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THE EFFECTS OF MACRO-ECONOMIC FACTORS ON THE CAPITAL STRUCTURE OF TURKISH FIRMS

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ABSTRACT

Master Thesis

THE EFFECTS OF MACRO-ECONOMIC FACTORS ON THE CAPITAL STRUCTUR OF TURKISH FIRMS

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Capital structure is one of the most important issues in corporate finance and a considerable number of empirical studies have been made on this topic in the developed countries. However, there has not been sufficient research in the developing countries and in Turkey. The aim of this study is to contribute to the scientific research on this topic.

This study analyzes the effects of macro-economic and firm-specific factors on the capital structure of Turkish manufacturing firms traded on the Istanbul Stock Exchange. The data is obtained from the Central Bank of Turkey and ISE. The period investigated in the study runs from 1996-2004 and the analysis is applied to 136 firms.

The results show that profitability, tangibility and market capitalization to GDP ratio have negative relationship with total and short-term leverage ratios. In contrast to this, tangibility and market capitalization to GDP ratio revealed a positive relationship with long-term debt ratio. Size, money supply to GDP ratio and interest rate are found to be positively related to leverage ratios.

Key Words: 1) Capital Structure, 2) Leverage Ratio, 3) Profitability, 4) Size, 5) Interest Rate

ÖZET

Yüksek Lisans Tezi

MAKRO-EKONOMİK FAKTÖRLERİN TÜRK FİRMALARININ SERMAYE YAPISI ÜZERİNDE ETKİLERİ

Jalil JAVADOV

Dokuz Eylül Üniversitesi
Sosyal Bilimler Enstitüsü
İngilizce İşletme Ana Bilim Dalı
İngilizce Finansman Programı

Sermaye yapısı, işletme finansının en önemli konularından birisidir ve gelişmiş ülkelerde bu konuda çok sayıda ampirik çalışmalar yapılmıştır. Buna karşın, gelişmekte olan ülkelerde ve Türkiye'de yeterince çalışma bulunmamaktadır. Bu çalışma ile bu konudaki bilimsel katkı yapmak hedeflenmektedir.

Bu çalışmada, makroekonomik ve firmaya özgü faktörlerin İstanbul Menkul Kiymetler Borsasında (İMKB) işlem gören Türk imalat sanayindeki firmalarının sermaye yapılarına etkileri analiz edilmektedir. Veriler T.C Merkez Bankası ve İMKB'den elde edilmiştir. Çalışmada incelenen dönem 1996 – 2004 yıllarını kapsamakta ve ele alınan firma sayısı da 136'dır.

Çalışmada; karlılık, maddi duran varlıkların toplam varlıklara ve piyasa kapitalizasyonun GSYİH'ya oranlarının toplam borç ve kısa vadeli borç oranları ile negatif ilişkili olduğu sonucuna varılmıştır. Ayrıca ,maddi duran varlıkların toplam varlıklara ve piyasa kapitalizasyonun GSYİH'ya oranları uzun vadeli borç oranıyla pozitif ilişki göstermektedir. Firma büyüklüğü, para arzının GSYİH'ya oranı ve faiz oranı ile borç oranları arasında pozitif ilişki elde edilmiştir.

Anahtar Kelimeler: 1) Sermaye Yapısı, 2) Borçlanma Rasyosu, 3) Karlılık, 4) Firma Büyüklüğü, 5) Faiz Oranı

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INTRODUCTION

In a fundamental sense, the value of a firm is the discounted stream of expected cash flows generated by its assets. The assets of a firm are financed by investors who hold various types of claims on the firm's cash flows. Debt holders have a relatively safe claim on the stream of cash flows through contractual guarantees of a fixed schedule of payments. Equity holders have a more risky claim on the residual stream of cash flows. The mix of debt funds and equity funds (leverage) employed by a firm define its capital structure. Firms attempt to issue the particular combination of debt and equity, subject to various constraints, that maximizes overall market value. The mix of funds affects the cost and availability of capital and, thus, firms' real decisions about investment, production and employment.

Capital structure has aroused intense debate in the financial management arena for nearly half-century. Since the seminal work of Modigliani and Miller (1958), the basic question of whether a unique combination of debt and equity capital maximizes the firm value, and if so, what factors could influence a firm's optimal capital structure have been the subject of frequent debate in the capital structure literature.

Capital structure is considered one of the most prolific areas of research in corporate finance. Determinants of capital structure have been investigated over the past fifty years but the results have yielded little conclusive guidance for managers and decision makers choosing between debt and equity in financing firms.

The knowledge of capital structures has mostly been derived from data from developed economies that have institutional similarities. However, developing countries, which have many institutional differences, have rarely been investigated.

The aim of this study is to analyze the effects of macro-economic and firm-specific factors on the capital structure through an empirical analysis consisting of 136 manufacturing companies traded on ISE for the period 1996-2004.

The study is structured as follows. In the first chapter, the theories of capital structure, which are the trade-off theory, the pecking-order theory and the free cash flow theory, are discussed. The second section of this chapter investigates target leverage models. Financing hierarchies are also discussed in detail.

Second chapter provides literature review on the determinants of capital structure. Within this framework, the influence of firm-specific factors, ownership structure, corporate governance and macro-economic factors on capital structure were discussed.

The last chapter of the thesis includes the empirical analysis of the effects of macro-economic and firm-specific factors on the capital structure of the 136 manufacturing firms traded on ISE. The sample is defined and the methodology and the hypothesis of the study are conducted. Finally, the results are given and interpreted in order to find evidence for the relationship between macro-economic and firm-specific factors with the capital structure. The last part concludes by identifying the limitations of the study and research issues that require further attention.

CHAPTER 1:

THE THEORIES OF CAPITAL STRUCTURE

Capital structure theories are the most puzzling issues in the corporate finance literature which attracted many economists. The study of capital structure attempts to explain the mix of securities and financing sources used by corporations to finance real investment. Most of the research on capital structure has focused on the proportions of debt versus equity observed on the right-hand sides of corporations' balance sheets. Capital structure is a mix of debt and equity capital maintained by a firm. Capital structure is also referred as financial structure of a firm. The capital structure of a firm is very important since it is related to the ability of the firm to meet the needs of its stakeholders.

1.1. Modigliani and Miller (MM) Theory

Surveys of the theory of optimal capital structure always start with the Modigliani-Miller (1958) proof that financing doesn't matter in perfect capital markets. Modigliani-Miller's (1958) seminal paper on corporate financial structure is founded upon a number of restrictive assumptions. These assumptions include no transaction costs, no taxes or inflation, the equality of borrowing and lending rates, no bankruptcy costs and independence of financing and investment decisions. They showed that capital structure decisions do not affect firm value when capital markets are perfect, corporate and personal taxes do not exist, and the firm's financing and investment decisions are independent. Their work presented a logically consistent proof that, given unfettered arbitrage opportunities, no possibility that firms could go bankrupt, and no corporate taxes, the total market value of the firm is unaffected by the amount of debt that it issues.

The proof brought clarity, precision, and controversy to theoretical inquiries concerning the optimal debt policy of corporations. The controversy was heightened by the fact that under the assumption that the corporate tax rate is positive and that interest payments are deductible from taxable income, the Modigliani-Miller analysis implies

that an optimal capital structure consists entirely of debt. This implication of their analysis generated a good deal of comment, since an infinite debt-equity ratio is inconsistent with both common sense and established practice. Indeed even Modigliani and Miller did not advocate the exclusion of equity financing and argued that a number of considerations outside of their model render such a policy unsuitable (Scott, 1976: 33).

Recently the topic of optimal capital structure and the Modigliani-Miller paradigm in particular have gained increased importance in the study of the regulated firms; as such firms have been encouraged to increase their levels of debt. Theoretically the Modigliani-Miller analysis implies that regulators can pass the resulting tax savings on to consumers by lowering the maximum price they allow a regulated firm to charge. However, the use of this theory in such a manner can be dangerous because it fails to consider the detrimental effects increased debt can have upon a firm. Modigliani and Miller (1958) demonstrated that higher levels of debt can increase the value of the firm if corporations can borrow at a lower rate of interest than can investors (Scott, 1976: 33-34).

Until today there hasn't been any universal theory of the debt-equity choice, but there are several useful conditional theories, however. The literature on determinants of capital structure is well-known of the existence of three theories: trade-off, pecking order and free cash flow (or managerial agency costs). Each theory presents a different explanation of corporate financing.

The trade-off theory is concerned with the trade-off between debt tax shields (or tax saving) and bankruptcy costs, according to which an optimal capital structure is assumed to exist. The pecking order theory assumes hierarchal financing decisions where firms depend first on internal sources of financing and, if these are less than the investment requirements, the firm seeks external financing from debt as a second source, then equity as the last resort. The free cash flow theory assumes that debt presents fixed obligations (debt interests and principals to pay) that have to be met by the firm. These

obligations are assumed to take over the firm's free cash flow (if exists), therefore prevents managers from over consuming the firm's financial resources. It was recognized that the three theories are "conditional" in a sense that each works out under its own assumptions and propositions. That is, none of the three theories can give a complete picture of the practice of capital structure. This means that firms can pursue capital structure strategies that are conditional as well. That means that when the business conditions change, the financing decisions and strategies may change, moving from one theory to another. This is the main reason that the literature does not include one theory (or one explanation) on the determinants of capital structure. In fact, an interrelationship can be observed between and among the three theories of capital structure (Eldomiaty, 2007: 25).

1.2. The Trade-Off Theory

It consists of several theorems which describe the forces underlying the trade-off between the advantageous and disadvantageous effects of debt financing on firm value. On the one hand, increasing leverage by taking on more debt means that the firm can profit more from debt tax shields, which will increase its value (Modigliani and Miller's (1963) Proposition I under corporate taxes). On the other hand, higher leverage leads to higher (expected) direct and indirect costs of financial distress, decreasing the firm's value. Direct costs include the legal and administrative costs of liquidation or reorganization. Indirect costs refer to the impaired ability to conduct business and to agency costs of debt that are specifically related to periods of high bankruptcy risk (such as the incentive for stockholders to select risky projects) (Haas and Peeters, 2006: 135).

Frank and Goya (2003) argue that the tax savings seem large and certain while the deadweight bankruptcy costs seem minor. This implies that many firms should be more highly levered than what they really are. Second, if this theory were the key force, then the tax variables should show up powerfully in empirical work. Since the tax effects seem empirically to be fairly minor, he suggests that this theory is not grounded in

evidence. Third, the theory predicts that more profitable firms should carry more debt since they have more profits that need to be protected from taxation. Thus, while the tax/bankruptcy costs trade-off theory remains the dominant model in textbooks, its ability to predict actual outcomes is widely questioned.

Higher profitability implies lower expected costs of financial distress and so the firm will use more debt relative to book assets. Predictions about how profitability affects market leverage ratios are unclear. Similarly, high market-to-book ratio implies higher growth opportunities and thus higher costs of financial distress. Less debt is therefore used.

Size, as measured by assets, sales, or firm age, are inverse proxies for volatility and for the costs of bankruptcy. Thus the trade-off theory predicts that larger and more mature firms use more debt. It is worth mentioning that sales might also be serving empirically as a proxy for profits that need to be sheltered from taxation. If this is the right interpretation of sales, then higher sales should be associated with more leverage.

Financial distress is more costly for high growth firms, which means such firms will use less debt. Change in assets and change in natural log of sales are proxies for growth. Capital expenditure is commonly in a form that can be used for collateral to support debt.

Firms within an industry share exposure to many of the same forces and such forces will be lead to similar tradeoffs. Furthermore, product market competition creates pressure for firms to mimic the leverage ratio of other firms in the industry. Regulated firms have more stable cash flows and lower expected costs of financial distress and thus have more debt.

A higher marginal tax rate increases the tax-shield benefit of debt. Non-debt tax shields are a substitute for the interest deduction associated with debt. All of these variables should be negatively related to leverage.

If interest rates increase, existing equity and existing bonds will both drop in value. The effect of an increase in interest rates would be greater for equity than for debt. Thus, equity falls more, leaving the firm more highly levered. In a tradeoff model, it seems that equity has become somewhat more expensive, and so there should be little or no offsetting actions. Thus, it is predicted that an increase in interest rate increases leverage (Frank and Goyal, 2003: 4).

1.3. The Pecking Order Theory

This theory says that the firm will borrow, rather than issuing equity, when internal cash flow is not sufficient to fund capital expenditures. Thus the amount of debt will reflect the firm's cumulative need for external funds. It argues that, due to asymmetric information between managers and investors, firms prefer internal financing to debt financing and debt financing to issuing shares. Empirical studies show that, although trade-off considerations may be important in the longer term, pecking order behavior may matter or even dominate in the short term (Hovakimian, 2001: 2).

Equity is subject to serious adverse selection, debt has only minor adverse selection problems, and retained earnings avoid the problem. From the point of view of an outside investor, equity is strictly riskier than debt. Both have an adverse selection risk premium, but that premium is larger on equity. Therefore, an outside investor will demand a higher rate of return on equity than on debt. From the perspective of those inside the firm, retained earnings are a better source of funds than debt is, and thus, debt is a better deal than equity financing. Accordingly, retained earnings are used when possible. If there is an inadequate amount of retained earnings, then debt financing will be used. Only in extreme circumstances is equity used. This is a theory of leverage in which there is no notion of an optimal leverage ratio. Observed leverage is simply the sum of past events.

The firm size variables are ambiguous in the pecking order consideration. On the one hand, larger firms might have more assets in place and thus a greater damage is

inflicted by adverse selection. On the other hand, larger firms might have less asymmetric information and thus will suffer less damage by adverse selection. If sales are more closely connected to profits than just to size, then one might be inclined to expect a negative coefficient on log sales.

Capital expenditures need to be paid for and they directly enter the financing deficit. This implies that capital expenditures should be positively related to debt. R&D expenditures are likely to be better assessed by insiders and are particularly prone to adverse selection problems. Thus, the prediction is that R&D is positively related to leverage.

Like capital expenditures, dividends are part of the financing deficit. It is therefore expected that a dividend-paying firm will use more debt.

A credit rating involves a process of information revelation by the rating agency. Thus, a firm with an investment grade debt rating should have less of a problem with adverse selection. Accordingly, firms with such ratings should use less debt and more equity. Finally we might expect that beliefs are quite volatile for firms with volatile stocks. It seems plausible that such firms suffer more from adverse selection. If so, then such firms would have higher leverage.

An increase in the Treasury bill rate should have no effect as long as the firm has not yet reached its debt capacity. However, the debt capacity might plausibly be a decreasing function of the interest rate. When a firm reaches its debt capacity, it is supposed to turn to more expensive equity financing under the pecking order theory. Thus, there is no effect, or else an increase in the interest rate will tend to reduce leverage under the pecking order theory (Frank and Goyal, 2003: 6).

1.4. The Free Cash Flow Theory

It says that dangerously high debt levels will increase value, despite the threat of financial distress, when a firm's operating cash flow significantly exceeds its profitable

investment opportunities. The free cash flow theory is designed for mature firms that are prone to overinvest (Myers, 2001: 81).

Free cash flow is cash flow in excess of that required to fund all projects that have positive net present values when discounted at the relevant cost of capital. Conflicts of interest between shareholders and managers " over payout policies are especially severe when the organization generates substantial free cash flow. The problem is how to motivate managers to disgorge the cash rather than investing it at below the cost of capital or wasting it on organization inefficiencies.

Managers with substantial free cash flow can increase dividends or repurchase stock and thereby pay out current cash that would otherwise be invested in low-return projects or wasted. This leaves managers with control over the use of future free cash flows, but they can promise to pay out future cash flows by announcing a "permanent" increase in the dividend. Such promises are weak because dividends can be reduced in the future. The fact that capital markets punish dividend cuts with large stock price reductions is consistent with the agency costs of free cash flow.

Debt creation, without retention of the proceeds of the issue, enables managers to effectively bond their promise to pay out future cash flows. Thus, debt can be an effective substitute for dividends, something not generally recognized in the corporate finance literature. By issuing debt in exchange for stock, managers are bonding their promise to pay out future cash flows in a way that cannot be accomplished by simple dividend increases. In doing so, they give shareholder recipients of the debt the right to take the firm into bankruptcy court if they do not maintain their promise to make the interest and principle payments. Thus debt reduces the agency costs of free cash flow by reducing the cash flow available for spending at the discretion of managers. These control effects of debt are a potential determinant of capital structure.

Increased leverage also has costs. As leverage increases, the usual agency costs of debt rise, including bankruptcy costs. The optimal debt-equity ratio is the point at

which firm value is maximized, the point where the marginal costs of debt just offset the marginal benefits (Jensen, 1986: 323-324).

