…
Recovery rate (%)	2004	38.1	23.2	35.2	12.5	92.4	81.1	35.4	25.8	33	86	68
Recovery rate (%)	2005	44.3	24.2	31.5	12.8	92.6	81.7	38.8	23.9	34	85	76
Recovery rate (%)	2006	39.9	24.9	31.5	13	92.7	81.8	38.7	24.5	36	85	77
Recovery rate (%)	2007	39.1	23.2	35.9	11.6	92.6	81.2	38.3	24.5	45	85	76
Recovery rate (%)	2008	39.2	23.2	35.3	10.4	92.5	80.5	38.6	24.5	43	84	77
Average Recovery rate (%)		40.12	23.74	33.88	12.06	92.6	81.3	37.96	24.64	38	85	75

… Show that data is not available

*** The average bankruptcy cost of Bangladesh is average of 5 years instead of 6 years thus I ignored no practice 0.12%.

After attaining the height in GDP growth rate at 9 percent in 2005 it declines suddenly to 5.8 percent in 2006 (Ministry of Finance, 2009-10) due to severe earthquake in northern region of country on 8th October 2005. The GDP growth rate again increases to 6.8 percent in 2007 as compared to 5.8 in 2006 (Ministry of Finance, 2009-10) this increase in growth rates may be the result of aid from all around the world for rehabilitation of destructed areas in earthquake. The golden period of sustainable GDP growth rate ends in 2007 and GDP growth declines to 4.1 percent and 1.2 percent in 2008 and 2009 respectively. The possible chances of latest decline in GDP were because of unstable political situation, energy crisis, deteriorating law and order situation and so on.

Energy crisis has been getting worsening since 2003 due to increasing gap between demand and supply of energy. Here energy crisis refer to deficiency of electricity and natural gas. The deficit between electricity supply and demand has crossed 5,000 MW at its peak in 2009-10 (Ministry of Finance, 2009-10). This decline in energy supply has affected industries severely specially manufacturing industry that makes it difficult for industry to produce product. Electricity use in industrial sector fell by 6.5 percent, while gas consumption declined at 2.6 percent in 2009-10 that costs equal to 2.0-2.5 percent of GDP (Ministry of Finance, 2009-10).

According to official estimation by ministry of finance, being a front state in global war on terror, Pakistan has been affected to the extent over US $40 billion from 2001 to 2010. Pakistan has played as vital role as non NATO ally in war on terror since 9/11. In reaction to war on terror, a total of 8,141 incidents of terrorism have occurred in Pakistan that cost 8,875 lives of civilians as well as personnel of law enforcement agencies and injured a further 20,675 people (Ministry of Finance, 2009-10). Beside statistics of human causalities, a cumulative effects of military operation against militants have in country's North West have been enormous. The reaction from militant has made lives, home, schools, income uprooted in NWFP and FATA (Ministry of Finance, 2009-10). Due to Pakistan's front state in war on terror, Pakistan's economy has been suffering in many areas include decline in GDP growth, reduction in investment (foreign direct investment and local), lost export, damaged physical infrastructure, loss of employment and incomes, diversion of budgetary resources to military and security related spending, cutbacks in public sector development spending, capital and human capital drains, reduction in capital and wealth, stock exchange rate depreciation and inflation (Ministry of Finance, 2009-10). While analyzing the above conditions prevailing in Pakistan can affect the sale of firm, resulting in fewer sales and cash flow that can restrict firm from borrowing more.

Chapter 4
Variables

4.1. Objective of the chapter

In this chapter, we will discuss the determinants of capital structure. Furthermore, this chapter will enlighten the variables, and draw the hypothesis derived from theories of capital structure in the light of literature.

4.2. Hypothesis of study

This study is using the following dependent and independent variables to answer the questions that have been created in introductory section.

4.2.1. Leverage (Lev)

Leverage ratio is taken as dependent variable while searching for the determinant of the capital structure. We are taking into account the book value of the total assets for calculating leverage ratio instead of market value of total assets because it is book value of assets that is considered when company either giving the collateral for loan or facing the bankruptcy. Book leverage is preferred because financial market is fluctuating over time at a great level, therefore manager are said to rely on book value while considering the financing policy of the firm. This view is consistent with argument of Graham and Harvey (2001) that large number of managers does not rebalance with fluctuation in financial market. Fama and French (2002) argue that book Lev is figure that is more reliable and free from the effect of those factors which are beyond the control of firm. Many definitions of debt have been used in literature. Frank and Goyal (2009) use four definitions of Lev which are 1) long term debt (LTD) over market value of assets, 2) LTD over book value of assets, 3) total debt (TD) over market value of assets and 4) TD over book value of asset. Although capital structure theories use long term debt as proxy of Lev of firm (Jong et al 2008) but we use here two proxies: long term debt ratio (Lev1) and total debt ratio (Lev2) because the main source of firms in Pakistan to borrow was commercial bank until mid of 1994, when government of Pakistan removed most of constraints and amended company law to permit corporation to borrow directly from market by issuing term finance certificate (Shah and Khan, 2007). With limited history in corporate bond and commercial banks do not motivate long term debt; most of firms rely on short term debt (Shah and Khan, 2007). Shah and Hijazi (2004) found that average size of firm in Pakistan is small which make it difficult for the firm to access capital market in term of technical difficulties and cost. Booth et al (2001) investigate the capital structure of firms in developing countries including Pakistan and find that firms in developing countries more rely on short term debt than long term debt.

4.2.2. Profitability

Profitability can be main independent variable that determines capital structure and represent pecking order and trade-off theories quite clearly. As mentioned in literature review that trade-off theory says firms identify the target debt ratio by comparing benefit from and cost of leverage. Any decrease (increase) in cost (benefit) allows the firm to readjust target leverage by enhancing debt. Profitable firm are less risky with frequent cash flow from business decreasing the cost of financial distress such as bankruptcy cost. It is unanimously recognized that more profitability in world of tax with more leverage can save more tax for shareholder showing benefit from leverage. More benefit from leverage will disturb cost benefit relationship thus allows the firm to borrow more. Frank and Goyal (2009) argue that expected cost of financial distress is low for profitable firms thus finding tax shield more valuable. This reflects the positive relationship between Leverage and profitability. Agency cost perspective also regarded debt as a disciplinary measure and more valuable for firms with high profit producing the more free cash flow (Jensen, 1986). It means trade-off theory suggests positive relationship between profitability and leverage. Margaritis and Psillaki (2007) argue that profitability has positive effect on Lev of firm.

Hypothesis 1a: Trade-off theory suggests positive relationship between profitability and leverage.

Contrary to trade-off theory, pecking order theory suggests that profitable firm prefer to use retained earnings to finance their current or potential projects. Myers (1984) argues that firms with no profit or insufficient profit prefer to borrow debt and then issue equity securities if requirement for the funds is not fulfilled by debt borrowing. It means pecking order theory predicts negative relationship between profitability and leverage. Some empirical evidences also validate negative correlation between profitability and leverage (Tong & Green, 2005), (Huang & Song, 2006), (Frank & Goyal, 2009).

Hypothesis 1b: Pecking order theory expects negative relationship between leverage and profitability.

There can be more probability of hypothesis 1b to occur in Pakistan because as mentioned above main source of finance in Pakistan is short term bank loan with skyrocketed inflation's immediate effect can severely increase interest. The change in cost of leverage can be large enough to eat away the profitability of firm. Therefore major contribution of short term debt loan will not allow profitable firm to hold more leverage.

4.2.3. Size (SZ)

Size can be another important determinant of capital structure because literature review shows contradicting views about the relationship between size and debt. Larger firms are

more diversified, have less default risk, and lower cost of financial distress. Larger firm diversification advantage reduces bankruptcy (Titman & Wessels, 1988). Therefore according to trade-off theory any decrease in cost of leverage allows the firm to increase leverage thus predicts positive relationship between size and leverage because size of firm diminishes the cost of leverage.

Hypothesis 2a: Trade-off theory explains positive relation between size and leverage.

Pecking order theory is interpreted as it predicts negative relationship between size and leverage because larger firms are well known and have longer/older history of adding retained earnings in their capital structure (Frank & Goyal, 2009). Therefore firm with more retained earnings additions should have less leverage. Margaritis and Psillaki (2007) find non-monotonic relationship between SZ and Lev. They find size is negatively related to low debt ratio and positively related to mid and high debt ratios. Larger firm generates more profit as compared to small firm therefore according to pecking order theory profitable firm prefers internal financing than external one. This suggests that SZ is negatively related with debt.

Hypothesis 2b: Pecking order theory depicts negative relationship between size and leverage.