1.5. Target Leverage Models

When firms adjust their capital structure, they tend to move toward a target debt ratio that is consistent with theories based on tradeoffs between the costs and benefits of debt. According to this theory, the firm issues, retires, and repurchases debt or equity to keep its leverage at the target level. In the optimum, the leverage of a firm equals its target leverage. In practice, however, a firm may choose not to adjust its leverage immediately to the target. This will be the case when adjustment costs are high or when the financial system is simply not able to cater to the financing needs of firms. Actual leverage may then be adjusted only partially to the target leverage (Haas and Peeters, 2006: 135).

In a dynamic framework, a firm's target leverage ratio varies over time with its investment opportunity set. In the presence of adjustment costs, firms will allow the leverage ratio to deviate from the optimal level, readjusting it infrequently. Thus, with adjustment costs, a firm's current leverage ratio may be not only a function of its current investment opportunity set, but also a function of its past investment opportunity set.

In a dynamic framework, there are two channels through which stock returns can have an impact on the leverage ratio. First, stock returns can affect target leverage. Second, in the presence of frictions, firms will allow their market leverage ratios to temporarily fluctuate with their stock returns since it is neither optimal nor feasible for firms to issue debt or equity instantaneously to counteract the influence of stock price changes on their capital structures (Lui, 2005: 3).

Many papers have been written, beginning with Modigliani and Miller (1958), about the effects of introducing taxation into the Modigliani-Miller framework. Other papers have introduced the costs associated with the bankruptcy and financial distress

while others have added various transaction and agency costs (costs associated with conflicts of interest between debt holders, equity holders and firm management) to the models of financial structure. All of these costs are influenced by leverage. Below, I consider these various wrinkles in the original Modigliani-Miller framework.

1.5.1. Taxation

In a tax system and in economics, the tax rate describes the burden ratio (usually expressed as a percentage) at which a business or person is taxed. Debt has tax advantages at the corporate level because interest payments reduce the firm's taxable income while dividends and share repurchases do not. Unless personal taxes negate this advantage, interest 'tax shields' give corporations – that is, shareholders – a powerful incentive to increase leverage.

Nearly everyone believes taxes must be important to financing decision, but little support has been found in empirical analyses. Myers (1984) wrote, "I know of no study clearly demonstrating that a firm's tax status has predictable, material effects on its debt policy. I think that the wait for such a study will be protracted''

When taxation is introduced into the model, cash flows are divided between debt holders, equity holders and the government. The value maximizing capital structure becomes that which minimizes the portion of cash flows that goes to the government. By incorporating a tax on corporate profits, Modigliani and Miller (1958 and 1963) show that tax deductibility of interest payments make it optimal for firms to rely entirely upon debt. Miller (1977) extends this work, deriving an expression for the gain from leverage when different tax rates are applied to corporate profit, personal earnings from stocks and personal interest earnings. He shows that the incentive to finance completely through debt disappears under variety of tax regimes. In his 1977 paper, Miller also suggests that clientele effects (whereby firms attract those investors that suit their degree of leverage) may reduce or negate the tax related gains from leverage for any single firm.

The trade-off theory of capital structure is largely built upon the tax benefits of debt. In its simplest form, trade-off theory says that firms balance the tax benefits of debt against the costs of financial distress. (Leverage might also affect agency conflicts among stockholders, bondholders, and managers.) Tax effects dominate at low leverage, while distress costs dominate at high leverage. The firm has an optimal, or target, debt ratio at which the incremental value of tax shields from a small change in leverage exactly offsets the incremental distress costs. This notion of a target debt ratio, determined by firm characteristics like profitability and asset risk, is the central focus of many empirical tests (Leary and Roberts, 2004: 1).

Under general conditions, the tax costs of internal equity (retained earnings) are less than the tax costs of external equity, and in principle may be zero or negative. As a result, optimal leverage depends on internal cash flows, debt ratios can wander around without a specific target (much like in the pecking-order theory of Myers (1984), and firms with internal cash may not have a tax incentive to lever up i.e., to pay out the cash and simultaneously increase borrowing). These predictions are all contrary to the way trade-off theory is generally interpreted.

The result from the simple observation implies that any cash distribution from a firm to shareholders, via dividends or repurchases, triggers personal taxes that could otherwise be delayed. Thus, using internal cash for investment, rather than paying it out, has a tax advantage – the deferral of personal taxes – that partially offsets the double-taxation costs of equity. An immediate implication is that internal equity is less costly than external equity for tax reasons: both types of equity are subject to double taxation, but only internal equity has the offsetting deferral effect.

The general rule is that internal equity is less costly than external equity whenever distributions accelerate personal taxes; in principle, the tax-deferral benefit of retaining cash can be large enough to completely offset the double-taxation costs (i.e., retained earnings may be cheaper than debt). When firms use dividends, the tax cost of internal equity depends on personal and corporate tax rates, of course, but also on the

fraction of capital gains that are realized and taxed each period. When firms use repurchases, the cost depends on the tax basis on investors' shares relative to the current price.

The main implications for capital structure are noted above: the tax advantage of internal over external equity implies that optimal leverage is a function of internal cash flows and that firms have less incentive to lever up than typically assumed (the trade-off between debt and retained earnings depends on the capital gains tax rate, not the dividend tax rate, regardless of how the firm distributes cash). The tax advantage of internal equity also implies that a firm's cost of capital depends on its mix of internal and external finance, not just its mix of debt and equity. The implication is that firms' investment decisions, like their capital structures, should depend on past profitability and cash flows (Lewellen and Lewellen, 2006: 2-7).

Theory predicts that firms with low expected marginal tax rates on their interest deductions are less likely to finance new investments with debt. Tax shields should matter only to the extent that they affect the marginal tax rate on interest deductions. However, although deductions and credits always lower the average tax rate, they only lower the marginal rate if they cause the firm to have no taxable income and thus face a zero marginal rate on interest deductions (tax exhaustion) (Mackie-Mason, 1990: 1471).

DeAngelo and Masulis (1980) developed the current view that links non-debt tax shields with cross-sectional variation in debt policy. They showed that a firm's effective marginal tax rate on interest deduction depends on the firm's non-debt tax shields, such as tax loss carry forwards and investment tax credits. Although all firms face the same statutory marginal rate, net taxable income is stochastic and different firms face different probabilities of paying zero taxes. The firm's effective tax rate can be thought of as the statutory rate times the probability of having positive taxable income. Firms with different tax prices on interest deductions will then have different preferred debt ratios (Mackie-Mason, 1990: 1471).

Despite these offsetting factors, it appears that the tax system remains to have an important influence on capital structure choice. In the survey of listed Australian companies, 85 percent of firms stated that tax issues have a major impact on capital structure decisions.

There are two implications of the influence of taxation on capital structure choices, which are:

1) Optimal Leverage may increase as corporate tax rates rise, and
2) Optimal Leverage may increase with the amount of income against which firms expect to be able to offset interest expenses (Shuetrim, et al., 1993: 5).

1.5.2. Bankruptcy and Financial Distress Costs

Because of the fact that the debt is tax deductible it provides tax benefits to the firm. However, debt puts pressure on the firm, because interest and principal payments are obligations. If these obligations are not met, the firm may risk some sort of financial distress. The ultimate distress is bankruptcy, where ownership of the firm's assets is legally transferred from the stockholders to the bondholders. These debt obligations are fundamentally different from stock obligations. While stockholders like and expect dividends, they are not legally entitled to dividends in the way bondholders are legally entitled to interest and principal payments (Ross, 2005: 433)

The idea under the costs of financial distress is that the probability of financial distress increases with debt and, as a consequence, the firm suffers from financial distress costs. As firms use more debt in their capital structure, the growth of the financial distress costs is directly proportional, and there is a certain level of debt for which financial distress costs offset the tax benefits of interest payments (Pindado, 2005: 6).

Distress costs have been recognized as an important determinant of the pricing of a firm's debt and of its capital structure. There has been some debate, however, as to

how significant their impact might be. Some authors argue that bankruptcy costs should not be significant because claimants in financial distress should be able to negotiate outside of court without affecting the value of the underlying firm. More recent scholars, however, such as Jensen (1991) note that not only the conflicts between creditor groups, but also the influence of certain bankruptcy court decisions have had a negative impact on firms' ability to renegotiate their claims out of court. When a firm is unable to complete an out-of-court reorganization, it may be unable to avoid a more costly court-supervised bankruptcy proceeding. Regardless, it is clear that if distress costs are in fact significant, the optimal leverage for a company may be lower. A number of researchers discuss the bankruptcy cost issue within the framework of capital structure and cost of capital assessment (Altman and Edith, 2006: 93).

Bankruptcy for a company is a final declaration of its inability to sustain current operations given its current debt obligations. Practically all firms must have some debt load to expand operations or just to survive. Good economic planning often requires a firm to finance some of its operations with debt. The degree to which a firm has debt in excess of assets or is unable to pay its debt as it comes due are the two most common factors in bankruptcy.

Because business failure is a major concern to the parties involved and can create high costs and heavy losses, its prediction is highly beneficial. If bankruptcy could be predicted with reasonable accuracy ahead of time, firms could better protect their businesses and could take action to minimize risk and loss of business and perhaps even prevent the bankruptcy itself (Pongsatat, 2004: 2).

The costs of financial distress are typically classified as either direct or indirect. Direct costs include out-of-pocket expenses for lawyers, accountants, restructuring advisers, turnaround specialists, expert witnesses, and other professionals. Indirect costs include a wide range of unobservable opportunity costs. For example, many firms suffer from lost sales and profits caused by customers choosing not to deal with a firm that may enter bankruptcy. They may also suffer from increased costs of doing business,

such as higher debt costs or poorer terms with suppliers while in a financially vulnerable position. Indirect costs also include the loss of key employees, or lost opportunities due to management's diversion from running the business (Altman and Hotchkiss, 2006: 93).

While direct costs are relatively easy to identify, it has not been easy for researchers to obtain the information needed to study these costs in a systematic way. Altman (2006) cited that Opler and Titman (1994) and Andrade and Kaplan (1998) both use debt-based indicators assuming that the higher the firm's leverage the higher its probability of financial distress. However, as Jensen (1989) states, the relationship between debt and financial distress is perhaps one of the least understood aspects of organizational evolution, and leverage can also be beneficial for financially distressed firms.

When a firm has debt, conflicts of interest arise between stockholders and bondholders. Because of this, stockholders are tempted to pursue selfish strategies. These conflicts of interest, which are magnified when financial distress is incurred, impose *agency costs* on the firm.

Firms near bankruptcy usually take great chances, because they believe that they are playing with someone else's money. For example, imagine a levered firm considering two mutually exclusive projects, low-risk one and a high-risk one. If the firm were all equity firm it would have accepted the low-risk project. In contrast to this, levered firm usually chooses the riskier project because it has higher returns which can take out the company from financial distress in spite of the fact that bondholders wouldn't accept this if they knew. When the companies see that they are in financial distress they began to gamble with the bondholders' money because if they choose low-risk project, its' returns will be enough only to pay bondholders. Hence, they will not be able to keep away from financial distress. But, when the firm takes high-risk it has the chances to survive.

Finally, given the firm's present levered state, stockholders will select the high-risk project, even though the high-risk project has a lower NPV. The key is that, relative

to the low-risk project, the high-risk project increases firm value in a boom and decreases firm value in a recession. The increase in value in a boom is captured by the stockholders, because the bondholders are paid in full regardless of which project is accepted. Conversely, the drop in value in a recession is lost by the bondholders, because they are paid in full with the low-risk project but receive less with the high-risk one. The stockholders will receive nothing in a recession anyway, whether the high-risk or low-risk project is selected. Thus financial economists argue that stockholders expropriate value from the bondholders by selecting high-risk projects (Ross, 2005: 438).

Another strategy is to pay out extra dividends or other distributions in times of financial distress, leaving less in the firm for the bondholders. This strategy is known as *milking the property.*[1]

Because the stockholders must pay higher interest rates as insurance against their own selfish strategies, they frequently make agreements with bondholders in hopes of lower rates. These agreements, called *protective covenants,* are incorporated as part of the loan document (or indenture) between stockholders and bondholders. The covenants must be taken seriously since a broken covenant can lead to default. Protective covenants can be classified into two types: negative covenants and positive covenants. A **negative covenant**[2] limits or prohibits actions that the company may take but in contrast to this a **positive covenant**[3] specifies an action that the company agrees to take or a condition the company must abide by.

[1] This phrase was taken from real estate. In this strategy the firm chooses to raise new equity, because equity is actually withdrawn through the dividend.

[2] Some typical negative covenants: limitations are placed on the amount of dividends a company may pay, the firm may not pledge any of its assets to other lenders, the firm may not merge with another firm and etc.

[3] Some examples of positive covenant: the company agrees to maintain its working capital at a minimum level, the company must furnish periodic financial statements to the lender and etc.

Protective covenants should reduce the costs of bankruptcy, ultimately increasing the value of the firm. Thus, stockholders are likely to favor all reasonable covenants.[4]

Consequently, bond covenants, even if they reduce flexibility, can increase the value of the firm. They can be the lowest-cost solution to the stockholder-bondholder conflict.

What is the relationship between a company's profitability and its debt level? A firm with low anticipated profits will likely take on a low level of debt. A small interest deduction is all that is needed to offset all of this firm's pretax profits. And, too much debt would raise the firm's expected distress costs. A more successful firm would probably take on more debt. This firm could use the extra interest to reduce the taxes from its greater earnings. And, being more financially secure, this firm would find its extra debt increasing the risk of bankruptcy only slightly. In other words, rational firms raise debt levels (and the concomitant interest payments) when profits are expected to increase (Ross, 2005: 446).

1.5.3. Agency Costs

The costs of monitoring the managers so that they act in the interests of the shareholders are referred as agency costs. The higher the need to monitor the managers, the higher the agency costs will be (Roshan, 2009: 2). Agency costs of debt are borne by firm owners as the result of potential conflicts between debt holders and equity holders and between managers and equity holders. The magnitude of these costs is limited by

[4] To see this, consider three choices by stockholders to reduce bankruptcy costs:

1) *Issue No Debt.* Because of the tax advantages to debt, this is very costly way of avoiding conflicts.
2) *Issue Debt with No Restrictive and Protective Covenants.* In this case, bondholders will demand high interest rates to compensate for the unprotected status of their debt.
3) *Write Protective and Restrictive Covenants into the Loan Contracts.* If the covenants are clearly written, the creditors may receive protection without large costs being imposed on the shareholders. The creditors will gladly accept a lower interest rate.

how well the owners and delegated third parties, such as banks, monitor the actions of the outside managers. The choice of capital structure can, in some circumstances, reduce the costs arising from these conflicts (Harris and Raviv, 1991: 301).

Berle and Means (1932) initially developed the agency theory and they argued that there is an increase in the gap between ownership and control of large organizations arising from a decrease in equity ownership. This particular situation provides a platform for managers to pursue their own interest instead of maximizing returns to the shareholders.

In theory, shareholders of a company are the only owners and the duty of top management should be solely to ensure that shareholders interests' are met. In other words, as Elliot (2002) concludes, the duty of top managers is to manage the company in such a way that returns to shareholders are maximized thereby increasing the profit figures and cash flows.

Jensen and Meckling (1976) identify two types of conflicts. The first one is the conflict which arises between shareholders and managers since the managers hold less than 100% of the residual claims. Consequently, they do not capture the entire gain from their profit enhancement activities, but they do bear the entire cost of these activities. For example, managers can invest less effort in managing firm resources and may be able to transfer firm resources to their own, personal benefit, e.g., by consuming "perquisites" such as corporate jets, plush offices, building "empires", etc. The manager bears the entire cost of refraining from these activities but captures only a fraction of the gain. As a result managers overindulge in these pursuits relative to the level that would maximize firm value. This inefficiency is reduced the larger is the fraction of the firm's equity owned by the manager. Holding constant the manager's absolute investment in the firm, increases in the fraction of the firm financed by debt increase the manager's share of the equity and mitigate the loss from the conflict between the manager and the shareholders. Moreover, as pointed out by Jensen (1986), since debt commits the firm to pay out cash, it reduces the amount of "free" cash available to managers to engage in the

type of pursuits mentioned above. This mitigation of the conflicts between managers and equityholders constitutes the benefit of debt financing.[5]

The second one is the conflict which arises between debtholders and equityholders since the debt contract gives equityholders an incentive to invest suboptimally. More specifically the debt contract provides that if an investment yields large returns, well above the face value of the debt, equityholders capture most of the gain. If, however, the investment fails, because of limited liability, debtholders bear the consequences. As a result, equityholders may benefit from "going for broke," i.e., investing in very risky projects, even if they are value-decreasing. Such investments result in a decrease in the value of the debt. The loss in value of the equity from the poor investment can be more than offset by the gain in equity value captured at the expense of debtholders. Equityholders bear this cost to debtholders, however, when the debt is issued if the debtholders correctly anticipate equityholders' future behavior. In this case, the equityholders receive less for the debt than they otherwise would. Thus, the cost of the incentive to invest in value-decreasing projects created by debt is borne by the equityholders who issue the debt. This effect, generally called the "asset substitution effect," is an agency cost of debt financing (Harris and Raviv, 1991: 301).

Myers (1977) points out another agency cost of debt. He observes that when firms are likely to go bankrupt in the near future, equityholders may have no incentive to contribute new capital even to invest in value-increasing projects. The reason is that equityholders bear the entire cost of the investment, but the returns from the investment may be captured mainly by the debtholders. Thus larger debt levels result in the rejection of more value-increasing projects. This agency cost of debt yields conclusions about capital structure similar to those of Jensen and Meckling.

[5] Another benefit of debt financing is pointed out by Grossman and Hart (1982). If bankruptcy is costly for managers, perhaps because they lose benefits of control or reputation, then debt can create an incentive for managers to work harder, consume fewer perquisites, make better investment decisions and etc., because this behavior reduces the probability of bankruptcy.

Jensen and Meckling (1976: 5) argue that an optimal capital structure can be obtained by trading off the agency cost of debt against the benefit of debt as previously described.[6] A number of implications follow. First, one would expect bond contracts to include features that attempt to prevent asset substitution, such as interest coverage requirements, prohibitions against investments in new, unrelated lines of business, etc. Second, industries in which the opportunities for asset substitution are more limited will have higher debt levels, *ceteris paribus*. Thus, for example, the theory predicts that regulated public utilities, banks, and firms in mature industries with few growth opportunities will be more highly levered. Third, firms for which slow or even negative growth is optimal and that have large cash inflows from operations should have more debt. Large cash inflows without good investment prospects create the resources to consume perquisites, build empires, overpay subordinates, etc. Increasing debt reduces the amount of "free cash" and increases the manager's fractional ownership of the residual claim. According to Jensen (1989) industries with these characteristics today include steel, chemicals, brewing, tobacco, television, and radio broadcasting, and wood and paper products. The theory predicts that these industries should be characterized by high leverage.

The optimal capital structure in Harris and Raviv (1991: 302) trades off improved liquidation decisions versus higher investigation costs. A larger debt level improves the liquidation decision because it makes default more likely. In the absence of default, incumbent management is assumed not to liquidate the firm even if the assets are worth more in their next best alternative use. Following a default, however, investors control the liquidation decision, and they expand resources to obtain additional information pertinent to this decision. Since investors choose an optimal liquidation decision based on their information, default improves this decision. More frequent default, however, is more costly as resources are expended investigating the firm when it is in default.

[6] Several authors have pointed out that agency problems can be reduced or eliminated through the use of managerial incentive schemes and/or more complicated financial securities such as convertible debt. See Barnea et. al. (1985), Brander and Poitevin (1989), and Dybvig and Zender (1989).

The optimal capital structure is determined by trading off the benefit of debt in preventing investment in value decreasing projects against the cost of debt in preventing investment in value increasing projects. Thus, firms with an abundance of good investment opportunities can be expected to have low debt levels relative to firms in mature, slow-growth, cash-rich industries (Harris and Raviv, 1991: 301).

Harris and Raviv (1991: 304) show how managers of firms have an incentive to pursue relatively safe projects out of reputational considerations. They argue that managers choose projects that assure debt repayment. Since lenders can observe only a firm's default history, it is possible for a firm to build a reputation for having only the safe project by not defaulting. The longer the firm's history of repaying its debt, the better is its reputation, and the lower is its borrowing cost.

While the agency cost literature is replete with theoretical models, testable implications are scarce. One testable implication is that a negative relationship exists between leverage and firm's growth opportunities. This negative relationship arises in two ways. Titman and Wessels (1988: 4) note that, because growth opportunities are not fully collateralizable (they are very difficult to monitor and value), creditors demand a relatively high return when providing finance for these opportunities. Thus, firms with significant growth opportunities are expected to look to equity rather than debt as a source of finance. Similarly, firms in growing industries may have greater flexibility in their choice of investments, allowing equityholders greater freedom to expropriate wealth from bondholders. Either way the costs of debt for rapidly growing firms may lead to a preference for equity funds.

In summary, agency cost theories imply that corporate leverage is chosen, in a rather complex manner, to reduce the capacity of shareholders to act in a manner contrary to the welfare of bondholders and to reduce managers' capacity to act in a manner contrary to shareholders' interests. Empirical support for the implications of agency costs is mixed. Titman and Wessels (1988) find that leverage is inversely related

to the firms' growth opportunities while Kestler (1986) does not find a significant relationship.

1.6. Financing Hierarchies

1.6.1. Asymmetric Information

The problem of explaining firms' capital structure is intensely debated in corporate finance. As noticed before, one of the most popular models of corporate financing decisions in the literature is the pecking order theory of Myers (1984). It is based on the argument that asymmetric information problems drive the capital structure of firms. In their most basic form, asymmetric information theories argue that managers have more information about the firm than do investors. Myers (1984) argues that if managers know more than the rest of the market about their firms' value (information asymmetry is where one person has economically relevant information that another person does not have), the market penalizes the issuance of securities (like equity) whose expected payoffs are crucially related to the assessment of such a value. Since the seminal research by Myers (1984) and Myers and Majluf (1984) it has been recognized that when it is impossible or costly for firms to convey the true value of their assets to outside investors, firms may be forced to forgo projects with positive net present value. In reaction companies optimally choose to use sources of funds that are insensitive to the information advantage of insiders. When managers know more about the mean expected returns, this leads to the classical pecking order of using all internal funds first and if additional capital is needed to be raised, debt should be issued. Equity should be issued only as a last resort when the leverage is at a very high level at which the firm has exhausted its debt capacity.

The choice of security depends not only on the current adverse selection cost of the security but also on the future information environment and future needs of financing

of the firm.[7] When managers anticipate an increase in the asymmetric information, even though they have private information at present, managers may choose to issue equity. The goal is to determine the optimal sequence of securities as a function of the size and dynamics of the asymmetric information advantage that insiders of the firm have with respect to outside investors.

As Fama and French (2005) observed, ultimately the pecking order theory posited that information asymmetry was an important (or perhaps even the sole) determinant of firms' capital structure. However, no test has ever been performed to ascertain the empirical viability of that basic assumption of the theory. In other words, nobody still does know whether information asymmetry drives firms' capital structure decisions.

The pecking order theory of Myers (1984); and Myers and Majluf (1984) is based on adverse selection between firm managers and market participants. Market microstructure measures of information asymmetry are designed to capture adverse selection between a larger category of agents (informed traders) and the rest of the market (uninformed traders). In other words, firm managers constitute a subset of informed traders in the market who, in turn, constitute a subset of all traders in the market. Therefore, market microstructure measures of information asymmetry are (imperfect) proxies for the financial markets' perception of the information advantage held by firm insiders and the resulting adverse selection costs; and those costs are what ultimately affect the cost of issuing information-sensitive securities.

In fact however, companies make a sequence of financing decisions over time. It is clear that myopically following the pecking order rule is not going to be optimal for a

[7] People seek out insurance if they know they are more likely to need it. In this case, there is asymmetric information in that the insurer cannot identify who is a high risk and who is a low risk, but the person seeking insurance does know. Since the insurer can only determine the aggregate risk of all people seeking insurance, it can only charge a single average rate. But since people, in fact, differ in the risks they face, people who face relatively high risks, will be more likely to buy this group insurance, since, for them, it is under priced.

big proportion of firms. It is natural that insiders, namely the managers running the company, would do better if they minimize the adverse selection costs of all rounds of financing by picking an optimal sequence of securities. Although Myers and Majluf (1984) do not consider the dynamic issues explicitly, one solution that they propose for the single period problem suggest a remedy for the dynamic problem. If managers do not have an information advantage at some point before the investment has to be made, companies should build financial slack to be used later when the valuations of insiders and outsiders diverge.

For the majority of firms however, it is likely that they will suffer highest adverse selection cost while they are young and lack established relations with the capital markets. On the one hand for a typical firm, the information asymmetry may gradually be reduced through time as more and more investors start producing information about the firm and as it accumulates price histories of its securities. On the other hand, observation of lots of old established firms that still face significant information asymmetries when raising capital. Possible reasons for why the firm may become less transparent are sharp increases of prices of inputs, change of the management team, change in the corporate governance, or change of the focus of the company through investments in projects that are outside of main line of business or by developing new products. Essentially any change in the company that breaks the patterns and invalidates the past historical experience of investors dealing with the firm will diminish the capability of outsiders to price correctly the securities of the firm, while making the advantage of managers of receiving first signals about the quality of the firm bigger.

What are the empirical implications of Myers' "pecking order" theory? Probably the most important implication is that, upon announcement of an equity issue, the market value of the firm's existing shares will fall. Moreover, financing via internal funds or riskless debt (or any security whose value is independent of the private information) will not convey information and will not result in any stock price reaction. A second implication is that new projects will tend to be financed mainly from internal sources or

the proceeds of low-risk debt issues.[8] Third, underinvestment problem is least severe after information releases such as annual reports and earnings announcements. Therefore equity issues will tend to cluster after such releases and the stock price drop will be negatively related to the time between the release and the issue announcement. Finally, suppose firms with comparatively little tangible assets relative to firm value are more subject to information asymmetries. These firms can be expected to accumulate more debt over time, other things equal (Halov, 2006: 2-5).

A number of authors have extended the basic idea of Myers and Majluf. Krasker (1986) allows firms to choose the size of the new investment project and the accompanying equity issue. He confirms the results of Myers and Majluf in this context and also shows that the larger the stock issues the worse the signal and the fall in the firm's stock price.

The seminal contribution of the model in which investment is fixed and capital structure serves as a signal of private insider information is that of Ross (1977). In Ross' model, managers know the true distribution of firm returns, but investors do not. Firm return distributions are ordered by first order stochastic dominance. Managers benefit if the firm's securities are more highly valued by the market but are penalized if the firm goes bankrupt. Investors take larger debt levels as a signal of higher quality.[9] Since lower quality firms have higher marginal expected bankruptcy costs for any debt level, managers of low quality firms do not imitate higher quality firms by issuing more debt.

Several studies exploit managerial risk aversion to obtain a signaling equilibrium in which capital structure is determined. The basic idea is that increases in firm leverage allow managers to retain a larger fraction of the (risky) equity. The larger equity share

[8] For example, Bradford (1987) shows that if managers are allowed to purchase the new equity issued by firms in the situation described by Myers and Majluf (1984), then the underinvestment problem is mitigated.

[9] An equivalent approach is to assume that managers can commit to paying dividends and suffer a penalty of the promised dividend is not paid. Ravid and Sarig (1989) consider a combination of debt and dividend commitment. They show that both dividends and debt level increase with firm quality.

reduces managerial welfare due to risk aversion, but the decrease is smaller for managers of higher quality projects. Thus managers of higher quality firms can signal this fact by having more debt in equilibrium.

Finally, the main predictions of asymmetric information theories concern stock price reactions to issuance and exchange of securities, the amount of leverage, and whether firms observe a pecking order for security issues.

Stock Price Effects of Security Issues

- Debt: Myers and Majluf (1984) and Krasker (1986) predict the absence of price effects upon issuance of (riskless) debt. Noe (1988) and Narayanan (1988) predict a positive price effect of a (risky) debt issue.
- Equity: Myers and Majluf (1984), Krasker (1986), Noe (1988) predict a negative price effect of an equity issue. This price drop will be larger the larger is the informational asymmetry and the larger is the equity issue. Moreover, Lucas and McDonald (1990) show that, on average, equity issues will be preceded by abnormal stock price increases.

There have been many discussions about if there is a pecking order or not and there is not an exact answer to this question. Some authors argue that there is pecking order but a few authors do not obtain a pecking order result (Harris and Raviv, 1991: 315).

Myers and Majluf (1984) imply that leverage increases with the extent of the informational asymmetry. Ross (1977) derives a positive correlation between leverage and value in a cross section of otherwise similar firms.

1.6.2. Transaction Costs

In economics and related disciplines, a transaction cost is a cost incurred in making an economic exchange. A variety of market imperfections are also capable of explaining variation in the relative costs of different types. First, costs and delays involved in raising funds on equity markets (for example, broker charges, underwriting fees and the issue of prospectuses) may lead to a preference for internal equity and debt over external equity. An assumption in the Modigliani-Miller value-invariance proposition is that capital markets are frictionless (there are no transaction costs and transactions occur instantaneously). In practice, however, this is not the case. As noted in Allen (1991: 113), "many companies stated the equity issues were costly and time consuming but in contrast to this debt funding had the advantage of being quick to obtain". Firms may prefer internal funds and debt because transaction costs are lower, especially for smaller firms, because they give firms the flexibility to respond quickly as investment opportunities arise.

It should be noted that debt involves slower access and higher transaction costs than internal fund sources which can be brought to bear almost immediately. This may lead to a preference for internal funds over debt.

Second, some firms may prefer to maintain informational asymmetries. If internal funds are used, there is no requirement to subject the firm to external scrutiny. Similarly, where debt finance is used, information is provided to bankers, but there is no requirement for the disclosure of information to the capital market, competitors, or to shareholders. The advantages of privacy and the costs of releasing information may generate a fund cost hierarchy (Shuetrim et al, 1993: 9).

Transactions costs are central in the ongoing academic debate about whether firms have optimal leverage ratios. Those who believe in target capital structures cite transactions costs as the reason why firms do not instantaneously adjust their leverage ratios in response to changes in their target ratios. However, research is mixed on whether transactions costs are large enough to plausibly explain leverage choices by most firms.

Transactions costs are potentially very important to financially distressed firms. The debt adjustments contemplated by these firms are quite large, and financial distress may have pushed them far away from their optimal capital structures. To get their debt levels down, financially distressed firms must either persuade creditors to write down their claims, or retire the debt by selling assets and/or new securities. However, for a number of reasons these options may be quite costly: firms cannot unilaterally force a financial settlement on all creditors, giving individual creditors an incentive to hold out; various regulations discourage institutional lenders from writing down their principal or exchanging debt for equity; income from debt forgiveness is taxed; managers have much better information than outsiders about the firm's business prospects; and financially distressed firms may be forced to sell assets at fire-sale prices (or be unable to find buyers at any price, e.g., because their whole industry is distressed) (Gilson, 1997: 161-162).

1.6.3. Flexibility

Financial flexibility represents the ability of a firm to access and restructure its financing at a low cost. Financially flexible firms are able to avoid financial distress in the face of negative shocks, and to readily fund investment when profitable opportunities arise. While a firm's financial flexibility depends on external financing costs that may reflect firm characteristics such as size, it is also a result of strategic decisions made by the firm related to capital structure, liquidity, and investment (Gamba and Triantis, 2008: 2263).

Soku Byoun (2007) defines financial flexibility as the degree of capacity and speed at which the firm can mobilize its financial resources in order to take reactive, preventive and exploitive actions to maximize the firm value. He also argues that all of the uses of flexibility pertinent to the finance literature are encompassed by its reactive, preventive and exploitive nature.

The effect of financial flexibility on firm value can be quite large, however, when there is significant opportunity for growth on the upside, or when the firm is performing poorly on the downside. High volatility in the firm's profitability thus magnifies the value of financial flexibility. Firms with more flexible capital can partially compensate for costly external financing, indicating that investment and financial flexibility are substitutes to some extent (Gamba and Triantis, 2008: 2265).

In view of financial flexibility, change in profit (especially loss) can be important determinant of leverage. Specifically, firms with negative retained earnings (from the accumulation of losses) are likely to have little financial flexibility and debt capacity but ample needs for additional cash. The main view of Soku Byoun (2007) is that firms with negative retained earnings are more likely to issue equity to build up cash holdings in order to preserve financial flexibility and hence have low leverage. The corollary to this view is that cash holdings will be negatively associated with leverage. On the other hand the results of Soku Byoun (2007) show that firms with negative retained earnings build up cash holdings through equity financing, lowering leverage ratios, whereas firms with more positive retained earnings also have lower leverage ratios through the accumulation of earnings (as a means of building financial flexibility).