We expect positive relationship between size and debt because of three main reasons. First, despite the fact that main source of leverage in Pakistan is short term bank loan yet larger firms are well known by investors; therefore it becomes easy for large firms to issue long term debt in financial markets in Pakistan. Secondly larger firm are diversified so law and order situation such as in NWFP may not hurt its overall sales. Finally, suppose if leverage of larger firm is mainly financed by short term bank loan yet larger firm generate larger cash flow and change in cost of debt capital may not affect cash flow of firms.

4.2.4. Tangibility of asset (TNG)

A firm with more physical asset can borrow at cheaper cost of debt capital as compare to company with less physical assets. The tangibility of assets offers the bargaining power to company. Jensen and Meckling (1976) point out that agency cost between the creditors and shareholders exists because firm may invest in riskier projects after borrowing and may transfer the wealth from creditors to shareholder. Companies having more fixed asset can borrow more by pledging their fixed asset as collateral and mitigating lenders' risk of bearing such agency cost of debt (Ross et al 2008). Therefore firm with low agency cost can increase the debt it means trade-off theory predicts positive relationship between tangibility of assets and debt. Margaritis and Psillaki (2007) argue that TNG of firm is positively related

to Lev. Studies conducted by Jong, et al (2008) and Huang & Song (2006) also suggest the positive correlation between fixed asset and leverage. Frank and Goyal (2009) found positive relationship between TNG and Lev level. However results from developing world are mixed. Shah & Khan, (2007) found significant positive relationship between TNG and Lev for Pakistani firms. Booth et al (2001) find negative relationship between TNG and Lev in ten developing countries (including Pakistan). Huang and song (2006) experience significant positive relationship between TNG and Lev in China.

Hypothesis 3a: Trade-off theory predicts positive relationship between tangibility and leverage.

The negative relationship between TNG and Lev, may infer the results consistent with predictions of market timing theory because if firm has more tangibility and issues equity may indicate mispricing of financial instruments for example overvaluation of shares, undervaluation of bond etc. Other reasons may include cheap cost of equity risk premium, expensive cost of debt. Market timing theory suggests when the stock price in the market is overvalued then based on asymmetric information, the companies issue the equity. Firms buy their own stock when price of stock is perceived undervalued.

Hypothesis 3b: Market timing theory predicts negative relationship between tangibility and leverage if firms have more tangible assets and issue more equity.

We expect positive relationship between tangibility and leverage because as mentioned in chapter 3, environment since 2003 seems risky for potential creditors to lend the money without collateral so firms having more fixed assets can let the firms to borrow more money by offering collateral to creditors because any unexpected condition such as bankruptcy can make creditors able to recover their full or major portion of their investment by selling pledged fixed assets of firm. The limited history of financial market for debt in Pakistan left creditors less aware and more cautious to debt market. So creditors may avoid to invest with firms have less tangibility because bankruptcy may leave less amount of money to recover their investment. If we consider the short term bank loan as a main source of leverage yet bank may feel relax to forward loan to firm with more tangibility than that of low tangibility. Beside this more corporate tax rate, more average recovery rate, and least average cost of bankruptcy in Pakistan as compared to that in other south Asian countries also permit the firm to increase the leverage.

4.2.5. Growth (GTH)

Growth can be a good independent variable and derived from pecking order theory and trade-off theory. There are conflicting views found in theories of corporate capital structure

regarding the relationship between growth and leverage of the firm. According to pecking order theory the company first finances its projects by internal financing (Ross, et al 2008) that may not sufficient in the condition of growth. So the company should increase its leverage during growth period. It means pecking order theory indicates the positive relationship between growth and leverage. Tong and Green (2005) find significant positive relationship between growth and leverage.

Hypothesis 4a: Pecking order theory forecasts positive relationship between growth and leverage.

On the other side growth is increasing cost and probability of financial distress when the company borrowing more debt to support growth opportunities. And increasing cost of financial distress may restrict firm from borrowing more; it means trade-off theory suggests negative relationship between GTH and Lev of firms. Jong et al (2008) and Huang and Song, (2006) showed out the negative relationship between the GTH opportunities and Lev of the firm.

Hypothesis 4b: Trade-off theory expects negative relationship between growth and leverage.

We expect positive relationship between growth and debt because of some reasons. Firstly, because the main source of leverage in developing country such as Pakistan is short term bank loan, it becomes easy for the firm to borrow lump sum amount immediately from bank. Secondly, more growth opportunities are offered by good economic conditions that boost firm's confidence to generate enough cash flow to pay debt obligations. Thirdly, Pakistan is one of countries with lowest bankruptcy cost in Asia (see table 1). Finally, Pakistan is at third place after Japan and Korea with regard to average recovery rate from 2003 to 2008 (see table 1). Pakistan is country with highest corporate tax rate in south and south-east Asian region. All above properties can motivate the firm to borrow more.

4.2.6. Dividend (Dvnd)

According to pecking order, firms with higher profitability are experiencing the lower debt in their capital structure. But it is solely depending upon the dividend policy of firm. If the company has low retention ratio (high dividend payout ratio) then company must issue more debt that will increase the Lev ratio. POT suggests that firm with higher Dvnd payout history has fewer amounts to reinvest in business thus indicating positive relationship between Dvnd payout ratio and Lev. In the condition of high GTH opportunity, POT suggests the low Dvnd payout. Tong and Green (2005) find the past Dvnd and Lev has significantly positive relationship. As mentioned above, Adedeji (1998) suggests that because of reluctance to cut the Dvnd in the condition of earning shortage, firms borrow to pay the Dvnd thus indicating

the positive relationship between Dvnd and debt ratio. Baskin (1989) empirically confirms the positive relationship between the Dvnd and Lev ratio.

Hypothesis 5a: Pecking order thoery show positive relationship between dividend and leverage.

Dividend payment and debt financing can serve as alternatives to address the agency cost of free cash flow problem. Paying dividend can't offer firm any tax benefit while borrowing more not only reduces the agency cost of free cash flow problem but also offers tax shield benefit. Therefore decreasing agency cost and increasing tax benefit may let the firm to borrow more and more leverage may leave fewer amounts with firm to pay dividend. Allen & Mizuno, (1989) find that firm might not wish to pay high Dvnd in the presence of high fixed charges of financing. Therefore trade-off theory would suggest negative relationship between dividend payout and Lev. Frank and Goyal (2009) point out that the firms that pay Dvnds have less Lev as compare to firms those do not paying dividend.

Hypothesis 5b: Trade-off theory predicts negative relationship between dividend and leverage.

We expect positive relationship between dividend and leverage because major portion of population in Pakistan belongs to middle and lower class and shareholder of public corporation from these classes will prefer to get immediate return in form of dividend. Dividend payment will decrease the retention ration of firm thus firm may not have sufficient amount to reinvest in the business so firm may borrow more for fulfilling need for funds.

4.2.7. Inflation (Inf)

We can derive inflation as variable from market timing and trade-off theories of capital structure. Inflation is macroeconomic variable that has impact on price of debt and equity. Whenever the inflation is increasing the creditors demand more interest rate, on the funds they have furnished to organization in order to balance the opposite effect of inflation that diminishes purchasing power of currency of particular country. It means there is positive relationship between the inflation and cost of debt. According to ADB report (2008), while continuous tightening the monetary policy in responding rising inflation, State Bank of Pakistan adjusted the discount rate from 7.5 in FY2005 to 9.5% in December 2007 to 15% by November 2008. Hatzinikolaou et al (2002) argue that inflation uncertainty put forth a strong negative effect on capital structure of the firm. Issuing debt at higher cost may increase the costs of financial distress. Therefore trade-off theory suggests the negative relationship between inflation rate and leverage.

Hypothesis 6a: Trade-off theory estimates negative relationship between inflation and leverage.

Market timing theory says that firm issues the debt when the interest on the debt is low as compared to past and future expected interest rate. Barry et al (2008) show that decision of issuing debt is affected by timing in which the interest rate (due to lower inflation rate) is lower than historical level of debt. Frank & Goyal, (2009) find that when firm expects that the inflation rate will be higher in future or realizing the current rate of inflation is low, the companies issuing debt securities. But prediction about the future interest rate depends on inflationary trend in economy. It means if firm expect more inflation in future it will amplify the probability of enhancing the interest rate thus firm may not delay in issuing debt. This shows that market timing theory suggests positive relationship between inflation and debt if it is expected that future inflation will be more.

Hypothesis 6b: Market timing theory demonstrates positive relationship between inflation and leverage.