The pecking order theory by Myers and Majluf (1984) assumes that firms desire to maintain "financial slack" to avoid the need for external funds. However, empirical findings show that the way managers value financial flexibility is not sufficient to prove that the pecking-order model is the true description of capital structure choice.

Soku Byoun (2007) makes this point explicit:

The most important item affecting corporate debt decisions is management's desire for "financial flexibility," … However, the importance of flexibility in the survey responses is not related to informational asymmetry (size or dividend payout) or growth options in the manner suggested by the pecking-order theory. In fact, flexibility is statistically more important for dividend-paying firms, opposite the theoretical prediction (if dividend-paying firms have relatively little informational asymmetry).

Therefore, a deeper investigation indicates that the desire for financial flexibility is not driven by the factors behind the pecking-order theory (Byoun, 2007: 5).

Despite managers' contention that financial flexibility is an important factor in the decision-making process of managers, the capital structure literature has to date remained aloof to recognize and incorporate financial flexibility. Frank and Goyal (2005) reason, "the stress on financial flexibility is interesting, but potentially open to a variety of interpretations.

Financial flexibility survey evidence is of interest, but it is best regarded as being interesting and suggestive, rather than providing definitive tests." In addition to considerable ambiguity in the use of the term, judgments about flexibility are subjective and informal and flexibility levels are rarely monitored or even measured. Accordingly, dealing with financial flexibility may be criticized as being less than practical and based on speculation on the ability of a firm to respond to hypothetical future events. It is therefore not surprising that there is relatively little systematic study of financial flexibility in the capital structure literature (Byoun, 2007: 6).

Graham Harvey (2001) sees financial flexibility as "preserving debt capacity to make future expansions and acquisitions" or "minimizing interest obligations, so that they do not need to shrink their business in case of an economic down turn." Gamba and Triantis (2005), in their attempt to model the value of financial flexibility, define, financial flexibility as "the ability of a firm to access and restructure its financing with low transaction costs." They further elaborate by adding "financially flexible firms are able to avoid financial distress in the face of negative shocks, and to fund investment at low cost when profitable opportunities arise." Donaldson (1969, 1971) uses "financial mobility" to describe "the capacity to redirect the use of financial resources in a manner consistent with the evolving goals of management as it responds to new information about the company and its environment." Donaldson particularly relates financial mobility to capital structure decisions where the goal is to find the optimal mix of financing sources.

Soku Byoun, (2007: 6) describes financially flexible company as one that can take corrective action that will eliminate an excess of required cash payments over expected cash receipts quickly and with minor adverse effect on its present and future earnings or on the market value of its stock.

Many authors define financial flexibility as "the ability of an entity to take effective actions to alter amounts and timing of cash flows so it can respond to unexpected needs and opportunities. Most of the treatments of financial flexibility in the finance literature are more or less about the ability of a firm to meet its expected future needs through large cash flow, large unused borrowing capabilities, or large liquid assets.

Bernstein (1993) defines flexibility as the ability of an enterprise to take steps to counter unexpected interruptions in the flow of funds for reasons however unexpected. In this view, financial flexibility means the ability to borrow from a variety of sources, to raise equity capital, to sell and redeploy assets, and to adjust the level and the direction of operations in order to meet changing circumstances. Koornhof (1998) defines flexibility as an ability to take actions to reposition the resources and functions of the organization to new information and environment in a manner consistent with the evolving vision, strategies and goals of management.

Flexibility arises from a formal decision problem in which the choice from future options are affected by the choice made now. In other words, the decision on flexibility made in the present impacts on the options management will have available in the future in response to unforeseeable change. Financial flexibility is future oriented. It would be fundamentally inappropriate of a CFO of a company to say that his or her job is to maximize flexibility for the organization. Thus, maximizing the firm value should be the ultimate goal of optimizing financial flexibility.

A firm can also develop financial flexibility through cash accumulation (DeAngelo and DeAngelo (2006)). On the one hand, cash holdings increase financial flexibility. On the other hand, it increases agency costs. Leverage can mitigate agency costs, but leverage in turn reduces future financial flexibility. Firms with negative earnings are likely to be in need of financial flexibility while constrained in borrowing

and with little concern for agency costs and thus they can accumulate cash holdings through equity financing in order to preserve financial flexibility.

1.6.4. Liquidity Constraints

The concept of liquidity is the cost of buying and selling of stocks. That is, those stocks that are expensive to trade are considered less liquid than those that trade cheaply. The cost of trading is generally thought as: brokerage fees, the bid-ask spread, and market-impact costs. The cost of trading a non-liquid stock reduces the total return that an investor receives. Both the bid-ask spread and market-impact costs would reduce this gain still further.

Trading costs vary across securities. Investors demand a high expected return when investing in stocks with high trading costs, low liquidity. And, this high expected return implies a high cost of capital to the firm (Ross, 2005: 334).

Equity investors need to be compensated not only for the risks they bear but for the transaction costs they incur when buying and selling their shares. Furthermore, issuing firms view the issuance costs as a component of the cost of equity financing and recent evidence suggests that less liquid stocks have higher issuance costs. All else equal, therefore, firms with more liquid equity will have a lower cost of equity than firms with less liquid equity. To the extent that capital structure decisions trade-off the net tax benefit of debt against the net cost of equity, more liquid firms should employ relatively more equity financing and therefore be less leveraged (Lipson and Mortal, 2008: 4).

It is clear that liquidity is a major concern for those who trade shares and those who create, manage or regulate trading infrastructure. A growing body of research suggests that liquidity has a much broader relevance. Stoll and Whaley (1983) first note that stock transactions costs need to be taken into account when valuing equity investments and argue that this may explain the higher required rate of return on small stocks, which are relatively illiquid. Amihud and Mendelson (1986) provide a formal

model where transaction costs, like a tax, increase required rates of return for equity investments. They note that this effect can explain a substantial faction of firm valuations. Looking just at issuance costs, Butler, Grullon and Weston (2005) find that investment banking fees are lower for more liquid firms. These issuance costs must be acknowledged when raising equity through external financing and are an implicit cost of external equity. A number of other studies provide evidence consistent with a significant effect of liquidity on expected returns.

Finally, a liquid security is essentially one that can be bought and sold easily. Trading volume (turnover) is often the measure of liquidity examined in theoretical analyses of markets. Volume is also used as an empirical measure of liquidity and is, as one would expect, negatively correlated with trading costs. Stock market liquidity is a major concern to all those involved in one way or another in equity trading, and for that reason there are many studies devoted to investigating factors affecting liquidity, and how liquidity relates to asset values and expected returns (Lipson and Mortal, 2008: 28).

1.6.5. Ownership Structure

A firm's ownership structure can help to explain the choice between debt and equity. The idea is that the capital structure choice depends on who is in control of the firm. As a result, the relationship between capital and ownership structures is not straightforward. For instance, shareholders are encouraged to increase debt in order to use leverage as a mechanism to restrain managerial discretion; hence higher debt ratios are expected when shareholders are in control of the firm. In contrast, managers prefer to limit the use of debt to avoid its disciplinary role and reduce the risk they bear; consequently, lower debt ratios are expected when self-interested managers have control of the decision-making process (Pindado, 2005: 3).

Capital structure is not only the result of the various financial characteristics of the firm and strategies it engages, but it is also determined by the decision-makers' choice. Particularly, managers and significant outside owners both exert a major influence on decision making in the firm and, consequently, on financing decisions. In

this sense, the structure of a firm's ownership, since it has the potential to influence the incentives and goals of managers and outside owners, and it determines their relative power in the decision-making process, may have a significant impact on leverage.

According to Jensen and Meckling (1976), managers' natural tendency is to make decisions in their own best interests, which may conflict with those of outsiders. Given the risk of non-diversification of their personal wealth, self-interested managers are encouraged to reduce their firms' debt to a level that is below the level of value maximization.[10] However, as insider equity ownership increases, the conflicts between managers and shareholders are likely to be resolved (Jensen and Meckling, 1976: 12) and, consequently, the incentives of managers to lower debt diminish.

It has been widely supported by financial literature that both insider ownership (as a consequence of the convergence of interest and entrenchment effects) and ownership concentration (as a result of the monitoring and expropriation effects) have a non-linear influence on the scope of the firm's agency costs, and are thus non-linearly related to firm value (Miguel et al., 2004). This non-linearity of ownership with respect to firm value has implications for the previously described relationship between ownership and debt.

At some point, as the level of insider ownership increases, managers get entrenched. This position allows managers to engage in self-serving actions without endangering their employment and salary, since few constraints on their opportunistic behavior may exist. In this scenario, the decision-making process is under the control of self-interested managers, who will act in their own best interests departing from the value-maximization objective. Therefore, managerial entrenchment involves not only the desire, but also the ability to decrease debt levels, even if doing so reduces shareholders' wealth. By reducing leverage, entrenched managers avoid taking excessive risks on their large exposure to the firm, and they also avoid the disciplinary role of debt over the firm's free cash flow (Jensen, 1986: 324).

[10] This is because debt increases the probability of financial distress and, as pointed out by Harris and Raviv (1990), bankruptcy is particularly worrying for managers because it leads them to lose control over the firm and casts doubts on their managerial qualities.

A very concentrated ownership creates a conflict between controlling owners and minority shareholders, in that the former can redistribute wealth in both efficient and inefficient ways – from the latter. When the control over the firm passes to its controlling owners, self-interested actions intended to attain their private benefits are expected, and incentives to monitor managers in order to protect the value-maximization objective are likely to diminish. According to the risk-based argument in Demsetz and Lehn (1985), large shareholders are expected to limit the risk they bear by promoting lower debt levels than would otherwise be the case. Therefore, the positive relationship between ownership concentration and debt is expected to weaken when the expropriation of minority owners is feasible.

Finally, there is likely to be an interaction between ownership and several firm characteristics, as well. In fact, the incentives and goals of managers and outside owners may change according to certain characteristics of their firms, such as the level of intangible assets, the investment opportunity set, and the free cash flow.

The level of intangible assets discloses information about a firm's growth opportunities and, according to Myers (1977), growth opportunities can be viewed as call options whose value depends on discretionary future investment. As a result, intangible assets cannot be easily assessed by potential external investors and, consequently, these assets exacerbate the asymmetric information problem by sending a signal that is perceived as negative by potential bondholders. However, the negative signal that is sent to the market by a high level of intangible assets may be offset by the positive signal corresponding to a higher level of insider ownership and ownership concentration. Therefore, the choice between debt and equity within a context of high levels of intangible assets is expected to depend on the trade-off between the bondholders' reluctance to lend to the firm, and the reliance on a better use of such intangible assets by value-maximizer managers (Pindado, 2005: 16).

In addition, Brailsford et al. (2002) suggest that the relationship between managerial share ownership and leverage may in fact be non-linear: At low level of

managerial ownership, agency conflicts fall leading to higher debt and capital structure. However, when managers already hold a significant portion of firms' equity, an increase in managerial ownership may lead to an increase in managerial opportunism and therefore may cause lower debt.

The link between ownership structure and firm value/performance/efficiency has been the subject of an on-going debate going back to Berle and Means (1932), who suggested that firms with a wide dispersal of shares tend to under-perform. Further, Stulz (1988) formalized a concave relationship between managerial ownership and firm valuation: an increase in managerial ownership and control will first increase firm value; but at a higher level of managerial ownership, firm value will decrease because of entrenchment effects.

Ownership structures are also characterized by the separation of voting rights from cash flow rights where control rights (or voting rights) of the largest owners were often generally greater than the corresponding cash flow rights. Higher voting rights may give rise to serious agency problems, and are often associated with pyramid ownership structures, and crossholding. Such situations are associated with an over-reliance on debt, due to large shareholders being unwilling to dilute their ownership (Driffield, 2006: 5).

Mahrt and Smith (2005) argue that managers prefer some types of owners to others, because different types have differential abilities to constrain their choices. As a consequence, managers act to maximize firm value if such ''favorite'' owners remain in charge when firm performance is good but debt features (e.g. effective debt covenants) constrain managerial choice following bad performance.

Finally, corporate financing decisions are quite complex processes and existing theories can at best explain only certain facets of the diversity and complexity of financing choices.

CHAPTER 2:

LITERATURE REVIEW ON THE DETERMINANTS OF CAPITAL STRUCTURE

"Given the level of total capital necessary to support a company's activities, is there a way of dividing up that capital into debt and equity that maximizes current firm value? And, if so, what are the critical factors in setting leverage ratio for a given company?" (Barclay and Smith, 1999: 8).

The sentence above poses one of the most controversial problems in corporate finance: the existence of an optimal capital structure and its determinants. After more than fifty years after the breakthrough work of Modigliani and Miller (1958), it is surprising that a satisfactory answer to such question has not yet been provided.

In recent years, a number of theories have been proposed to explain the variation in debt ratios across firms. The theories suggest that firms select capital structures depending on attributes that determine the various costs and benefits associated with debt and equity financing (Titman and Wessels, 1988: 1).

Since the early works of Miller and Modigliani (1958), corporate financial decision making and especially the capital structure choice is fascinating academic researchers and practitioners alike. While Miller and Modigliani (1958) derive conditions under which the capital structure choice is irrelevant to firm valuation, the subsequent theoretical literature has shown that a firm can influence its value and improve its future prospects by varying its ratio between debt and equity. While renowned theories of capital structure explain differences in the optimal debt-to-equity ratio across firms, most of the empirical literature applied static frameworks, using observed leverage ratios as a proxy for a firm's optimal leverage.

For example, Titman and Wessels (1988) for U.S. data and Rajan and Zingales (1995) for an international sample document that leverage is related to firm-specific characteristics such as profitability, investment opportunities, tangibility of assets or

earnings volatility. However, as forcefully argued by Heshmati (2001), traditional capital structure theories do not explain observed differences in leverage ratios, but rather differences in optimal leverage ratios across firms.

Corporate sector growth is vital to economic development. Prasad (2001) argues that the issue of finance has been identified as an immediate reason why businesses in developing countries fail to start or to progress. It is imperative for firms in developing countries to be able to finance their activities and grow over time if they are ever to play an increasing and predominant role in providing employment as well as income in terms of profits, dividends and wages to households. Growing SMEs will also contribute to expanding the size of the directly productive sector in the economy; generating tax revenue for the government; and, all in all, facilitating poverty reduction through fiscal transfers and income from employment and firm ownership.

To understand how firms in developing countries finance their operations, it is necessary to examine the determinants of their financing or capital structure decisions. Green et al. (2002) show that the company financing decisions involve a wide range of policy issues. At the macro level, they have implications for capital market development, interest rate and security price determination, and regulation. At the micro level, such decisions affect capital structure, corporate governance and company development. Knowledge about capital structures has mostly been derived from data of the developed economies that have many institutional similarities (Booth et al., 2001). It is important to note that different countries have different institutional arrangements, mainly with respect to their tax and bankruptcy codes, the existing market for corporate control, and the roles banks and securities markets play. There are also differences in social and cultural issues and even the levels of economic development.

A few studies on developing countries have not even agreed on the basic facts. Singh and Hamid (1992) and Singh (1995) used data on the largest companies in selected developing countries. They found that firms in developing countries made significantly more use of external sources to finance their growth than the industrialized

countries. They also found that firms in developing countries rely more on equity finance than debt finance. These findings seem surprising given that stock markets in developing countries are invariably less well developed than those in the industrial countries, especially for equities.

Subsequent theoretical work has taken into account the imperfections of financial markets and has shown that firm capital structure emerges from three sources: firm-specific, country of incorporation institutional and macroeconomic factors.

Both theoretical and empirical capital structure studies have generated many results that attempt to explain the determinants of capital structure. As a result of these studies, some broad categories of capital structure determinants have emerged. Titman and Wessels (1988), and Harris and Raviv (1991), however, point out that the choice of suitable explanatory variables is potentially contentious.

There is an important gap in modern finance theory on the issue of corporate debt policy. The theory should be able to explain why the tax advantages of debt financing do not lead firms to borrow as much as possible, and it should explain the phrase "as much as possible." It should explain why some firms borrow more than others, why some borrow with short, and others with long-maturity instruments, and so on (Myers, 1977: 147).

A variety of ideas has been advanced to fill this gap. Modigliani and Miller (1963) have suggested that firms maintain "reserve borrowing capacity" - although the need for such flexibility is not clear in the frictionless capital markets MM rely on and that the incremental tax advantage of borrowing declines as more debt is issued and interest tax shields become less certain. They and others have also noted that the existence of personal taxes, specifically the difference between rates on capital gains and rates on regular income reduces the theoretical tax advantage of corporate borrowing. These arguments rationalize firms' reluctance to borrow "as much as possible," but they give little specific guidance beyond that.