Chapter 5
Data and Methodology

5.1. Objective of the chapter:

There are many purposes of this chapter. First purpose is to explain what data is used. Second aim of the chapter is to put light on descriptive statistics of leverage and its determinants. Third, to explain what models are being used to analyze the data? Final purpose of chapter is to define the proxies of variables.

5.2. Data

This study is based on the data collected from State Bank of Pakistan (SBP) publication "Balance sheet analysis of joint stock companies listed on the Karachi Stock Exchange (2003-2008)". This publication provides the data of 436 firms from 2003 to 2008. Following the SBP's publication, this research excludes financial institutions to investigate capital structure of firms because of fact that capital structure of financial institution is completely different from those of nonfinancial firms and financial firm is purely service firms that do not offer tangible product. The data is published sector wise that is allowing us to compare the capital structure of different sectors/industries i.e. textile sector, chemicals, engineering, sugar and allied industries, paper and board, cement, fuel and energy, transportation and communications, tobacco, jute, vanaspati and allied industries and miscellaneous.

The purpose of table 1 is to provide information about changing number of firms belonging to different economic group during sample period (2003-2008). It can be observed that the number of firms in each sector depicts declining trend in most of economic groups. It means firms in Pakistan in different sectors might go either bankrupt or closed during the period because of economic instability in country. Textile is largest industry of Pakistan because it covers maximum number of firms from sample data and its results can affect the results of aggregate data. The number of firms in textile sector varies a high 182 and a low 165 in 2003 and 2007 respectively. As depicted in last column of table 1 we take into account those firms from different sectors that did business successfully for sample period and are not on the edge of bankruptcy (we excluded firm with negative equity in their balance sheets). So last column of table 1 can be interpreted in two ways; firstly there are only 108 firms in textile sector for example that consistently could do business during sample period without being closed to be bankrupt. It means some textile firms either got closed after 2003 or started to do business between 2003 and 2008. Secondly, the firm could do business during the sample period successfully but SBP might not get data to publish.

Table 2

Distribution of companies by sectors

We classify the firms according to industry they belong to. Column 1 shows economic group or industries. Columns 2 to 7 show the years and last column illustrates the number of firms belong to different industries whose data is available throughout the six years after excluding firms with negative equity from all sectors which we think is lousy data (the data which is exceptional and do not make sense in normal conditions). We have taken into consideration the number of firm belonging to each industry in last column of this table. Following data is taken from the "Balance sheet analysis of joint stock companies listed on the Karachi stock exchange (2003-2008)". Other sectors include tobacco, jute, vanaspati and allied industries and miscellaneous industries.

Economic Groups	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2003 to 2008**
Textile	182	172	166	166	165	167	108
Other Textile	17	17	16	15	15	15	12
Chemicals	38	36	34	34	34	35	31
Engineering	44	42	41	41	41	40	31
Sugar and Allied Industries	37	35	35	35	36	35	25
Paper and Board	13	12	12	10	10	10	7
Cement	22	22	22	22	20	21	16
Fuel and Energy	24	25	28	28	27	27	17
Transport and Communication	7	13	15	12	12	12	3
Other sector	79	77	74	73	77	74	46
Total:	**463**	**451**	**443**	**436**	**437**	**436**	**368**

Unlike textile sector, the number of firms in fuel & energy (F&E) and transportation & communication (T&C) sectors has increased from 2003 to 2008. The number of firms in T&C has increased dramatically and becomes more than doubled in 2005 as compare to that in 2003. This increase in number of T&C firms is because of the fact that some international firms such as Eye Television Network Ltd, Callmate Telips Telocom Ltd etc started their business in Pakistan during sample period. Regardless of dramatic increase in number of firms in T&C, we could include 3 firms based on criteria mentioned above. Based on our set criteria sugar & allied industries could do business most consistently during sample period because reliable data for these entire firms is available for all six years. There is huge difference in number of firms belonging to every economic group.

As last column of table 2 demonstrates a high 108 and as low 3 in textile and T&C respectively, in fact the number of firm in textile sector is even more than twice of that of in every other sector. Therefore we can say the results in sectors with minimum number of firms may not be reliable. Therefore to avoid this problem we are also focusing on aggregate data without considering the industry dummy.

Table 3 provides the summary data on mean, median, standard deviation (STDEV), minimum (Min.) and maximum (Max.) across the 10 industries from 2003 to 2008. Lev1 is

long term debt over total assets. Based on average long term liabilities average book value of liabilities varies from a high 25.5 percent in cement to a low 3.3 percent in transport and communication. The highest average long term debt of 25.5 in any sector is lower than that of calculated by (Qureshi, 2009) in his study. The industries seem to fall into three categories. A low average long term debt group (having less than 10 percent average long term debt) consists of chemical, engineering, T&C and others; a high average long term group (having average long term debt more than 20 percent) consists on only chemical sectors; while textile, other textile, sugar & allied, fuel & energy and paper & board sectors constitute a group having middle average long term debt. Average total leverage is more than 50 percent of assets in all industries except paper & board (P&B), transport & communication (T&C) and other industries (OI). T&C and OI seem more cautious toward leverage (long term and total debt). Consistent with argument of Booth et al (2001) the difference between average long term debt and average total debt is huge indicating that firms in Pakistan more rely on short term debt like other developing countries. Profitability is denoted as a percentage to book value of total assets. This ratio shows how effectively a firm uses its total assets to generate profit. T&C is most profitable sector with average 19.6 percent profitability followed by chemical, engineering, P&B and OI with 14.4, 14.5, 13.6 and 11.9 percent respectively. Size is based on total sale a firm generates with assumption that large firm generate more sales as compared to smaller firms. Average sale of firms in fuel and energy sector is the largest in all industries. Tangibility is percentage of fixed assets in total assets. Cement sector is one with most average fixed asset while each firm in engineering sector has 32.2 percent fixed assets in total assets. Growth is annual percentage change in total assets of firm. The firms in P&B achieve the highest average growth in their assets during the sample period. We view the least average growth in other textile. Dividend shows dividend payout ratio that can be interpreted as the percentage of book value of total equity paid by a firm in dividend. Each firm in OI pays a 20.6 percent return to its shareholders that is the highest average dividend in all sectors. Inflation shows increase in consumer price index that may also affect the interest rate on leverage. Median in table 3 shows central tendency this means tendency of firm in middle. We observed in 8 of 10 sectors median firms have less than 10 percent long term leverage. Value of median profitability follow the pattern of average profitability means the industries that show highest average profitability also show greater median values in respective sector. We observed more the 50% median tangibility in five industries. Standard deviation is showing dispersion that means how the values disperse away from average value. It also measures the risk or fluctuation in observations. We observed the highest long term debt and total debt dispersion in fuel and energy sector.

Table 3

Sector wise descriptive statistics of leverage and its determinants

We define long term leverage ratio as percentage of book value of total assets (TA from now) of firm in long term debt. We describe it as total liabilities divided by total assets. We use independent variables such as profitability is equal to earnings before interest and tax (EBIT) divided by TA. Sales will be use to explain the size of firm we define it as natural log of gross sales. We measure tangibility (TNG) as fixed assets over TA and define growth as TA minus TA_{t-1} divided byTA_{t-1}. We take readymade data for dividend (Dvnd) from State Bank of Pakistan's (SBP) published data. Inf is inflation we use consumer price index data for inflation from official web site of SBP. Colum 1 shows mean, median, standard deviation (STDEV) minimum (Min.) and maximum (Max.) and rest of columns show each industry. While presenting descriptive statistics we follow panel data style in which we consider annual data as separate company instead of calculating average of data from 2003 to 2008 for each firm.