The importance of country of incorporation for firm leverage has been analyzed in a few cross-country studies. Booth et al, (2001) show on a sample of firms from ten developing countries that country fixed effects explain a large share of leverage variation, but they do not decompose the country effects to show what country characteristics matter.

On a sample of firms from developing Asian and South American countries, Schmukler and Vesperoni (2001) explore the relation between leverage and financial liberalization. Using data on Western European firms Giannetti (2003) shows that financial development and creditor protection are significant determinants of leverage.

Jõeveer (2005), also using Western European firm data, shows that half of the country explanatory power is determined by six country macroeconomic and institutional factors while another half is explained by an unmeasurable institutional difference. All above mentioned studies confirm that the macro-economic and country-specific factors do matter for the capital structure of the firm.

The implications of theoretical studies have been tested in numerous empirical studies. The most attention has been focused on the estimation of leverage on firm-specific characteristics (Bradley, Jarrell, and Kim 1984; Titman and Wessel 1988). The latest study, based on US firms (Frank and Goyal 2004), has found that firm characteristics explain approximately 30% of within-country firm leverage variation. Among firm variables, industry is a significant determinant of leverage. Industry alone has been found to explain up to 25% of within-country leverage variation (Bradley, Jarrell, and Kim 1984).

Korajczyk and Levy (2003) show that for US firms, macroeconomic variables can explain as high a share of leverage variation as firm factors. In more detail, Desai, Foley, and Hines (2004) show that the country tax rate explains the firm leverage level in different countries. Hence, there is empirical evidence for the importance of all three – firm, institutional, and macroeconomic – factors in determining firm capital structure.

However, there is still a lack of studies spanning a large number of macroeconomic, institutional and different firm-specific factors simultaneously.

Drobetz et al (2006: 2) strongly suggest that firm decision makers seek a target debt-to-equity ratio. Their main objective in setting debt policy is not to minimize a firm's weighted average cost of capital, but rather to preserve financial flexibility, which is best explained in the context of a pecking order theory of capital structure. Nevertheless, due to random events or other changes, firms may temporarily deviate from target or optimal leverage and only gradually work back to the optimum.

The type of assets that a firm possesses can also be considered as an ambiguous factor that contributes in the determination of the debt-equity ratio. On the one hand, this particular factor is closely related with the notion of financial distress costs. Specifically, the costs of financial distress depend on the types of assets that a firm has. For example, if a firm retains large investments in land, equipment and other tangible assets, it will have smaller costs of financial distress than a firm that relies on intangible assets.

A firm determining the optimal capital structure will issue as much secured debt as possible, because the agency costs of secured debt are lower than those of unsecured debt. Securable assets are considered the tangible assets such as plant and machinery. Thus, firms with more tangible assets should issue more debt. However, on the other hand, lots of tangible assets may mean that a firm has already found a stable source of return which provides it more internally generated funds and prohibits it from turning to external financing. Thus, in case of a negative relationship between leverage and asset structure, this also is an indication that pecking order exists. As a matter of fact, there is a negative relationship between the short term debt and the asset structure and a positive relationship between long-term debt and asset structure (Daskalakis and Psillaki, 2005: 6).

Myers (1984) challenged the notion of an optimal capital structure based purely on the tradeoff of debt-related benefits and costs in a world of information asymmetry between corporate managers and investors. Myers observed that corporate financing

practice does not conform with a simple tradeoff model and he suggested the existence of a "pecking order" among the financing sources used by firms. Internally generated cash is at the top of the pecking order. External debt financing comes next, and external equity financing is used only as a last resort.

Shyam-Sunder and Myers (1993) find support for the pecking order theory among U.S. firms and little empirical support for the static trade-off model. A survey of chief financial officers (CFOs) of Fortune 500 firms by Pinegar and Wilbricht (1989) also indicated that most CFOs seem to follow a hierarchy of financing sources.

There have been few empirical studies attempting to validate the theoretical capital structure models in an international setting. Early studies include Stonehill and Stitzel (1969), Remmers, et al. (1974), and Toy, et al. (1974). A common finding in these early studies is that the home country of a corporation is significantly related to capital structure. Conflicting evidence was found regarding the impact of other variables, including risk, growth, industry, and firm size. Aggarwal (1981) analyzed capital structure of the 500 largest European corporations and found evidence suggesting industry and home country as the most significant determinants of corporate leverage. Aggarwal and Baliga (1987) and Errunza (1979) also reported similar results for corporations from Latin American countries. Aggarwal (1990), in a study of large Asian corporations from 22 countries found evidence of industry and country influences on leverage.

Kester (1986) and Krishnan and Moyer (1995) corrected the leverage measures used in earlier studies for the market value of equity. Kester (1986) compared capital structures of large manufacturing corporations from Japan and the U.S. While the book value measures of debt seem to indicate significantly higher leverage for Japanese firms, when the values were adjusted for holdings of liquid assets and the market value of equity, the differences are less significant. Krishnan and Moyer (1995) examined the determinants of capital structure of large corporations from industrialized countries and found that country of origin, firm size, past profitability and growth appear to be

significant variables affecting capital structure. Rajan and Zingales (1994) found considerable similarity in leverage across the G-7 countries. The factors identified by previous studies as important determinants of capital structure appear to influence leverage decisions for public firms in other G-7 countries too.

Marsh (1982), Auerbach (1985) and Shyam-Sunder and Myers (1999) argue that firms try to maintain long-term target debt levels, although they may deviate from these in the short run in response to timing considerations and capital market imperfections. Nevertheless, Jalilvand and Harris (1984) and Myers (1984) argue that the existence of adjustment costs prevents firms from adjusting their target capital structure. Graham and Harvey (2001) and Ozkan (2001) show that large firms are more likely to maintain target debt ratios.

Jiraporn and Gleason (2007) argue that since leverage alleviates agency problems, firms with larger agency problems should adopt higher debt ratios. They find that debt ratios are inversely related to measures for better corporate governance for a large sample of non-regulated firms between 1993 and 2002. John and Litov (2008) also find, over a similar period, that manufacturing firms with weaker shareholder rights use more debt financing and have higher leverage between 1993 and 2004. They assume that better-governed firms are easier to monitor: it is easier for the market to distinguish between managers' bad luck versus bad judgment. This allows better-governed firms to take more risks. In equilibrium, a tradeoff between expected bankruptcy costs and debt-related benefits (such as tax shields) implies that firms with riskier investments will choose lower levels of debt. Following that logic, John and Litov (2008) find that poorly governed firms will be associated with more conservative investments and higher use of debt relative to their better-governed counterparts.

A number of articles have noted that firms tend to issue equity following increases in their stock prices and tend to repurchase shares following stock price declines. This evidence implies that stock returns are likely to be strongly related to past stock returns, which was recently documented by Welch (2003).

Graham and Harvey's (2001) survey evidence suggests that firms issue equity following stock price increases because CFOs believe that they can raise equity capital under more favorable terms in such situations. Baker and Wurgler (2002) examine how this tendency to "time the equity markets" affect debt ratios and find that firms that raise substantial amounts of capital when the equity market is perceived to be more favorable, i.e., when market to book ratios are higher, tend to have lower debt ratios.

In a recent study, Frank and Goyal (2004) use US publicly traded firms over 1950-2000 and evaluate the importance of 36 factors (both firm- and economy-specific) on leverage. They conclude that seven factors—median industry leverage, market-to-book ratio, collateral, profits, dividend paying, logarithm of assets, and expected inflation - are the most reliable ones.

The present empirical evidence on capital structure is that profitability as well as market-to-book ratio and dividend paying are negatively related to leverage. More profitable firms have larger internal slack and therefore a smaller need for external finance. Market-to-book ratio proxies growth opportunities and are negatively related to leverage due to the agency costs between the owners and bondholders. Dividend-paying firms are considered to be financially unconstrained, and unconstrained firms are expected to be less dependent on debt. Median industry leverage, collateral, log of assets, and expected inflation are found to be positively related with leverage. It is natural to think that firms with more assets and more collateral available face fewer obstacles in receiving debt, and, hence, have higher leverage. The expectation of high inflation makes credit cheaper today and therefore is positively related to leverage. Industry leverage is important since firms in the same industry are exposed to the same technology and therefore are likely to have a similar optimal financial structure (Jõeveer, 2005: 6).

Gleason et al, (2000) argue that the legal environment, the tax environment, the economic system, and technological capabilities influence the capital structure in the fourteen European community member countries examined in their study. Other

empirical studies at the international level, however, have reported conflicting results. Furthermore, Korajczyk and Levy (2003) argue that both macroeconomic conditions and firm-specific factors have an effect on firm's financing choices.

Antoniou et al, (2002) find that the capital structure decisions of firms are not only affected by its own characteristics, but also by its surrounding environment. The surrounding environment may affect the firm's capital structure for different reasons, such as, the deterioration or the improvement in the state of economy, the existence of a stock market and/or the size of banks sector.

As noted by Bevan and Danbolt (2002), under market imperfections such as restrictions to access to external financing and differentiations in the costs of alternative forms of external finance, firms will attempt to select levels of debt and equity in order to reach an optimal capital structure. On the other hand, Groth and Anderson (1997) suggested that aside from deciding on a target capital structure, a firm must manage its own capital structure. Imperfections in capital markets, taxes, and other practical factors influence the management of capital structure.

In this chapter, the empirical studies which investigate the factors that influence the capital structure are discussed under three sections: 1) Firm-specific factors, 2) Ownership structure and corporate governance, 3) Macro economic factors.

2.1. Firm-Specific Factors

Empirically, the relation between firm-specific variables and target leverage is consistent with some elements of both the pecking order theory and the tradeoff theory of capital structure. However, the relation is also inconsistent with some elements of each theory. Larger firms and those with more tangible assets tend to have higher leverage. Firms with unique assets tend to have lower leverage. Consistent with the tradeoff theory, firms with large depreciation tax-shields have lower target leverage. Also consistent with the tradeoff theory, deviations from estimated target leverage

explain firms' choice of security issuance. However, the negative relation between operating income and leverage and the negative relation between the macroeconomic variables and leverage seem consistent with a pecking order theory, particularly for unconstrained firms (Korajczyk and Levy, 2003: 77).

According to Harris and Raviv (1991), the consensus is that "leverage *increases* with fixed assets, nondebt tax shields, investment opportunities, and firm size and *decreases* with volatility, advertising expenditure, the probability of bankruptcy, profitability and uniqueness of the product."

2.1.1. Profitability

Many authors have different views on the relationship between leverage and profitability. The pecking order theory strongly suggests a negative relationship between leverage and profitability. If a firm has more retained earnings, it will be in a better position to finance its future projects by retained earnings, instead of external debt financing. However, in some authors' approaches, the choice of the firm's capital structure signals to outside investors the information of insiders, in which case investors take larger debt levels as a signal of good performance of the firm and management's confidence. If the argument is true, one would expect that firm value (or profitability) and debt level are positively related (Chen et al, 1998: 16).

Titman and Wessels (1988) cite evidence from Myers suggests that firms prefer raising capital, first from retained earnings, second from debt, and third from issuing new equity. He suggests that this behavior may be due to the costs of issuing new equity. These can be the costs that arise because of asymmetric information, or they can be transaction costs. In either case, the past profitability of a firm, and hence the amount of earnings available to be retained, should be an important determinant of its current capital structure.

According to trade-off theory, higher profitability implies a larger tax burden, which in turn increases the tax advantage of debt. According to asymmetric information theory, more profitable firms have less binding debt overhang restrictions, and thus they can be more leveraged. According to pecking-order theory, higher profitability implies a higher level of internally generated resources available for investments – the "cheapest" source of funds in terms of agency costs – and therefore a lower requirement for external financing capital (Jorgensen and Terra, 2003: 8).

Mandaci (2009) analyzing the impact of firm-specific and agency variables on capital structure of Turkish firms found that profitability has a negative relationship with the leverage ratio.

Regarding the effects of profitability on the financial leverage ratio of the firms, there are conflicting theoretical predictions. If past profitability is a good proxy for future profitability, profitable firms could borrow more, as the likelihood of paying back the loans is greater.

There is also strong empirical evidence on the negative association between profitability and leverage ratio in Donaldson's (1961) pecking order description of how firms make their financial decisions. The results of many authors support the pecking order theory that high profit firms use internal financing, while low profit firms use more debt because their internal funds are not adequate. Ozkan (2001) found that current profitability of UK firms have a negative impact on their borrowing decisions whereas there is a positive relation between past profitability and debt ratio.

Hovakimian et al. (2001) also found that past profits are an important predictor of debt ratios. On the other hand, Ooi (1999) indicates that corporate profitability is not a significant determinant of capital structure of UK property companies.

2.1.2. Asset Tangibility

Many theoretical and empirical studies propose that the composition of the assets of the firm determines the choice of its capital structure. The idea usually accepted is that firms with more tangible assets that can be used as collateral (with larger collateral value, as identified by the market) would or could issue more debt. That is so because the tangibility of assets is a way to reduce the information asymmetry between insider managers and outsider bondholders. If tangible assets are more easily appraised by the market and intangible ones have a specific value essentially for the firm, then there is a positive relationship between the degree of tangibility of assets and the degree of indebtedness of the firm. In this context, if it is not possible for the firm to offer collateral for debt, then creditors would make stricter demand, which would probably have consequences on the firm's cost of debt, leading it to prefer debt financing instead. Agency theory approaches find support in several empirical works predicting that there are strong industry effects across leverage ratios, and that volatility and tangibility seem to be major economic sources of such effect (Jorgensen and Terra, 2003: 6).

In an uncertain world, with asymmetric information, the asset structure of a firm has a direct impact on its capital structure since firms tangible assets are the most widely accepted sources for bank borrowing and raising secured debt. If banks have imperfect information regarding the behavior of the firm, firms with little tangible assets find it difficult to raise funds via debt financing. This suggests that a positive relationship between asset tangibility and leverage implies the existence of imperfect information, and hence indirectly confirms the relevance of models based on asymmetric information for explaining capital structure of firms. On the other hand, the absence of a relationship between tangible assets and leverage seems to suggest that information problems do not play an important role. Hence, the sign of the coefficient with respect to asset tangibility provides information on the importance of theories based on asymmetric information (Chen et al, 1998: 14).

The tangible assets of a firm can be considered as the representatives of the real guarantees to its creditors. Therefore, the importance of those assets among total assets

influences its level of debt. Therefore, the greater the proportion of tangible assets on the balance sheet (fixed assets divided by total assets), the more willing lenders should be to supply loans, and leverage should be higher. Firms with higher proportion of tangible assets are more likely belong to an industry with lower risks, where they can afford higher financial leverages and higher proportions of tangible assets. These tangible assets will eventually have an impact on the borrowing decisions of these firms, and in the case of a bankruptcy, tangible assets create more value than firms with greater dependence on intangibles (Sayılgan et al., 2006: 13).

Theories of capital structure provide certain relationships between the structure of firm's tangible (fixed) assets and its capital structure. The literature provides some different results on the relationship between debt and fixed assets. On one hand, Toy et al. (1974) show that corporate executives considered liquidity of assets a highly determinant of debt ratio. Schmidt (1976) and Ferri and Jones (1979) found a negative correlation between total debt and the proportion of fixed assets. On the other hand, the works of Jensen and Meckling (1976) and Myers (1977) provide evidence on positive relationships between firm's debt ratios and their collateralized assets. Titman and Wessels (1988) find an effect of assets' collateral value on firm's capital structure choice. Martin and Scott (1974) and Ghosh et al. (2000) find that the ratio of fixed assets to total assets is a positive and significant determinant of firm's capital structure.

Mandaci (2009) for Turkey found that tangibility is positively related to the long term debt, whilst shot-term debt and total debt are found to be negatively related. The work of Wiwattanakantang (1999) in Thailand, and work of Um (2001) in Korea report a positive relationship between tangibility and leverage, other studies such as Booth et al, (2001) in ten developing countries, and Huang and Song (2002) in China, find that tangibility is negatively related to leverage. It is argued, however, that this relation depends on the type of debt.

Nuri (2000) argues that companies with a high fixed asset ratio tend to use more long-term debt. Bevan and Danbolt (2000 and 2002) also find a positive relationship

between tangibility and long-term debt, whereas a negative relationship is observed for short-term debt and tangibility in the UK.