	Textile	Other Textile	Chemical	Engineering	Sugar & Allied	Paper & Board	Cement	Fuel & Energy	Trans & Comm.	Others
Mean										
Long term debt ratio (%)	17.7	10.9	7.6	7.3	11.1	11.7	25.5	13.1	3.3	6.3
Total debt ratio (%)	65.8	52.0	51.6	57.3	59.8	38.4	60.0	54.9	37.0	49.0
Profitability (%)	5.9	6.7	14.4	14.5	7.1	13.6	6.3	7.9	19.6	11.9
Sale (in millions)	2036.4	4533.8	6037.6	6067.9	1869.6	2339.4	3770.8	47324.5	30120.5	3587.4
Tangibility (%)	55.5	50.9	39.8	32.2	51.3	53.8	71.0	52.0	42.7	41.7
Growth (%)	18.3	6.3	15.0	25.3	18.9	37.1	29.0	11.0	19.3	19.7
Dividend (%)	1.1	1.7	8.4	5.7	1.9	5.1	2.6	6.8	6.3	20.6
Inflation (%)	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.4	7.5	7.4
Median										
Long term debt ratio (%)	17.0	5.0	2.0	3.0	7.5	8.5	23.5	3.0	0.0	1.0
Total debt ratio (%)	68.0	59.0	52.0	57.0	66.5	36.0	61.5	64.0	41.5	50.0
Profitability (%)	6.0	6.0	13.0	13.0	6.0	14.5	5.0	7.0	21.0	9.0
Sale (in millions)	1109.9	2820.4	1573.8	1567.4	1344.1	851.45	2466.8	12482.5	7937.8	977.6
Tangibility (%)	56.0	46.5	35.5	31.0	53.0	57.0	75.5	53.0	47.5	41.0
Growth (%)	11.0	4.0	10.0	19.0	12.0	16.0	17.5	7.0	15.0	12.0
Dividend (%)	0.0	0.0	5.2	4.1	0.0	3.7	0.0	4.8	4.8	2.7
Inflation (%)	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9	7.9

	Textile	Other Textile	Chemical	Engineering	Sugar & Allied	Paper & Board	Cement	Fuel & Energy	Trans & Comm.	Others
Standard Deviation										
Long term debt ratio (%)	12.1	14.6	11.0	13.2	11.3	12.0	17.7	20.5	7.2	9.9
Total debt ratio (%)	14.9	25.3	18.5	18.0	24.0	18.8	16.4	25.5	12.8	23.2
Profitability (%)	16.1	20.7	13.6	10.2	8.8	11.8	11.8	11.3	8.8	13.2
Sale (in millions)	2447.3	6046.3	10526.9	10161.7	1717.1	3416.1	3636.9	88427.2	37963.9	7667.9
Tangibility (%)	16.3	19.9	22.0	19.1	16.6	20.0	17.2	22.2	22.1	24.1
Growth (%)	30.9	15.2	22.3	31.2	31.4	51.1	35.5	18.7	28.8	31.5
Dividend (%)	4.7	2.5	11.8	9.3	3.6	5.2	7.3	7.5	7.4	193.7
Inflation (%)	2.9	3.0	2.9	2.9	2.9	3.0	2.9	2.9	3.0	2.9
Minimum										
Long term debt ratio (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total debt ratio (%)	11.0	7.0	15.0	14.0	5.0	8.0	23.0	1.0	13.0	2.0
Profitability (%)	-98.0	-51.0	-28.0	-4.0	-16.0	-31.0	-23.0	-20.0	0.0	-28.0
Sale (in millions)	0.3	0.3	5.8	0.8	0.6	47.5	285.5	7.2	182.9	2
Tangibility (%)	4.0	17.0	4.0	2.0	13.0	13.0	16.0	6.0	4.0	1.0
Growth (%)	-75.0	-28.0	-19.0	-22.0	-20.0	-11.0	-24.0	-35.0	-17.0	-31.0
Dividend (%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Inflation (%)	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
Maximum										
Long term debt ratio (%)	57.0	72.0	49.0	74.0	52.0	41.0	75.0	84.0	29.0	64.0
Total debt ratio (%)	98.0	93.0	92.0	100.0	98.0	78.0	98.0	95.0	55.0	98.0
Profitability (%)	324.0	125.0	57.0	75.0	41.0	33.0	44.0	45.0	31.0	66.0
Sale (in millions)	19267.6	21557.3	57433.7	60747.8	12393.9	14300.9	20819.8	583214	87986	49053
Tangibility (%)	99.0	100.0	93.0	79.0	87.0	89.0	93.0	94.0	72.0	97.0
Growth (%)	295.0	65.0	138.0	214.0	158.0	231.0	169.0	70.0	100.0	258.0
Dividend (%)	100.5	9.1	87.5	105.8	17.9	17.2	63.5	29.2	27.4	3199.4
Inflation (%)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0

Other textile is the most risky sector to invest because its return fluctuates at highest level. The sector with least risk in return is sugar & allied and T&C. we observe that maximum dispersion in fixed assets in other sectors. Minimum shows the minimum ratio in all economic groups for each variable. Negative sign before profitability show the loss and a textile firm bears 98 percent loss in sample period. Textile sector is also leading in negative growth with -75 percent across all industries. Maximum section of table 3 specially catches the attention of reader and it needs vivid explanation. We observe that firms represent half of industries have more than 60 percent long term debt. Firm finances more than 90 percent of assets at maximum with total debt in 8 of 10 sectors but it doesn't mean that all the debt is secured with collateral. As we have already discussed that firm in Pakistan more rely on short term debt than long term debt like other developing countries (Booth et al 2001) and short term debt includes account payable, tax payable, insurance payable etc these liabilities neither claim any interest nor they are secured with assets of firm.

Therefore if firm finances its asset more than 90 percent with total leverage does not mean that firm has less than 10 percent in equity because it is long term debt and equity that make up capital structure of a firm. Qureshi (2009) reports even more than 250 percent total debt in vanaspati sector. Maximum profitability varies a high 324 percent of total asset in textile sector and a low 31 percent in T&C. It means a textile firm generates operating income that is more than three times of its assets in a year from 2003 to 2008. We observe that the largest sale produced by a firm belongs to fuel & energy sector in entire industries. Firms in four economic groups have more than 200 percent growth at maximum in total assets in a year during sample period. Maximum tangibility across the sectors ranges from 72 percent in T&C to 100 percent in other textile. An exceptional situation arises when we see maximum dividend as a percentage of total equity paid by any firm from any sectors. We observe that another firm pays 3199.4 percent of equity in dividend. This is possible and indeed the case in which a firm (Unilever Pakistan Foods Ltd "Rafhan Bestfoods Ltd") borrows huge amount and pays dividend to shareholders in a year. The figure of 3199.4 appears due to fact that when firm borrows and pays the dividend the amount of total equity is decreasing by the amount it pays in dividend. Therefore if firm pays dividend in above way the figure of dividend automatically inflates to a great extent. The maximum inflation remains at 12 percent in 2008.

Table 4 provides the summary on ratios of variables from aggregate data. Base on sample data in sample period we used in this study, each firm in Pakistan has 12.8 percent long term debt that is smaller than 16.6 percent and 26 percent reported by (Jong et al 2008) and (Booth et al 2001) respectively for average Pakistani firm. Long term debt ratio varies from a minimum of 0.0 to maximum of 84 percent. A 9-percent median long term debt is smaller

than that of (12.3 percent) discussed by (Jong et al 2008) for Pakistan. Dispersion from mean for long term debt is 14 percent.

Table 4

Descriptive statistics of Leverage and its determinants

This table presents descriptive statistics from aggregate data without considering industry dummy. First column shows variables and other consecutive five columns show mean, median, standard deviation, minimum and maximum respectively. This table is also presenting data like table 3 so the definition of variable is similar as given in table 3.

Variables	Mean	Median	STDEV	Min	Max
Lev1 (%)	12.8	9.0	14.0	0.0	84.0
Lev2 (%)	57.9	61.0	20.6	1.0	100.0
Profitability (%)	9.2	7.0	14.4	-98.0	324.0
Sale (in millions)	6205.402	1362.7	24532	0.3	583214
TNG (%)	49.2	50.0	21.5	1.0	100.0
Gth (%)	19.1	12.0	30.5	-75.0	295.0
Dvnd (%)	6.0	0.0	76.8	0.0	3199.4
Inf (%)	7.5	7.9	2.9	3.1	12.0

Total debt ranges from 1 percent to 100 percent with an average total leverage of 57.9 percent as compare to 65.6 percent average total debt reported by (Booth et al 2001) for Pakistan. Each firm in Pakistan enjoys 9.2 percent of operating income (EBIT) on every unit in TA. Pakistani firms generates profitability as low as -98 percent and as high as 324 percent. Baig Spinning Mills Ltd. generates the highest profitability because it sold its total assets and paid off debt obligation resulting in total asset decreased from 447.8 million in 2003 to only 40.9 million in 2008 that ultimately inflated the figure in profitability. It automatically inflates the figure for profitability due because selling assets reduce total assets and on other side selling assets increase the profitability. Profitability indicates the return on investment and fluctuation in return is call risk that we measure with help of standard deviation of profitability. So we can say that average risk level associated with return on investment in Pakistan is 14.4 percent. If we compare the risk with average profitability we can say average firm in Pakistan generating very low operating income as compare to its associated risk. Average sales of firm in Pakistan are much smaller than that of Chinese firm (Huang & Song, 2006). If we compare the sales of Chinese firm and Pakistani firm, we will see that firm with minimum sales in China (Huang & Song, 2006) has sales more than that of largest sale of Pakistani firm. Gross sale of Pakistani firm varies more than that varies in China (Huang & Song, 2006). We observe that each Pakistani firm has more fixed assets as compared to average fixed assets of Chinese firm (Huang & Song,

2006). A Pakistani firm has maximum 100 percent fixed assets as compare to 93.4 percent maximum fixed assets of firm in China (Huang & Song, 2006). Total asset of firms grow at an average of 19.1 percent annually. Fluctuation in growth of Pakistani firm is significant with as high as 295 percent and as low as -75 percent. Average dividend a company pays to its shareholder on their investment from 2003 to 2008 is 6 percent. Inflation in Pakistan fluctuates between 3.1 percent in 2003 to 12 percent in 2008.