2.1.3. Size

A firm's size is considered positively related to leverage. The most important argument is that informational asymmetries are less severe for larger firm than for smaller firms. If the public is more aware of what is going on at larger firms, the firm will find it easier to raise debt. Further, larger firms can diversify their investment projects on a broader basis and limit their risk to cyclical fluctuation in one particular line of production. Thus the financial distress risk can be considered lower for larger firms (Chen et al, 1998: 15).

Literature offers some reasons regarding the positive relationship between firm size and financial leverage ratio. For example, large companies have more stable or less volatile cash flows and may be able to exploit the economies of scale in issuing securities. They may have an advantage over smaller firms in accessing credit markets and can borrow under better conditions and may have a more dilute ownership, and thus have less control over individual managers. Managers may then issue debt to reduce the risk of personal loss resulting from bankruptcy. The larger a firm is the more information is expected to be available about it, which reduces the level of information asymmetries in the market, making it possible to obtain financial resources from lenders. Because of information asymmetries, smaller firms are also likely to face higher costs for obtaining external funds (Sayılgan et.al., 2006: 9).

Direct bankruptcy costs appear to constitute a larger proportion of a firm's value as that value decreases. It is also the case that relatively large firms tend to be more diversified and less prone to bankruptcy. These arguments suggest that large firms should be more highly leveraged. The cost of issuing debt and equity securities is also related to firm size. In particular, small firms pay much more than large firms to issue new equity and also somewhat more to issue long-term debt. This suggests that small

firms may be more leveraged than large firms and may prefer to borrow short term (through bank loans) rather than issue long-term debt because of the lower fixed costs associated with this alternative (Titman and Wessels, 1988: 5-6).

There is evidence that bigger firms have proportionally smaller bankruptcy costs. These firms' values therefore deteriorate relatively less in the event of bankruptcy, which is a positive incentive for debt in the trade-off theory. Agency approaches of the asymmetric information theory, on the other hand, that management of larger, more established firms may have an incentive for overinvestment, which is accomplished by using the free cash flows of the firm in inefficient projects instead of distributing it to shareholders through dividends or leveraged stock repurchases.[11] This argument works similarly in the context of the pecking-order theory, except that investment is not necessarily inefficient, but preferably financed with the cheapest source of funds in terms of agency costs (Jorgensen and Terra, 2003: 8).

Size can be considered as a potential explanatory determinant of differences in leverage among the firms contained in the samples. Larger firms will more easily attract a debt analyst to provide information to the public about the debt issue. Banks are more willing to lend their funds to larger firms partly because they are more diversified and partly because larger firms usually request larger amounts of debt capital than smaller firms. As a consequence, larger firms are usually able to reduce transaction costs associated with long-term debt issuance and can arrange a lower interest rate (Eriotis, 2007: 325).

Scott (1976) concludes that the maximum amount of secured interest payments was shown to be an increasing function of the firm's size. Ozkan (1996) reports a positive relationship that smaller firms tend to have lower leverage ratios. Similarly,

[11] This argument should be taken somewhat cautiously because one can argue that, since debt alleviates the overinvestment problem, larger firms could add value by issuing more debt and, therefore, larger firms would have higher leverage ratios. This is essentially the rationale behind Leveraged Buyouts (LBO) and the advocates for concentration of ownership in a smaller group of investors that would exercise stricter supervision over management.

Ghosh et al. (2000) report a significant positive relationship between assets size and long-term debt ratio. On the other hand, Toy et al. (1974), Ferri and Jones (1979), Chung (1993) an Ozkan (2001) found no linear relationship between total debt ratios and firms' size.

Rajan and Zingales (1995) present an alternative argument for size that suggests that informational asymmetries between insiders in firms and the capital markets are lower for large firms. Accordingly, large firms should be more capable of issuing informationally sensitive securities like equity and should have lower debt. However, in all four countries studied by Rajan and Zingales, net equity issuance by firms in the largest size quartile is significantly less than for firms in the smallest size quartile.

Analyzing the firms in G-7 countries Rajan and Zingales (1995) find that leverage increases with size in all countries except Germany. A possible explanation is that larger firms are better diversified and have a lower probability of being in financial distress. Lower expected bankruptcy costs enable them to take on more leverage.

Size can serve as an indicator of riskiness of the firm in that:

- Smaller firms have higher product market risk,
- Small firms have a higher probability to be takeover targets.
- According to Whited (1992) small firms cannot access long-term debt markets since their growth opportunities exceed their assets. Titman and Wessels (1988) argue that larger firms have easier access to capital markets.

Rajan and Zingales say that: "The effect of size on equilibrium leverage is more ambiguous. Larger firms tend to be more diversified and fail less often, so size may be an inverse proxy for the probability of bankruptcy"

2.2. Ownership Structure and Corporate Governance Factors

2.2.1. Ownership Structure and Capital Structure

Corporate ownership structure can act as an incentive device for reducing the agency costs associated with the separation of ownership and management which can be used to protect property rights of the firm.

Since the pioneer work of Modigliani and Miller (1958) proposed the concept, that the general characteristics of a firm's ownership structure can affect performance has received considerable attention but few studies have looked at the relationship between ownership structure and capital structure. Corporate debt policy has also been viewed as an internal control mechanism, which can reduce agency conflicts between management and shareholders, particularly the agency costs of free cash flow as suggested by Jensen (1986). Jensen (1986) argues that managers with substantial amounts of free cash flow are likely to engage in non-optimal activities.

Grossman and Hart (1980) suggest that debt is a disciplinary device that may be used to reduce the agency costs of free cash flow. However, as Myers (1977) demonstrates, debt can also have undesirable effects such as inducing managers to forego positive net present value projects.

Jensen and Meckling (1976) argue that managerial shareholding reduces managerial incentives to consume perquisites and expropriate shareholders' wealth and results in alignment of the interests of management and shareholders. It also reduces the propensity to involve in non maximizing behavior. Fama and Jensen (1983) and Demsetz (1983) argue that managerial shareholding may still have adverse effects on agency conflicts and it may entrench the present management leading to an increase in managerial opportunism. Jensen (1986) again addresses the issue of agency theory and finds that managers of a firm may make efforts to expand the firm beyond its optimal size for their personal gains and this may result in increase in gearing levels.

Short, Keasey and Duxbury (2002) examine the influence of ownership structure on the financial structure of UK firms. Results reveal that there exist positive relationship between management ownership and leverage ratio whereas negative relationship is observed between large external equity holder's ownership and financial leverage. However, relationship between management ownership and leverage ratio is not significant in the presence of a large outside equity holders. These findings suggest that outside equity holders affect the agency costs of equity financing and debt financing.

Brailsford (2002) finds that the managerial ownership and leverage may be related in nonlinear fashion. He provides evidence about the presence of negative relationship among managerial equity holding and leverage levels. He discovers that low level ownership by managers leads to low level of agency conflicts and results in higher level of debt. On the other hand higher levels managerial ownership results in managerial opportunism and ultimately leads to lower debt levels.

External block-holders may reduce the scope of managerial opportunism resulting in lower direct agency conflicts between management and shareholders (Shleifer and Vishny, 1986). If external block-holders serve as active monitors, management may not be able to adjust debt to their own interests as freely if such investors do not exist. In other words, firms with higher external block-holding are likely to have a higher debt ratio. Second, Jensen (1986) argues that managerial self-interests in continued viability of the firm may also be important in inducing managers to lower debt. This is because large debt increases the risks of bankruptcy. Third, corporate debt policy has also been viewed as an internal control mechanism that may lower agency conflicts between managers and shareholders, especially in the presence of free cash flow.

2.2.2. Corporate Governance and Capital Structure

Corporate governance is a philosophy and mechanism that entails processes and structure which facilitate the creation of shareholder value through management of the corporate affairs in such a way that ensures the protection of the individual and collective interest of all the stakeholders. Sound corporate governance principles are the foundation upon which the trust of investors and lenders is built. Good corporate governance practices may have significant influence on the strategic decisions of a company, e.g. external financing, that are taken at board level. Therefore corporate governance variables like size of board, composition of board, skill set at board and CEO/Chair duality may have direct impact on capital structure decisions.

Corporate governance is generally associated with the existence of agency problem and its roots can be traced back to separation of ownership and control of the firm. Similarly conflict of interests between controlling shareholders and minority shareholders is also at the heart of the corporate governance literature. According to modern corporate finance theories, agency cost is one of the determinants of capital structure. However empirical literature on corporate governance does not provide any conclusive evidence on the existence of relationship between corporate governance, ownership structure and capital structure of firm. According to modern corporate finance theories, agency cost is one of the determinants of capital structure whereas corporate governance is structured to alleviate agency issues; hence corporate governance and capital structure are linked through their association with agency costs (Hasan and Butt, 2009: 50).

According to La Porta et al. (2000b), "corporate governance is, to a large extent, a set of mechanisms through which outside investors protect themselves against expropriation by the insiders (both managers and controlling shareholders)."

La Porta et al. (1998) show that countries adopt different law and its enforcement to protect outside investors. They argue that, in general, common law countries offer greater protection than civil law countries. Protection provided to both creditors and

shareholders is the least in French-civil-law countries, in which Turkey is included. Their results show that in some countries laws are not sufficient to protect investors from expropriation of their funds.

Shleifer and Vishny (1997) claim that if legal protection is poor, investors with a higher percentage of shares could have more effective control rights. In effect, concentration of ownership by one or more large equity blockholders leverages up legal protection. To support this argument, La Porta et al. (1998), with a sample of large firms from 49 countries, find a strong negative correlation between concentrated ownership, as measured by the combined stake of the three largest shareholders, and the quality of legal protection of investors. La Porta et al. (1999) also show that ownership structure of large corporations in 27 wealthy economies, except in economies with very good legal shareholder protection, is highly concentrated. Families or the state typically controls firms in countries with poor investor protection.

Claessens et al. (2000) find that more than two-thirds of firms in nine East Asian countries are controlled by a single shareholder, and control is most pronounced among family-controlled firms, except in Japan, which has fairly good shareholder protection. Lins (2003) examine 1,857 firms from 22 emerging markets. The results show that 58 percent of sample firms are controlled by one or more blockholders. Managers and their families are the dominant type of controlling blockholders in emerging markets. Implication of the findings for the earlier studies is that, share ownership is concentrated on most of both developed and developing countries.

Agency theory suggests that there are several ways in which debt can help mitigate agency conflicts between shareholders and managers. Holding constant the manager's absolute investment in the firm, increases in the fraction of the firm financed by debt increase the manager's share of the equity, thereby bringing the manager's and the shareholders' interests into better alignment (Jiraporn and Kitsabunnarat, 2005: 6).

Jiraporn and Kitsabunnarat (2005) advance two possible hypotheses that may explain the influence of governance quality on capital structure.

2.2.2.1. The Outcome Hypothesis

This view argues that capital structure is determined as an "outcome" of corporate governance quality. Firms with low governance quality suffer more severe agency problems. Managers of these firms are better able to exploit shareholders and place their private benefits ahead of those of the shareholders. As argued by agency theory and shown by empirical evidence, debt plays a role in controlling agency costs, making it more difficult for opportunistic managers to misbehave. In firms with poor governance, managers experience less monitoring and are more likely to behave opportunistically. These managers are more likely to carry debt at a sub-optimal level because they do not want to impose additional constraints on themselves in the form of fixed interest payments or be deprived of "free" cash flow that they have control over. Therefore, this view predicts that poor governance quality is associated with low leverage. In other words, there is a positive relationship between governance quality and capital structure.

2.2.2.2. The Substitution Hypothesis

This perspective contends that leverage acts as a "substitute" for corporate governance. Debt helps alleviate agency costs. Likewise, corporate governance is installed to mitigate agency conflicts. Thus, debt and governance play the same role and may substitute for each other. In firms with weak governance, the need for debt to act as a tool for controlling agency costs may be greater than in firms with strong governance. Hence, firms with poor governance quality should be more leveraged.

Alternatively, there is another way to reason for the substitution hypothesis. This argument relies critically on the need for firms to raise money in the external capital markets, at least occasionally. To be able to raise external funds on attractive terms, a firm must establish a reputation for moderation in expropriating shareholders. One way to establish such a reputation is by carrying debt and making interest payments, which reduces what is left for expropriation.

A reputation for good treatment of shareholders is worth the most for firms with weak corporate governance. As a result, the need for debt to establish a reputation is the greatest for such firms. By contrast, for firms where governance quality is high, the need for a reputation mechanism is weaker, and, thus, so is the need for leverage. This view, therefore, posits that, all else equal, leverage should be higher in firms with weaker governance quality. In other words, an inverse relationship should be observed.

2.3. Macro-Economic Factors

Booth et al, (2001: 118) state that, *"In general, debt ratios in developing countries seem to be affected in the same way and by the same types of variables that are significant in developed countries. However, there are systematic differences in the way these ratios are affected by country factors, such as GDP growth rates, inflation rates, and development of capital markets."*

Many researchers have considered the importance of firm-specific characteristics as a determinant of firms' choice of financial leverage (Titman and Wessels (1988), Havakimian et al (2001)). There is an equally large literature that documents how capital structure choice varies over time. Some of these studies make a strong case that the macroeconomic environment within which firms operate could be an equally important determinant of their financing decision (Choe, Masulis & Nanda (1993), Gertler & Gilchrist (1994)).

The capital structure is merely firms' decision regarding the mix of debt and equity capital, the macroeconomic variables also play significant role in the capital structure decisions. The fiscal policy and monetary policy are major macroeconomic directives in this regard. An increase in corporate tax rate raises the leverage ratio because of debt tax shield and vice versa (Modigliani and Miller, 1963; and Miller, 1977). In the same manner, the monetary policy determines the interest rate, which ultimately influence on debt-equity choice. The development of capital market also influences on capital structure (Booth et al., 2001). In aggregate, the economic

development of the country influence on firms' capital structure decision (Rajan and Zingales, 1995; Booth et al., 2001).

There are several potential macro variables affecting the impact of firms' growth opportunities on leverage. Inflation generally reveals a certain degree of higher instability in economic context, resulting in fewer business opportunities, thus mitigating the effect of growth opportunities on corporate activities. This means that companies tend to borrow against real investment opportunities rather than the inflationary growth prospects.

Existing empirical studies have, however, been largely confined to the US and other developed countries and clustered around firm specific variables; some recent studies (Gertler and Gilchrist, 1993; Bernanke and Gertler, 1995; Rajan and Zingales, 1995; Demirguc-Kunt, and Maksimovic, 1999; Booth et al., 2001; Korajczyk and Levy, 2003) are carried out from macroeconomic perspective.

Research by Rajan and Zingales (1995), La Porta et al. (1997), Demirgüç-Kunt and Maksimovic (1998, 1999), Booth et al. (2001), and Giannetti (2003) have shown that a country's development of its legal and institutional framework matters in firms' capital structure decisions. When the legal system is inefficient or costly to use, short-term debt is more likely to be employed than long-term debt. What is overlooked from this line of research is the fact that there are substantial differences in institutional development even within a country, and those differences could also affect firms' financial decisions in a similar way as the institutional differences across countries.

Gertler and Gilchrist (1993) find that aggregate net debt issues, following recessions associated with a monetary contraction, increase for large firms but remain stable for small firms that rely on private debt. Similarly, Gertler and Gilchrist (1994) show that aggregate net short-term debt issues are less sensitive to the business cycle for small firms. Theoretically, the literature debates whether these patterns are due to the effect of monetary policy on firms' debt issue patterns through the bank lending channel or through the balance sheet channel. Bernanke and Gertler (1995)

provide a description of the debate as well as a review of the literature. The bank lending channel focuses on the possible effects of monetary policy actions on the supply of loans by depository institutions.

Rajan and Zingales (1995) examine the differences in the development of banks versus financial markets as possible determinants of capital structure. However, as the Rajan and Zingales (1995) study shows, the relative importance of banking is less indicative of differences in corporate leverage than it is of differences in the relative amounts of private financing (bank loan) and arm-length financing through open market. Demirguc-Kunt and Maksimovic (1996) find a negative relation between level of stock market development and both long-term and short-term debt to total equity of firm, and a positive relation between bank development and leverage. Furthermore, in developing countries, firms become more leveraged as stock-market develops. Booth et al. (2001), in their cross-sectional study, find negative influences of stock market ratio (on GDP) and inflation rate on total debt ratio and long-term debt ratio; and the positive influences of GDP growth rate, Miller's tax advantage and liquid liabilities/GDP ratio.