5.3. Methodology

Following (Booth et al 2001), (Shah & Khan, 2007) and (Shah & Hijazi, 2004) this study is using the panel data. Panel data take into consideration both: time series features and cross section features. This means panel data considers multiple variables for multiple periods of times to draw the true picture of relationship between variables. Panel data has many advantages over time series and cross sectional sets of data. It provides large number observations; enhances the level of freedom and decreases level of co-linearity among independent variables. We use two regression model put forth by panel data analysis.

5.3.1. The fixed effect model

This study uses fixed effect model to capture the individual firm effect on leverage. To control for omitted variables that are different among firms but are constant over time this study take into consideration the individuality of each firm belonging to an industry thus the intercept for each firm will be different as mention by i withβ_{0i} in formula given below.

$$Lev_{it} = \beta_{0i} + \beta X_{it} + u_{it}$$

Where

Lev_{it} = the measure of leverage of firm i at time t

β_{0i} = the intercept of equation for firm

β = Coefficient for X_{it}

X = independent variables for leverage

u = error term

i = number of firms i.e. i = 1, 2, 3……N

t[3] = the time period i.e. t = 1, 2, 3…… T

The specification of formula to analyze the panel data in this study is as following. We used dividend and inflation into models by following (Tong & Green, 2005) and (Frank & Goyal, 2009) respectively.

[3] Panel data is also called time series cross sectional data therefore in these models "t" is used only for showing that data is used for multiple periods of time but we did not run the "t" in models

$\mathrm{Lev}_{1it} = \beta_{0i} + \beta_1 \mathrm{Profitability}_{it} + \beta_2 \mathrm{SZ}_{it} + \beta_3 \mathrm{TNG}_{it} + \beta_4 \mathrm{GTH}_{it} + \beta_5 \mathrm{Dvnd}_{it} + \beta_6 \mathrm{inf}_{it} + u_{it}$ ... *(1)*

$\mathrm{Lev}_{2it} = \beta_{0i} + \beta_1 \mathrm{Profitability}_{it} + \beta_2 \mathrm{SZ}_{it} + \beta_3 \mathrm{TNG}_{it} + \beta_4 \mathrm{GTH}_{it} + \beta_5 \mathrm{Dvnd}_{it} + \beta_6 \mathrm{inf}_{it} + u_{it}$... *(2)*

Where

Lev_{1it} = the measure of long term debt of a firm i at time t

Lev_{2it} = the measure of total debt of a firm $i$at time t

$\beta_1 \mathrm{Profitability}_{\mathrm{it}}$ = Coefficient of profitability

$\beta_2 \mathrm{SZ}_{\mathrm{it}}$ = Coefficient of size

$\beta_3 \mathrm{TNG}_{\mathrm{it}}$ = Coefficient of tangibility

$\beta_4 \mathrm{GTH}_{\mathrm{it}}$ = Coefficient of growth

$\beta_5 \mathrm{Dvnd}_{\mathrm{it}}$ = Coefficient of dividend payout

$\beta_6 \mathrm{inf}_{\mathrm{it}} = \mathrm{Coefficient\ of\ inflation}$

$\mathrm{u}_{\mathrm{it}} = \mathrm{error\ term\ of\ a\ firm\ i\ at\ time\ t}$

We use the two proxies for dependent variable leverage. Equation (1) with Lev_{1it} and equation (2) with Lev_{2it} show long term debt and total debt respectively and will determine impact of independent variables on long term debt and total debt in each industry. In this study we use industry dummy to know the industry effect base on special features of industry such as , profitability, size, growth rate ,tangibility etc. we classify the firms in ten industries namely: textile, other textile, chemicals, engineering ,sugar and allied, paper and board, cement, fuel & energy, Transportation & communication and other industries. Booth et al (2001) argue that "in the presence of measurement error the fixed-effects model can produce more biased estimators that simple pooling." Therefore we present the outcomes of both models despite the fact that we couldn't find significant difference between results of both models.

5.3.2.Pooled regression model

We used pooled regression model of panel data analysis. This is also called constant coefficient model of panel data analysis in which slopes and intercepts are constant. This model assumes that there is no effect of industry and all firms are similar with regard to capital structure. The model specification is as following.

$\mathrm{Lev}_{1\mathrm{it}} = \beta + \beta_1 \mathrm{Profitability}_{\mathrm{it}} + \beta_2 \mathrm{SZ}_{\mathrm{it}} + \beta_3 \mathrm{TNG}_{\mathrm{it}} + \beta_4 \mathrm{GTH}_{\mathrm{it}} + \beta_5 \mathrm{Dvnd}_{\mathrm{it}} + \beta_6 \mathrm{inf}_{\mathrm{it}} + \varepsilon_{\mathrm{it}}$ ..... (3)

$\mathrm{Lev}_{2\mathrm{it}} = \beta + \beta_1 \mathrm{Profitability}_{\mathrm{it}} + \beta_2 \mathrm{SZ}_{\mathrm{it}} + \beta_3 \mathrm{TNG}_{\mathrm{it}} + \beta_4 \mathrm{GTH}_{\mathrm{it}} + \beta_5 \mathrm{Dvnd}_{\mathrm{it}} + \beta_6 \mathrm{inf}_{\mathrm{it}} + \varepsilon_{\mathrm{it}}$..... (4)

Table 5

Definition of proxies

All the data (except data for inflation rate) is take from "Balance Sheet Analysis of Joint Stock Companies Listed on the Karachi Stock Exchange From 2003 to 2008". This study is using two proxies for leverage (Lev1 and Lev2). I have added debenture (item 5A) and other fixed liabilities (item 6A) to get long term debt that is used in finding Lev1. we use total long term debt plus current liabilities (item 5B) for calculating total debt. we take item 4C for book value of total assets that is addition of current assets (item B4) and fixed assets after deducting accumulated depreciation (item2C). For computing profitability we use operating profit (item 5D). I bring into play gross sale (item 1D) for computing SZ of firm. NFA in TNG proxy's definition is showing Net fixed asset after deducting accumulated depreciation. I took ready made item H2 for dividend payout ratio that is reported (D9 as % of A3) in "Balance Sheet Analysis of Joint Stock Companies Listed on the Karachi Stock Exchange From 2003 to 2008". We use consumer price index for inflation.

Proxies	Definition in this study	Definition in other selected studies
Long term debt ratio (Lev1)	$\text{Lev1} = \frac{\text{LTD}}{\text{BVTA}}$	$\text{Lev} = \frac{\text{LTD}}{\text{BVTA}}$ or $\text{Lev} = \frac{\text{LTD}}{\text{MVTA}}$ (Frank & Goyal, 2009); (Jong, et al 2008); (Booth et al, 2001)
Total debt ratio (Lev2)	$\text{Lev2} = \frac{\text{TD}}{\text{BVTA}}$	$\text{Lev} = \frac{\text{TD}}{\text{BVTA}}$ or $\text{Lev} = \frac{\text{TD}}{\text{MVTA}}$ (Frank & Goyal, 2009); (Shah & Khan, 2007); (Shah & Hijazi, 2004)
Profitability	$\text{PROFITABILITY} = \frac{\text{EBIT}}{\text{BVTA}}$	$\text{Profitability} = \frac{\text{EBIT}}{\text{BVTA}}$ (Frank & Goyal, 2009); (Tong & Green, 2005) (Margaritis & Psillaki, 2007); (Huang & Song, 2006) $\text{P} = \frac{\text{EBITDA}}{\text{TA}}$ (Eldomiaty & Ismail, 2009)
Size (SZ)	$\text{SZ} = \text{Log sale}$	$\text{SZ} = \text{Log sale}$ (Jong et al 2008); (Huang & Song, 2006); (Eldomiaty & Ismail, 2009); S= Log TA (Frank & Goyal, 2009) S= Log TA (Aggarwal & Kyaw, 2010); (Eldomiaty & Ismail, 2009)
Tangibility (TNG)	$\text{TNG} = \frac{\text{NFA}}{\text{BVTA}}$	$\text{TGA} = \frac{\text{NFA}}{\text{BVTA}}$ (Jong et al 2008); (Huang & Song, 2006); (Antoniou et al, 2008)
Growth (GTH)	$\text{Gth} = \frac{\text{BVTA}_t - \text{BVTA}_{t-1}}{\text{BVTA}_{t-1}}$	$\text{Gth} = \frac{\text{BVTA}_t - \text{BVTA}_{t-1}}{\text{BVTA}_{t-1}}$ (Shah & Khan, 2007); (Shah & Hijazi, 2004) (Eldomiaty & Ismail, 2009) $\text{Gth} = \frac{\text{MVTA}}{\text{BVTA}}$ (Jong et al 2008); (Antoniou et al. 2008)
Dividend (Dvnd)	$\text{Dvnd} = \frac{\text{Dvnd}}{\text{TE}}$	$\text{Dvnd} = \frac{\text{Dvnd}}{\text{TE}}$ (Tong & Green, 2005); (Eldomiaty & Ismail, 2009); (Frank & Goyal, 2009)
Inflation	$\text{I} = \Delta\text{CPI}$	$\text{I} = \Delta\text{CPI}$ (Huang & Ritter, 2009); (Frank & Goyal, 2009)