Business cycles can have great impact on the credit portfolio of the company. The firm's profitability changes with the business cycle. Apart from the management problems and other firm specific issues that would cause a loss in its profitability, changes in market and economic conditions (such as changes in interest rates, stock market, exchanges rate, unemployment rates, and industry specific shocks, etc) may affect the overall profitability of the firm. Ross's (1976) Arbitrage Pricing Theory (APT) reflected this idea by defining a firm's change in value (or return) as a function of changes in the underlying macroeconomic variables (the systemic component) and the firm specific idiosyncratic shocks. In general, in an expansion, demand is high and business is strong: firms have higher probability to profit and therefore fewer defaults will happen. Whereas during a recession, keeping a business profitable is more challenging and it is more likely for a firm to default. Frye (2000) finds a significant synchrony between default and recovery and Carey (1998) verified that losses are indeed

worse in recession. Therefore the firm's performance, which is associated with its risk profile, is directly tied to the business cycle and the whole state of macro economy.

2.3.1. Interest Rate

Interest rate fluctuations can have major effects on the firm's profitability and financial slack growth prospects. As the firm's interest expense on existing debts increases, taxable income decreases. Yet, a firm's potential to grow can be unaffected for a certain period of time if interest rates rise but the firm's cost of debt does not rise simultaneously because the firm's debt contracts have fixed interest rates. The percentage of the firm's debt contracts that have interest rates tied to certain market rates will determine to what extent the firm's profitability and its prospects for growth in financial slack are exposed to interest rate fluctuations (Gulati and Zantout, 1997: 78).

2.3.2. Market Capitalization to GDP

Another important aspect to consider, regarding financing decisions, is related to the type of the financial markets, or more specifically, with the development stage presented by the financial markets in countries with considerable economics differences, in what concerns to the sector own structure, per capita income, level of the interest rate, inflation rates, relative participation of the stock market, tributary legislation, etc.

The macro-economic variable such as the development of a country's stock market can lessen the effect of firm size which is used as a proxy of information asymmetry. The more effective this factor is, the more accurate information outside investors would obtain about firms' operations, which mitigates the impact of information asymmetry problem. Besides, when an economy's financial system is more market-oriented, the firm size does really matter in terms of revealing more information. In contrast, if the financial system is more of bank-based nature, this effect of firm size is likely to be mitigated.

Higher GDP growth rate of a country implies more options for future growth for all firms in the economy. As suggested by Booth et al. (2001), firms are likely to borrow against real options for growth but not against inflationary prospects. Hence, leverage tends to rise with GDP growth and decline with inflation (Jong, 2006: 10).

The ratio of stock market capitalization to GDP proxies the development of the financial sector. Giannetti (2003) has shown that this indicator is negatively related to the leverage of Western European firms.

The next part of this chapter gives a short overview about macro-economic developments in Turkey. Afterwards, the capital structure of Turkish firms was discussed.

2.4. Macro-Economic Developments in Turkey during Last Decades

The last two decades witnessed an extensive shift in the development strategy which was the result of Turkey's adopting export-oriented "industrialization" (EOI) policies after 1980. A wide range of liberalization programs were implemented in the 1980s: The foreign trade regime was liberalized to a large extent in the 1980s that was followed by full capital account liberalization in 1989. Exports were encouraged by various means (more than 100 percent devaluation of the Turkish Lira in 1980, generous export subsidies throughout the 1980s, and decreasing real wages until 1988).

Labor and resource intensive sectors were the first to respond to these measures, and total volume of exports (in US$) increased more than 4-fold from 1980 to 1989. Economic growth rates increased in the 1980s thanks to the export boom and easing balance of payments problems, but macroeconomic environment deteriorated sharply in the 1990s and the economy was trapped into rising boom and bust cycles that finally ended with a devastating economic crisis in 2001.

The OECD (2004) reports that Turkey's labor productivity is just 30 percent of the level of United States. Further, Turkey's recent growth has lagged behind peer countries. The 2000–2001 crisis brought a GDP decline of 7.5 percent – one of the largest in Turkish Republican history – even in the midst of an IMF-sponsored stabilization plan. Whereas many OECD countries witnessed robust sectoral productivity growth during the 1990s, the productivity growth for Turkey in the same period came primarily from sectoral reallocation, with labor moving out of relatively less productive sectors such as agriculture. The share of the labor force working in agriculture is 34 percent, but these workers contribute just 12 percent of GDP (OECD, 2004: 154).

Turkey also suffers from high levels of income inequality: the Gini index for total income was about 0.42 in 1994 (World Bank, 2002). Although extreme examples are higher – Brazil or South Africa – Turkey is nevertheless close to some very unequal countries, such as the Russian Federation (Duygan and Güner, 2005).

Education statistics for Turkey are also alarming. In 2001, education expenditures were only 2.2 percent of gross national income, less than half that of many developing countries with similar per capita income (World Bank, 2003). Illiteracy remains shockingly high, especially among women. In the 2001 data, illiteracy was 15 percent of the general population aged 15 years or more and 25 percent among women aged 15 years or more. By comparison, illiteracy in Brazil was 12 percent, despite the fact that this country has a much higher percentage of its population below the one-dollar-a-day poverty line (World Bank, 2003). Even more troubling is the trend. Between 1990 and 2000 the share of education expenditures in total public expenditure declined by half, plummeting from about 18 to 9 percent (SIS, 2002).

Recent Turkish labor market trends are also disconcerting. The analysis in Tunali and Bavlevent (2005) reveals that employment growth has been weak. This is true even before the crisis of 2000–2001 hit the economy. Employment growth from 1988 to 1998 was 1.4 percent, despite 3 percent growth in working-age population (20–54 years).

When the period 1998–2003 was brought under scrutiny, average aggregate employment growth is negative at 0.6 percent per annum. The Labor Force Participation Rate (LFPR) is also very low in Turkey: whereas the LFPR is near 70 percent for OECD countries, this figure is 51 percent for Turkey. The corresponding figure for women in Turkey is even worse, only 28 percent compared to nearly 60 percent as the OECD average (Tunali and Bavlevent, 2005).

Financial crisis have important affect on the economies. Turkey experienced several financial crises during its history: The most recent ones were the 1994 financial crisis, the November 2000 and February 2001 financial crisis. These crises strongly affected the Turkish economy, capital markets and caused high inflation rates. Turkish governments tried to stabilize the economy after the 1994 financial crisis. However, these efforts in 1995, 1998 and 2000 failed to reduce the inflation rate to levels below 25 per cent per year. In 2002, the Government made an agreement with the International Monetary Fund to make minor changes in the program to restructure the Turkish economy. Turkish government achieved to decrease the high inflation rate from 29,7% in 2002 to 8,39% in 2007. With effort to joining European Union, systems are becoming more transparent among Turkish companies. The revision of the Turkish Commercial Code and the convergence to international accounting, auditing and valuation standards are the reforms of the Turkish capital market regulations (Arsoy and Crowther, 2008: 410).

2.5. Capital Structure of Turkish Firms

The financial markets in Turkey have some unique characteristics, which influence financial leverage decisions. First, financial markets are largely dominated by banks and there are limited resources in capital markets. Second, debt financing is the dominant source of financing rather than equity financing. The main reasons are company policies aimed at capturing the advantage of leverage in inflationary periods and the erosion of equity in such periods. In addition, there exists almost no opportunity

for firms to issue debt instruments due to the crowding-out effect of public sector borrowing. As a result, although the economic conditions have started to change as the inflation rates started to drop considerably in the recent years; firms in the whole period seem to rely heavily on short-term liabilities especially in the form of trade credits and short-term bank loans.

Turkish firms' capital structure decision has received scant attention recently. As alleged by Rajan and Zingales (1995), a good understanding of the relevant institutional context is required when identifying the fundamental determinants of capital structure and in this context, it is worthwhile to note that Turkey has many special features as an emerging market. The economic growth strategy of Turkey underwent a great transformation in the early 1980s. With the significant decisions taken in this period, many radical changes and structural reforms were materialized to increase the economic efficiency and competitiveness. Since then, Turkey has adopted a liberal economic policy with free market operations within the rules of demand and supply, free competition, and a liberalized foreign trade. However, growth rate resulting from these reforms could not be sustained due to the sharp recessions and financial crises in 1994 and 2001. Signing another standby agreement with the IMF, structural reforms have restarted and the economic reforms have begun to show results in subsequent years (Sayılgan, 2006: 126).

Turkey started the new millennium with another IMF backed macroeconomic stabilization and structural adjustment program. At the start, the program was mainly depended on fiscal austerity measures combined with pegged exchange rate regime. It was interrupted by a serious financial crisis in the early 2001. The ratio of the public sector budget surplus excluding the interest payments to the GDP is targeted to be 6.5 percent. The independent Central Bank of Turkey has the responsibility to implement the monetary policy through inflation-targeting, aiming to maintain the price stability (Yeldan and Voyvoda, 2006).

CHAPTER 3

AN EMPIRICAL ANALYSIS OF THE EFFECTS OF MACRO-ECONOMIC FACTORS ON THE CAPITAL STRUCTURE OF TURKISH FIRMS.

There are many studies which examine the effects of firm-specific characteristics on firms' financial leverage decisions. There is an equally large literature that documents how capital structure choice varies over time. Some of these studies argue that the macroeconomic environment within which firms operates could be an equally important determinant of their financing decision. There are some potential macro economic variables that are known to have a great influence on capital structure choice.

The major purpose of this thesis is to analyze empirically the effects of macroeconomic and firm-specific factors on the capital structure decisions of the firms listed in Istanbul Stock Exchange (ISE). This study provides evidence of how macroeconomic conditions and firm-specific factors affect firms' capital structure choice of Turkish firms.

Panel data regression analysis is used to analyze the relationship between firm-specific factors and macro-economic factors with the financial leverage ratios.

The last part of this thesis is structured as follows. Firstly, we describe the study's research design which includes the sample selection and data description. Secondly, the methodology and the hypothesis of the study are presented. Thirdly, empirical results are given. Finally, conclusions are drawn and the implications of the results are discussed.

3.1. Research Design

This study aims to test whether there is a relationship between macro-economic factors and capital structure of Turkish manufacturing firms. In addition to the macro

economic variables, the firm-specific factors were investigated in order to see which factors explain the most variations in leverage ratios of firms which are traded in ISE.

In the overall research design, the leverage ratios which are total debt to total assets, short-term debt to total assets, long-term debt to total assets are the dependent variables whereas profitability, tangibility, size, market capitalization to GDP ratio, money supply to GDP ratio, and interest rate are the independent variables. Research design is structured in two sections including the sample selection and the data description.

3.1.1. Sample Selection

The database employed in this study includes yearly accounting data of 136 firms listed on the Istanbul Stock Exchange (ISE) and the analysis is based on the year-end observations of nine consecutive years running from 1996-2004. The sample period could not be prolonged after 2004 because the firms listed on ISE changed their financial statements according to International Financial Reporting Standards (IFRS) beginning from 2005.[12]

For the analysis, the basic data were taken from the balance sheet and income statement of each firm. The financial statements of the firms are obtained from the web site of Istanbul Stock Exchange. Since the financial statements of the firms in the financial sector have a different structure from those of non-financial companies, the financial firms such as banks, financial groups, holding companies, investment corporations, insurance companies and others were excluded from the sample.

The firms which do not have sufficient data during the investigated period were also excluded from the sample. It was investigated whether the decisions of the firms

[12] See also P.E. Mandaci (2009)

concerning the financial leverage and the composition of leverage as short-term and long-term is in conformity with the patterns proclaimed in previous studies. This study focuses on determining if macro-economic and firm-specific factors are indeed relevant in the leverage decision, and if so, which factors have the greatest influence.

3.1.2. Data Description

Some basic institutional information on macroeconomic variables of Turkey is shown in Table 3.1. Data on country-level variables such as the growth in real gross domestic product, the nominal deposit interest rates, market capitalization and GDP are obtained from the web-site of Central Bank of Turkey. The Market Capitalization to GDP is measured as total market capitalization amount divided by total gross domestic product at factor cost. The Average figure is the arithmetic mean over the 9 years.

Table 3.1: Macro Financial Data

Year	GDP Growth Rate (%)	Interest rate	Market Capitalization (Rs. million)	Market Capitalization to GDP (%)
1996	7	93,77	3.275	0,22
1997	7,5	96,56	12.654	0,43
1998	3,1	95,5	10.612	0,20
1999	-3,4	46,73	61.137	0,78
2000	6,8	45,64	46.692	0,37
2001	-5,7	62,5	68.603	0,39
2002	6,2	48,19	56.370	0,20
2003	5,3	28,59	96.073	0,27
2004	9,4	22,06	132.556	0,31
Average	4,02	59,95	54219,1	0,35

Table 3.1 reveals that Turkey has experienced highest GDP growth rate in 2004 and lowest value in 2002 (-5.7%) during last 9 years. The reason that the GDP growth

rate was the lowest in 2001 is that in this year Turkey faced with the financial crises. As it is shown in the Table 3.1, until 2002 the GDP growth rate was fluctuating. Beginning from 2002 trend went upward and it reached the highest growth rate in 2004. The 9-year average statistic of GDP growth rate is 4.02%, which is nominal in case of developing countries.

The interest rate for the investigated period was highest in 1997 but it also was declining and reached 22.06 in 2004. The stock market capitalization has been observed highest in year 2004 which is 132.556 TL millions. The 9-year average statistics is 54219.1 TL millions. The ratio of stock market capitalization to GDP is highest in year 1999, that is, 78 %. The average ratio is revealed 35 %. The Table 3.1 reveals that the ratio of stock market capitalization to GDP was fluctuating during the observed period. The ratio decreased more than two times from 1999 to 2000 (from 78% to 37%), but beginning from 2002 it began to stabilize.

3.2. Methodology and Hypotheses

Panel data multiple regression analysis is used in this study to analyze the effect of macroeconomic and firm-specific factors on capital structure. In this study, Ordinary Least Square (OLS) model is used as a multivariate test to investigate the effect of each independent variable on capital structure.

Literature suggests a number of factors, which are likely to have an impact on a company's capital structure decision. This study investigates the influence of three firm specific characteristics– profitability, tangibility and size, and three macroeconomic factors – money supply to GDP, market capitalization to GDP, and interest rate - on the capital structure decisions or specifically, on the financial leverage ratios of the Turkish listed non-financial companies.

3.2.1. Hypotheses

Taking into account the literature on capital structure debate, the hypotheses which this study develops about the possible affects of macroeconomic and firm-specific factors on the capital structure of Turkish firms are as follows:

H1: The leverage ratios of Turkish firms are negatively related to the interest rate.

H2: The leverage ratios of Turkish firms are negatively related to the ratio of stock market capitalization to GDP.

H3: The leverage ratios of Turkish firms are positively related to the ratio of money supply to GDP.

H4: The leverage ratios of Turkish firms are negatively related to the profitability.

H5: The leverage ratios of Turkish firms are positively related to the tangibility.

H6: The leverage ratios of Turkish firms are positively related to the size.

3.2.2. Definition of Variables

All variables of this study are observed for the 1996-2004 period. The independent variables which are used in this study are: interest rate, the ratio of stock market capitalization to GDP, the ratio of money supply to GDP, profitability, tangibility and size. As discussed so far, the study aims to test whether the stated hypotheses are the same for the firms which are traded in Istanbul Stock Exchange or not. Therefore, the study also attempts to determine the direction of the relationship between leverage and different variables if any.

a) Dependent Variables

The dependent variables used in this study which are known as the indicators of the leverage are the ratios related to the capital structure of the firms. Rajan and Zingales (1995) used the leverage as the ratio of total debt to net assets, where net assets are total assets less accounts payable and other liabilities instead of the ratio of total liabilities to total assets or the ratio of debt (short term and long term) to total assets. Some of the studies used two different debt-equity ratios as a dependent variable in the regression analysis. For instance, Allen and Mizuno (1989), Ooi (1999), Hatfield et al. (1994) and Gaud et al (2005) expressed debt ratio in both book-and market-value terms. Book value of the ratio is derived by dividing the book value of debt by the sum of the book value of debt and the book value of equity. The market value based ratio is derived by dividing the book value of debt by the sum of the book value of debt and market value of equity. Padron et al. (2005) also used the market value based measure and defined the ratio of leverage as the ratio of total debt to the sum of total debt and the market value of equity.

In this study, the financial leverage is measured as the ratios of short-term debt/total assets, long-term debt/total assets, total debt/total assets which are consistent with the most of the literature.