LTD= Long term debt; BVTA= Book value of total assets; TE= Total equity; TD= Total debt; MVTA= market value of total assets; NFA= Net fixed assets; Log = Natural logarithm; EBIT= Earnings before interest and tax; CPI= Consumer price index; EBITDA= Earnings before Interest, tax, depreciation and amortization; BVTA_t= Book value of total assets at time t; BVTA_{t-1} = Book value of total assets at time t-1.

The specification of equations 3 and 4 is similar to that of equations 1 and 2 except equations 3 and 4 has one intercept for all the firms in sample.

We apply both—fixed effect model and pooled regression model of panel data analysis in order to know relationship between leverage and its determinants with and without industry effect. We use both models of panel data analysis because of huge differences in number of observations among industries. The largest industry is textile industry with 648 observations while smallest industry is transportation and communication with just 18 observations. Therefore we use pooled andf fixed effect regression models in order to take the true picture from aggregate data by assuming no temporal or cross-sectional effect of industry.

5.4. Definition of proxies

Table 5 furnishes the summary of proxies for variables, definition of variables in this study and how the variables are calculated in other studies. We used two proxies for leverage—long term debt and total debt because of main reason that firms in Pakistan more rely on short term debt than long term debt. This will also help us that why and how differently independent variables determine the long term debt and total debt. This analysis will provide us the insight to understand the difference between long term debt and total debt with regards to capital structure.

Chapter 6
Results

6.1. Objective of the chapter

This is most exciting chapter in which author analyzes and interpret the results. In this chapter we answer the following stimulating questions: Do the results support the hypothesis? What theories determine the financing choice in Pakistan? Are the results significant? Is there any difference in the results of both fixed effect regression and pooled regression model of panel data?

6.2. Results of panel data analysis

The asterisk reference marks ***, ** and * point out the statistical significance at 1%, 5% and 10% level respectively. Obs. is total number of observation that this study obtained from multiplication of number of firms in an industry and number of years ($\text{Total observations} = n \times t$). Adj-$R^2$ is ajusted R square that shows the value for the fixed effect regression and pooled regression in tables (6), (7), (8A) and (8B) repectively. P-values are reported on very next row below each industry/ sector. For concluding whole story we applied both pooled regression models and fixed effect model of panel analysis on all firms without considering the industry dummy and results are depicted in table 8A and 8B respectively. Column Adj-R2 in tables 6, 7, 8A and 8B show n% of variance in leverage can be predicted by combination of independent variables. Closer the Adj-R^2 to 100% the more the variability of dependent variable is being explained by variation of independent variables. Coefficient in columns for independent variables can be interpreted as each of value in independents variables' columns tell us the average change we can expect in leverage given one unit change in independent variable while all the other independent variables are held constant.

6.2.1. Profitability

We conclude following relationship between profitability and leverage[4] with and without industry dummy from tables 6, 7, 8A and 8B.

- Pooled Model
  - There is significant negative relationship between profitability and long debt in 4 industries (see table 6)
  - There is significant negative relationship between profitability and total debt in 7[5] industries (see table 7).

[4]By word leverage we mean both long term debt as well as total debt.

- There is significant negative relationship between profitability and leverage. (see table 8A)

❖ Fixed effect model

- There is significant negative relationship between profitability and long term debt in 7 industries. (see table 6)
- We detect significant negative relationship between profitability and total debt in 8 industries. (see table 7)
- We notice significant negative relationship between profitability and Leverage. (see table 8B)

These results are consistent with theoretical prediction of POT (Hypothesis 1b) that was given by (Myers, 1984) which tells hierarchy of preference in which firm prefer internal financing to external financing and prefer debt to equity in external financing to support its operations. The negative sign of coefficient for profitability is similar to that of (Tong & Green, 2005), (Shah & Khan, 2007), (Booth et al 2001).The significant negative coeffitient for profitability in this study is contrary to that of (Margaritis & Psillaki, 2007), this may be because of different sample and country effects. We also find that Pakistani firms with profitability are responding more negatively to total debt than long term debt. We conclude with statement that profitable Pakistani firms tend to have less leverage.

6.2.2. Size

We find monotonic relationship between size and leverage. All the statistically significant results for size in tables 6, 7, 8A and 8B show positive relationship between size and leverage.It means larger firms in pakistan tend to have more leverage. All the above results are consistent with trade-off prediction (hypothesis 2a) and (Titman & Wessels, 1988) view that larger firm diversification advantage reduces bankruptacy therefore relationship between the size and leverage is positively correlated. Based positive coefficient for size in tables 8A and 8B we can say that larger Pakistani firms tend to borrow more leverage and vice versa. All the significant positive results for size are consistent to our hypothesis 2a; and do not confirm (Rajan & Zingales, 1995) view that larger firms are well known which decreases the chance of undervaluation of new equity. Irrespective to model used, when we switch from long term debt (table 6) to total debt (table 7), the significant positive coefficient for size is noticed in more industries because of the fact that Pakistani firms more depend on short term debt than long term debt. These findings for size are contradicting with those of

[5] We ignore the results from transport and communication (T&C) sector because of fact that T&C is the smallest sector with 3 firms and 18 observations. So result in T&C may be misleading in generalizing to all firms in this sector.

Table 6

Long term debt ratio

This table provides the summary of results showing relationship between long term debt and its determinants. Using the industry dummy we run pooled regression and fixed effect regression of panel data in SPSS 18 . First row indicates the outcome of pooled regression and second row shows the statistics of fixed effect model. We follow the booth et al (2001) in presenting the outcomes in this table. Fixed effect model in SPSS 18 does not calculate the R-square, we used R-square is equal to residual variance of empty model minus residual variance of full model divided by residual variance of empty model. Here empty model we mean that run the model without using independent variables. After finding the R square we find adjusted R-square by using adjusted R-square calculator. Column 1 indicates sector or industries and their relative p-value which denoted by sig. in results on SPSS results window. Column 2 is intercept and denoted by constant in regression equation.

Sectors	Intercept	Profit	Size	Tangibility	Growth	Dividend	Inflation	Obs.	Adj-R^2
Textile	-0.251	-0.091	0.033	0.342	0.022	-0.052	0.048	648	0.234
(p-value)	(0.000)***	(0.058)*	(0.000)***	(0.000)****	(0.138)	(0.57)	(0.801)		
	-0.19123	-0.10288	0.027	0.302	0.022	-0.001	0.084	648	0.246
	(0.000)***	(0.006)***	(0.000)***	(0.000)***	(0.042)***	(0.985)	(0.526)		
O Textile	0.226	-0.125	0.001	-0.124	0.16	-0.832	-0.778	72	0.077
(p-value)	(0.063)*	(0.085)*	(0.884)	(0.252)	(0.145)	(0.226)	(0.214)		
	.001	-.183	.014	.106	.172	.393	-.752	72	0.216
	(0.995)	(0.001)***	(0.328)	(0.488)	(0.033)**	(0.517)	(0.069)*		
Chemical	-0.009	-0.275	0.006	0.22	0.089	0.151	-0.384	186	0.301
(p-value)	(0.818)	(0.000)***	(0.182)	(0.000)***	(0.008)***	(0.040)**	(0.214)		
	-.0198	-.1500	.0045	.2427	.0583	.0126	-.2821	186	0.276
	(0.718)	(0.053)*	(0.501)	(0.000)***	(0.038)**	(0.853)	(0.241)		
Engineering	-0.079	-0.113	0.008	0.408	-0.004	0.041	-0.349	186	0.295
(p-value)	(0.278)	(0.337)	(0.223)	(0.000)***	(0.897)	(0.698)	(0.379)		
	-.0136	-.1360	.0050	.2250	.0310	-.0060	-.1720	186	0.190
	(0.848)	(0.10)*	(0.552)	(0.000)***	(0.004)***	(0.887)	(0.299)		
Sugar & Allied	-0.183	-0.197	0.023	0.241	0.138	-0.052	-0.033	150	0.332
(p-value)	(0.015)**	(0.142)	(0.035)**	(0.000)***	(0.000)***	(0.867)	(0.928)		
	-.119	-.159	.007	.327	.088	.154	.062	150	0.238
	(0.178)	(0.084)*	(0.550)	(0.000)***	(0.000)***	(0.490)	(0.791)		

Sectors	Intercept	Profit	Size	Tangibility	Growth	Dividend	Inflation	Obs.	Adj-R^2
Paper & Board	-0.086	-0.458	0.033	0.186	0.033	-0.379	-0.691	42	0.339
(p-value)	(0.494)	(0.116)	(0.008)***	(0.050)**	(0.368)	(0.476)	(0.47)		
	-.179	-.206	.034	.191	.018	-.265	-.004	42	0.102
	(0.299)	(0.493)	(0.135)	(0.149)	(0.590)	(0.601)	(0.996)		
Cement	-0.464	-0.209	0.053	0.472	0.012	0.146	-0.366	96	0.247
(p-value)	(0.012)**	(0.254)	(0.012)**	(0.000)***	(0.792)	(0.574)	(0.608)		
	-.352	-.355	.025	.648	.001	.151	-.493	96	0.23
	(0.136)	(0.051)*	(0.337)	(0.000)***	(0.959)	(0.466)	(0.384)		
Fuel & Energy	-0.205	0.287	0.009	0.605	0.141	-0.696	-0.673	102	0.409
(p-value)	(0.052)*	(0.141)	(0.353)	(0.000)***	(0.296)	(0.066)*	(0.37)		
	-.108	.177	.001	.463	0.053	-0.205	-0.347	102	0.352
	(0.454)	(0.210)	(0.879)	(0.000)***	(0.520)	(0.444)	(0.375)		
Trans & com	0.09	0.032	0.005	-0.11	0.015	-0.071	-0.915	18	0.515
(p-value)	(0.11)	(0.798)	(0.219)	(0.038)*	(0.616)	(0.539)	(0.030)**		
	0.089	0.032	0.004	-0.110	0.015	-0.070	-0.915	18	0.826
	(0.110)	(0.797)	(0.219)	(0.038)**	(0.615)	(0.538)	(0.03)**		
Others	-0.077	-0.332	0.018	0.138	0.008	0.002	0.008	276	0.273
(p-value)	(0.008)***	(0.000)***	(0.000)***	(0.000)***	(0.68)	(0.528)	(0.973)		
	-0.071	-0.238	0.014	0.160	-0.002	0.000	0.038	276	0.218
	(0.048)**	(0.000)***	(0.007)***	(0.000)***	(0.862)	(0.739)	(0.813)		

Table 7

Total debt ratio

This table provides the summary of results showing relationship between total debt and its determinants. Using the industry dummy we run pooled regression and fixed effect regression of panel data in SPSS 18. All the other statistics have been produced as produced in table 6.

Sectors	Intercept	Profit	Size	Tangibility	Growth	Dividend	Inflation	Obs.	Adj-R^2
Textile	0.496	-0.15	0.013	0.073	-0.039	-0.105	0.63	648	0.029
(p-value)	(0.000)***	(0.024)**	(0.030)**	(0.070)*	(0.056)*	(0.411)	(0.016)**		
	.387	-.152	.028	.061	-.006	.051	.700	648	0.04
	(0.000)***	(0.000)***	(0.000)**	(0.203)	(0.650)	(0.571)	(0.000)***		
O Textile	0.333	-0.209	0.021	0.128	0.444	-1.869	-0.078	72	0.081
(p-value)	(0.199)	(0.178)	(0.301)	(0.58)	(0.062)*	(0.206)	(0.953)		
	.209	-.414	.039	.168	.217	-.102	-.431	72	0.021
	(0.536)	(0.000)***	(0.203)	(0.589)	(0.170)	(0.933)	(0.593)		
Chemical	0.514	-1.087	0.014	0.146	0.043	0.478	-0.542	186	0.418
(p-value)	(0.000)***	(0.000)***	(0.046)**	(0.009)***	-0.408	(0.000)***	(0.263)		
	0.466	-0.192	-0.003	0.234	0.028	-0.034	0.036	186	0.149
	(0.000)***	(0.037)**	(0.799)	(0.012)**	(0.360)	(0.658)	(0.893)		
Engineering	0.55	-1.242	0.033	-0.048	0.086	0.108	-0.93	186	0.416
(p-value)	(0.000)***	(0.000)***	(0.000)***	(0.472)	(0.010)***	(0.348)	(0.034)**		
	0.629	-0.967	0.028	-0.344	0.069	0.054	-0.704	186	0.366
	(0.000)***	(0.000)***	(0.042)**	(0.000)***	(0.003)***	(0.539)	(0.026)**		
Sugar and Allied	-0.389	-0.955	0.107	0.473	0.088	-0.017	0.324	150	0.385
(p-value)	(0.008)***	(0.000)***	(0.000)***	(0.000)***	(0.105)	(0.978)	(0.648)		
	0.425	-0.737	0.026	-0.028	0.035	0.392	0.510	150	0.01
	(0.003)	(0.000)***	(0.153)	(0.800)	(0.178)	(0.193)	(0.103)		

Sectors	Intercept	Profit	Size	Tangibility	Growth	Dividend	Inflation	Obs.	Adj-R^2
Paper and Board	0.289	-1.402	0.055	-0.117	0.085	0.616	-1.087	42	0.24
(p-value)	(0.189)	(0.008)***	(0.011)**	(0.464)	(0.188)	(0.505)	(0.512)		
	-0.237	-0.468	0.093	-0.052	0.010	0.381	0.766	42	0.072
	(0.472)	(0.207)	(0.074)*	(0.776)	(0.781)	(0.511)	(0.478)		
Cement	0.605	-0.39	-0.013	0.256	-0.067	0.198	-0.66	96	0.181
(p-value)	(0.001)***	(0.034)**	(0.528)	(0.025)**	(0.142)	(0.444)	(0.351)		
	0.588	-0.390	-0.010	0.276	-0.050	-0.063	-0.875	96	0.204
	(0.008)***	(0.018)**	(0.680)	(0.042)**	(0.127)	(0.732)	(0.085)*		
Fuel and Energy	-0.065	-0.451	0.059	0.313	0.482	-0.498	-0.698	102	0.408
(p-value)	(0.63)	(0.075)*	(0.000)***	(0.011)**	(0.007)***	(0.307)	(0.472)		
	0.080	-0.357	0.047	0.091	0.304	0.383	-0.276	102	0.23
	(0.675)	(0.042)**	(0.006)***	(0.555)	(0.004)***	(0.251)	(0.566)		
Trans & com	0.696	0.472	-0.038	-0.359	-0.108	0.857	0.026	18	0.614
(p-value)	(0.004)***	(0.285)	(0.015)**	(0.043)**	(0.305)	(0.053)*	(0.982)		
	0.958	0.011	-0.038	-0.697	-.156	0.668	0.010	18	0.07
	(0.141)	(0.973)	(0.488)	(0.002)***	(0.043)**	(0.029)**	(0.990)		
Others	0.122	-0.936	0.073	-0.05	-0.012	0.024	0.114	276	0.22
(p-value)	(0.076)*	(0.000)***	(0.000)***	-0.414	-0.785	(0.000)***	-0.843		
	0.342	-0.207	0.030	-0.173	0.015	0.016	0.459	276	0.044
	(0.000)***	(0.033)**	(0.008)***	(0.044)**	(0.486)	(0.000)***	(0.076)*		

Table 8A

Outcomes of the pooled regression models

This table indicates the outcomes of pooled regression without using any dummy variable. This table has been drawn to develop conclusion about relationship between dependent and independent variable.

Overall	Intercept	Profit	Size	Tangibility	Growth	Dividend	Inflation	Obs.	Adj-R^2
Lev 1 (equation 3)	-0.109	-0.193	0.014	0.308	0.037	-0.001	-0.058	1776	0.306
(p-value)	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.820)	(0.641)		
t-value	-5.919	-7.031	7.270	21.044	3.797	-0.227	-0.466		
Lev 2 (equation 4)	0.3008	-0.5860	0.0337	0.1309	0.0149	0.0200	0.2249	1776	0.168
(p-value)	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.359)	(0.001)***	(0.272)		
t-value	9.946	-12.988	10.761	5.457	0.918	3.422	1.098		

Table 8B

Outcomes of fixed effect regression models

This table shows the statistics of fixed effect regression without industry dummy. Column 1 indicates the parameters shows intercept of leverage and independent variables.

Parameter	Coefficient	Std. error	t-value	p-value
Lev1 (Intercept)	-0.098443	0.024557	-4.009	(0.000)***
Profitability	-0.154454	0.022455	-6.878	(0.000)***
SZ	0.012913	0.002888	4.472	(0.000)***
TGA	0.298731	0.020175	14.807	(0.000)***
Gth	0.027071	0.006726	4.025	(0.000)***
DPO	-0.000217	0.002436	-0.089	0.929
Inf	-0.069819	0.077928	-0.896	0.370
R-square	0.330395	Adjusted R-square	0.328129	
Lev2 (Intercept)	0.384530	0.038594	9.963	(0.000)***
Profitability	-0.310156	0.029739	-10.429	(0.000)***
SZ	0.027130	0.004579	5.925	(0.000)***
TGA	0.005960	0.030292	0.197	0.844
Gth	0.014514	0.008759	1.657	(0.098)*
DPO	0.016042	0.003173	5.056	(0.000)***
Inf	0.222690	0.101600	2.192	(0.029)**
R-square	0.120692305	Adjusted R-square	.117617	

(Shah & Hijazi, 2004) and (Shah & Khan, 2007) because they find negative and no relationship between size and leverage respectively. We couldn't find any industry effect with regard to contradicting sign for size because all the significant results for size in tables 6, 7, 8A and 8B presenting similar scenario.

6.2.3. Tangibility of assets

The strong and statistically significant explainatory variable of leverage is tangibility. All the significant results for tangibility from tables 6, 7, 8A and 8B confirm strong and significant positive relationship between tangibility and leverage. The exception is for other sector and engineering (fixed effect; table 7) in which we find significant negative relationship between tangibility and total debt. The highest 60.5 percent coefficient in fuel and energy sector can be interpreted as other things remain constant each unit invested in fixed asset is financed 60.5 percent by long term debt.The strong and significant positive coeffient for tangibility confirm the theoretical prediction of trade-off model for tangibility and consistent with our hypothesis 3a. The results of this study with regard to tangilbility are also consistnent with those of (Margaritis & Psillaki, 2007) , (Frank & Goyal 2009) from developed world and (Shah & Khan, 2007) (Huang & Song, 2006) and (Jong, et al. 2008)[6] from developing world but inconsistent with that of (Booth et al 2001) because they find negative relationship between tangibility and leverage in developing countries including Pakistan.

6.2.4. Growth

We find significant positive coefficient for growth from tables 6 to 8B irrespective to models used. The only exception is textile (pooled model; table 7) with significant negative relationship between growth and total debt the rest of significant results for growth confirm positive relationship between growth and leverage (see tables 6, 7, 8A and 8B). It mean growing textile companies in Pakistan avoid to borrow more total debt unlike rest of sectors with significant positive coefficient for growth tend to finance their growth with leverage. Table 8B indicates not only significant positive relationship between growth and long term debt (like table 8A) but it also confirms the positive relationship between growth and total debt. Therefore we can conclude that there is significant positive relationship between growth and leverage. These results are consistent with predictions of POT (hypothesis 4a) and that of (Tong & Green, 2005). The results are inconsistent with those of (Huang & Song, 2006) , (Shah & Hijazi, 2004) (Qureshi, 2009) and (Shah & Khan, 2007) because all of them find significant negative relationship between debt and leverage.

[6] Jong; Kabir and Nguyen investigate capital structure of firm in 42 countries with 21 countries from developing world including Pakistan.

6.2.5. Dividend

We find seven significant results for dividend from tables 6, 7, 8A and 8B and all are suggesting positive coefficient for dividend except fuel and energy sector (pooled model; table 6). It means firms in fuel and energy sector in Pakistan pay more dividend tend to have less amount in long term debt and vice versa because of fact that paying dividend not only reduces free cash flow agency problem but also get their name include in dividend paying firms. This can not only build confidence of firm but also make reputation of firms in eyes of existing and potential shareholders. contradicting to fuel and energy sector firms in chemical sector are paying more dividend tend to borrow more leverage. Results in tables 8A and 8B also cleary suggest the significant positive relationship between dividend and total debt. It means firms in Pakistan that pay more dividend tend to finance their business with total debt because paying more dividend is also decreasing the price of stock by amount paid in dividend (Ross et al 2008) and it seems less attractive to issue equity at decreased price. Significant positive relationship between dividend and leverage is consistent with prediction of POT and hypothesis 5a. These results are also consistent with those of (Tong & Green, 2005), (Qureshi, 2009) and (Baskin 1989) and confirm (Adedeji, 1998) view that because of reluctance to cut the dividend in the condition of earning shortage; firms borrow to pay the dividend.

6.2.6. Inflation

We put forth following summary from the table 6, 7, 8A and 8B with regard to significant relationship between inflation and leverage:

- Pooled model
  - We observe negative relationship between inflation and long term debt in other textile. (see table 6)
  - We find positive relationship between inflation and total debt in textile sector with maximum number of observations. (see table 7)
  - We notice negative relationship between inflation and total debt in engineering sector. (see table 7)
- Fixed model
  - We detect positive relationship between inflation and total debt in textile and other sectors that are at first and second place respectively with regards to number firms.
  - We find negative relationship between inflation and total debt in engineering and cement sectors.
  - We noticed significant positive relationship between inflation and total debt. (see table 8B).

For concluding the non-monotonic results we focus on the table 8B because it reperesent the fixed effect of whole the population in this study. So we can conclude that there is positive relationship between inflation and total debt and consistent with market timing hypothesis 6b. This is also consistent with (Frank & Goyal, 2009) view that when firm expects that the inflation rate will be higher in future or realizing the current rate of inflation is low, the companies issuing debt securities. The inflationary trend in Pakistan from 2003 to 2008 indicating more inflation in every subsequent period, and any delay in issuing total debt means more cost of debt. Therefore firm need to borrow today instead of in future specially in the condition when inflationary trend showing continuous increase in inflation.

Chapter 7
Conclusion

7.1. Objective of the chapter

The main objective of this chapter is to conclude the whole study. This is shortest chapter of the study that comprises on conclusion. We conclude that how this study is contributing into literature of capital structure.

7.2. Conclusion of the study

This study investigates capital structure of nonfinancial firms registered on Karachi Stock Exchange Pakistan from 2003 to 2008 to find what independent variables determine the capital structure of firm. We also tend to find that what theory (ies) of capital structure explains the financing behavior of Pakistani firm. We select six independent variables that have been used by previous studies. We find following results using fixed effect model and pooled regression model of panel data analysis.

- Firms that have more profit tend to have less leverage.
- Firms that are lager in size tend to have more leverage.
- Firms with more tangibility (fixed asset) tend to have more leverage.
- Firms with more growth opportunities tend to have more long term debt.
- Firms that pays more dividend tend to have more total debt.
- Firms that expect contineous increase inflation tend to borrow more than in future.

The negative relationships between profitability and leverage; positive relationships between growth and long term debt and dividend and total debt of firm are confirming the presence of POT in determining the financing behavior of Pakistani firms. The strong positive relationships between tangibility and leverage and size and leverage support the theortical predictions of TOT. Positive relationship between inflation and leverage confirm the presence of MTT. Beside results in tables 6 and 7 we mainly focus on results of pooled regression and fixed effect of panel data analysis in table 8A and 8B to finally conclude the outcomes because of basic fact that these tables represent the outcome of aggregate data without industry dummy variable. We couldn't find any industry effect with regard to contradicting signs except for inflation but we found different level of leverage across industries in Pakistan. Even though selected variable in this study determines the capital structure significantly but there is still need to consider as many variable as possible to get closed in fully determining the capital structure of Pakistani firms. We find partially different results from other studies in Pakistan as well as in developing countries. Conclusion from perior research from developed world is also valid in Pakistan.

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