1. STD/TA=Short-Term Debt/Total Assets

2. LTD/TA=Long-Term Debt/Total Assets

3. TD/TA=Total Debt/Total Assets

When measuring the financial leverage, book values instead of market values were used. The first reason was the data limitations, discussed also in Titman and Wessels (1988) which forced them to measure debt in terms of book values rather than market values. The second reason was the conceptual simplicity and the variables' ability to reflect a firm's total reliance on borrowed funds, which is also brought by Ferri

and Jones (1979) who measured the financial leverage as the ratio of total debt to total assets at book value for reasons of. As stated by Titman and Wessels (1988), with a reference to the Bowman (1980), the cross sectional correlation between the book value and market value of debt is very high, so the misspecification due to using book value measures is probably fairly small. Additionally, Almazan and Molina (2005) noted that equity book values can be important if firms base their decisions on accounting, rather than market information.

b) Independent Variables

Literature suggests a number of macro factors, which are likely to have an impact on a company's capital structure decision. This study investigates the influence of three macroeconomic characteristics –interest rate, stock market capitalization/GDP and money supply/GDP - on the capital structure decisions or specifically, on the financial leverage ratios of the Turkish listed companies.

In addition, we analyze the firm-specific determinants of leverage which are selected from prior literature and defined as follows.

Size

Several indicators such as logarithm of net sales (Titman and Wessels, 1988; Rajan and Zingales, 1995; Wiwattanakantang, 1999; Graham, 2000; Ozkan, 2001; Gaud et al., 2005), natural logarithm of total assets (Padron et al., 2005), average value of total assets (Chung, 1993), total assets at book value (Scott and Martin, 1975), the market value of the firm (Graham, 2000) were used in the literature to measure size. Size is also an indicator of borrowing capacity for firms. Larger firms have higher borrowing capacity and lower cost of borrowing with better access to capital markets. As a general rule, governments are more prone to protect larger firms and banks lend more capital to

these firms than smaller ones. As in the case of Turkey, it is important to show whether larger firms tend to borrow larger amounts of money than the smaller ones.

In this study, the natural logarithm of net sales is used in real terms as a proxy for size [SIZE].

Profitability

In literature, various proxies such as ratios of operating income over sales and operating income over total assets (Titman and Wessels, 1988), the return on assets - ROA (Wiwattanakantang, 1999), the return on total assets, which is calculated as the ratio of EBIT to total assets (Rajan and Zingales, 1995; Ooi, 1999; Ozkan, 2001; Gaud et al., 2005) were used as indicators of profitability to measure profitability. In this study, the ratio of earnings before interest and taxes to total assets was used as a proxy for profitability [PROF]. Using this variable as a proxy, it is aimed to show whether Turkish firms with large profits use internal financing and firms generating smaller profits use external financing.

Tangibility

There are various proxies for tangibility which were used in the empirical analysis. Chen et al. (1998) and Sayılgan et al. (2006) use the sum of the fixed assets plus inventories divided by the total assets. Other studies like Jorgensen and Terra, (2003) and P.E. Mandaci (2009) used net fixed assets/total assets ratio as indicator of tangibility. In this study, net fixed assets/total assets ratio is used to measure the tangibility [TANG].

Table 3.2 presents the definitions of the independent variables and their expected relationship with leverage ratios.

Table 3.2: Definition of Independent Variables and Expected Signs

Variable	Definition	Expected Sign
Profitability	Earnings before interest and taxes /Total Assets	_
Tangibility	Net Fixed Assets / Total Assets	+
Size	Log(Net Sales)	+
Development of financial sector	Stock market capitalization /GDP	+
Money supply/GDP		_
Interest Rate		_

3.2.3. The Model Specification

In this study, panel data regression analysis was used. Panel data analysis presents several advantages for the treatment of economic problems where cross-sectional variation and dynamic effects are relevant. Hsiao (1986) raises three advantages possessed by panel data sets: since they provide a large number of data points, they allow an increase in the degrees of freedom and reduce the collinearity among explanatory variables; they allow the investigation of problems that cannot be solely by either cross-section or time series data sets; and they provide a means of reducing the missing variable problem.

As noted by Schulman et al (1996), panel data allow economists and other social scientists to analyze, in depth, complex economic and related issues which could not be

treated with equal rigor using time-series or cross-sectional data alone. Like cross-sectional data, panel data describes each of a number of individuals. Like time-series data, it describes changes through time. By blending characteristics of both cross-sectional and time-series data, more reliable research methods can be used in order to investigate phenomena that otherwise could not have been dealt with.

The panel regression equation differs from a regular time-series or cross-section regression by the double subscript attached to each variable (Ooi, 1999). The general estimating equation written as a fixed-effects regression model has the form,

$$y_{i,t} = \alpha + \beta X_{i,t} + \varepsilon_{i,t} \quad (1)$$

with the subscript *i* denoting the cross-sectional dimension and *t* representing the time series dimension. The left-hand variable yi,t represents the dependent variable, $STDi,t/TEi,t$, $LTDi,t/TEi,t$, $TDi,t/TEi,t$ consequently for the *i*th company at time *t*, α represent the company-specific intercepts,

β is a kx1vector of parameters, Xi,t contains the set of explanatory variables for the *i*th firm in the *t*th period.

The fixed-effects model, by allowing different company intercepts, serves as a remedy for the known flaw of the capital structure model, which is being not fully specified. The set of explanatory macro and firm-specific variables Xi,t includes mainly inflation, interest rate, market capitalization/GDP, money supply/GDP, profitability, tangibility and size.

In equation form, the empirical model can be expressed as follows:

Leverage ratio = $\alpha + \beta Market + \beta Money + \beta Interest + \beta Profitability + \beta Tangibility + \beta Size + \varepsilon_{i,t}$

where,

Leverage ratio	:	total debt to total assets ratio defined as dependent variable
	:	short-term debt to total assets ratio defined as dependent variable
	:	long-term debt to total assets ratio defined as dependent variable
Market	:	market capitalization to GDP ratio as independent variable
Money	:	money market capitalization to GDP ratio as independent variable
Interest	:	nominal deposit interest rate as independent variable
Profitability	:	EBIT/Total Assets as independent variable
Tangibility	:	Net Fixed Assets/Total Assets
Size	:	logarithm of sales as independent variable

3.3. Empirical Results

This part is discussed under three sections. In the first section, the descriptive statistics of the sample is provided. In the second section correlation coefficients between variables are presented. Finally, in the third section, the empirical results and hypothesis testing is discussed in detail.

3.3.1. Descriptive Statistics

Table 3.3 presents the descriptive statistics for the variables used in our estimations. Summary statistics include the mean, the minimum, the maximum and the standard deviation of the variables during the period covering 1996-2004.

Table 3.3: Descriptive Statistics

	1996				1997				1998			
	Mean	Stdev	Min	Max	Mean	Stdev	Min	Max	Mean	Stdev	Min	Max
ShortD/TA	0,39	0,18	0,04	0,82	0,4	0,18	0,04	0,83	0,39	0,18	0,07	0,85
LongD/TA	0,12	0,1	0,00	0,43	0,14	0,1	0,00	0,57	0,13	0,11	0,002	0,58
TD/TA	0,51	0,19	0,04	0,93	0,53	0,19	0,04	0,94	0,53	0,19	0,14	0,91
Size	6,67	0,56	4,89	8,53	6,99	0,56	4,65	8,79	7,20	0,55	5,08	8,91
Profit	0,25	0,13	-0,12	0,64	0,26	0,14	-0,09	0,69	0,20	0,16	-1	0,57
Tangibility	0,34	0,19	0,01	0,92	0,32	0,17	0,02	0,93	0,33	0,17	0,02	0,87

	1999				2000				2001			
	Mean	Stdev	Min	Max	Mean	Stdev	Min	Max	Mean	Stdev	Min	Max
ShortD/TA	0,44	0,16	0,07	0,79	0,42	0,16	0,11	0,74	0,42	0,19	0,03	0,86
LongD/TA	0,13	0,1	0,001	0,51	0,12	0,08	0,00	0,44	0,14	0,12	0,004	0,58
TD/TA	0,57	0,17	0,15	0,93	0,54	0,17	0,20	0,89	0,56	0,21	0,13	0,93
Size	7,36	0,57	5,57	9,12	7,58	0,62	4,86	9,60	7,73	0,64	5,84	9,8
Profit	0,13	0,26	-0,98	1,01	0,12	0,15	-1,09	0,64	0,21	0,15	-0,17	0,59
Tangibility	0,32	0,18	0,01	0,95	0,32	0,17	0,01	0,95	0,34	0,19	0,03	0,96

	2002				2003				2004			
	Mean	Stdev	Min	Max	Mean	Stdev	Min	Max	Mean	Stdev	Min	Max
ShortD/TA	0,36	0,19	0,03	0,86	0,32	0,18	0,01	0,78	0,3	0,19	0,002	0,93
LongD/TA	0,15	0,11	0,003	0,58	0,12	0,12	0,003	0,82	0,11	0,11	0,001	0,6
TD/TA	0,51	0,21	0,08	0,93	0,44	0,21	0,17	0,93	0,41	0,21	0,004	0,93
Size	7,89	0,69	5,84	9,92	7,87	0,73	5,1	9,95	7,93	0,79	5,56	10,1
Profit	0,12	0,12	-0,27	0,469	0,07	0,1	-0,53	0,29	0,06	0,11	-0,52	0,35
Tangibility	0,39	0,2	0,16	0,96	0,4	0,2	0,021	0,97	0,43	0,2	0,002	0,96

ShortD/TA is the ratio of short-term debt to total assets where total assets are measured with book values. LongD/TA is the ratio of long-term liabilities divided by to total assets. Total debt ratio, TD/TA, is measured as total long-term liabilities plus current liabilities divided by total assets. SIZE is the natural logarithm of sales in real terms. PROFIT is the ratio of EBIT to total assets. TANGIBILITY is the ratio of tangible assets to total assets using book values.

According to Table 3.3 short-term debt ratio is approximately 40 percent during the years from 1996 to 2001. Beginning from 2002 it began to decrease and reached approximately 30 percent in 2004. The 2004 cross-sectional average is 30% which is the lowest during the investigated period and the statistic for 1999 is 44%, which is the highest. The highest long-term debt ratio revealed in 2002 which is 15%. It could be due

to the crisis which was occurred in 2001. Companies began to take long-term debts in order not to have so much short-term obligations which could become a reason for financial distress but further it decreased to 11% in 2004. Consequently, the lowest percentage of long-term debt was in 2004 which was 11%. The total debt ratio is highest in 1999, that is, 57% and lowest, 41%, in 2004.

Size, which is measured as a logarithm of net sales, is the lowest (6.67) in 1996. From the table it can be seen that the direction of size is upward. During the years it began to increase and finally reached 7.93 in 2004. The most profitable year of Turkish firms during the investigated period was 1997 which was 0,26 percent but since 1998 the profitability of firms began to decrease and became 0,06 percent in 2004 which is the lowest indicator during the period. The year in which the average tangible assets of firms is the highest is 2004 which is 0,43 percent. From 1996 to 2001 this number was fluctuating between 0,32 and 0,34 percent. From 2002 the ratio of tangibility was increasing meaning that in average the Turkish firms were investing in tangible assets year by year. The increasing of tangible assets can be considered a good indicator of reliability to the firm from the perspective of lenders.

3.3.2. Pearson Correlation Coefficients

Table 3.4 shows the correlation coefficients between variables. The results show that the total debt ratio is positively related to market capitalization/GDP ratio, money supply/GDP ratio, interest rate and size, while tangibility and profitability revealed to have a negative relationship with total debt ratio. This implies that as the market capitalization/GDP ratio and money supply/GDP ratio increases the total leverage ratio will also increase. At the same time, it can be seen that larger companies tend to have more debt in their capital structure because larger companies have authority, more tangible assets and proved themselves through the years. It is natural to think that firms

with more assets available face fewer obstacles in receiving debt, and, hence, have higher leverage.

Table 3.4: Pearson Correlation Coefficients between Variables

Variable	Total	Long	Short	MC/GDP	MS/GDP	Interest rate	Size	Profit	Tang
Total	1.000								
Long	0.412	1.000							
Short	0.840	-0,146	1.000						
MC/GDP	0.095	0,011	0,097	1.000					
MS/GDP	0.024	-0,003	0,028	0,631	1.000				
Interest rate	0.130	0,031	0,123	-0,176	-0,685	1.000			
Size	0,016	0,084	0,067	0,351	0,323	-0,48	1.000		
Profit	-0,032	-0,119	-0,035	-0,123	-0,229	0,384	-0,092	1.000	
Tang	-0,423	0,113	-0,527	0,159	0,004	-0,131	-0,004	-0,296	1.000

Notes: This table presents the Pearson correlation coefficients for the variables used in our estimations. The data are from the Istanbul Stock Exchange and the sample contains 136 Turkish Manufacturing firms listed on the Istanbul Stock Exchange for which there is nine consecutive years of data for the period 1996-2004. Total is defined as the ratio of total debt to total assets. Long is the ratio of long-term debt to total assets. Short is the ratio of short-term liabilities to total assets. The MC/GDP is measured as total market capitalization amount divided by total gross domestic product at factor cost. The MS/GDP ratio is defined as total money supply (M2) to GDP. Size is the natural logarithm of sales in real terms. Profit is the ratio EBIT to total assets. Tang is the ratio of tangible assets to total assets using book values.

Profitability has been found to be negatively related to the leverage ratio because profitable firms tend to use the internal capital first. Profitable firms try to borrow only at the time when the internal cash is not sufficient for the projects.

This study revealed a negative relationship between total debt ratio and tangibility. The empirical analyses until today have shown different relationships between total debt and tangible assets. Wiwattanakantang (1999) and Um (2001) report a positive relationship between tangibility and leverage, other studies such as Booth et al, (2001) in ten developing countries, and Huang and Song (2002) in China, find that tangibility is negatively related to leverage. It is argued, however, that this relation depends on the type of debt.

Long-term debt ratio has been found positively related to market capitalization/GDP ratio, interest rate, size and tangibility. As the market develops the problems of asymmetric information decreases and the market becomes reliable place for the investors. It is the most important reason why long-term debt ratio is positively related to market capitalization/GDP ratio. In a long period tangibility reveals to have a positive relation with long-term debt ratio. If a firm has more tangible assets it can borrow debt easily because tangible assets are considered to be the proof that the firm will be able to fulfill his obligations. Firms tangible assets are the most widely accepted sources for bank borrowing and raising secured debt.

From the table it can be seen that the short-term debt ratio is positively related to market capitalization/GDP ratio, money supply/GDP ratio, interest rate and size, but it is negatively related to profitability and tangibility. These results show that as market develops and money supply in an economy increases the short-term debt becomes a good alternative for borrowing.

The empirical evidence obtained suggests that the coefficients of total debt ratio, long-term debt ratio, short-term debt ratio, money supply/GDP ratio, market capitalization/GDP ratio, interest rate, size, profitability and tangibility are significant in order to be included in this analysis.

3.3.3. Empirical Analysis

The empirical findings for the regression analysis for debt ratios with firm-specific and macro-economic factors are given in Tables 3.5, 3.6 and 3.7 for each debt ratio respectively. In this analysis, total debt to total assets ratio, short-term debt to total

assets ratio, long-term debt to total assets ratio were regressed by firm-specific and macro-economic factors in order to see the relationship between each dependent and independent variables.

Table 3.5 summarizes regression results of the firm-specific and macro-economic factors as the independent variables and total debt ratio as the dependent variable.

Table 3.5: Regression Results: Total Debt Ratio as The Dependent Variable

Dependent Variable: TOTAL
Method: Panel Least Squares
Cross-sections included: 136
Total panel (unbalanced) observations: 1160

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.320034	0.102623	3.118553	0.0019
PROFIT	-0.259310	0.034764	-7.459211	0.0000
TANG	-0.445253	0.027806	-16.01286	0.0000
SIZE	0.019788	0.007457	2.653715	0.0081
MARKET	-1.58E-08	4.43E-09	-3.569826	0.0004
MONEY	0.007796	0.002455	3.175609	0.0015
INTEREST	0.001129	0.000413	2.730524	0.0064

R-squared	0.240617	Mean dependent var	0.492573
Adjusted R-squared	0.236665	S.D. dependent var	0.196392
S.E. of regression	0.171586	Akaike info criterion	-0.681454
Sum squared resid	33.94615	Schwarz criterion	-0.650943
Log likelihood	402.2433	F-statistic	60.88958
Durbin-Watson stat	2.037035	Prob(F-statistic)	0.000000

Since the p values of all coefficients are less than α at the 1% confidence level, all variables are statistically significant. In other words, the coefficient estimates of variables are greater than 1 and statistically significant. Interestingly, the R-squared of regression was found to be 24% and the adjusted R-squared is also approximately 24%

meaning that just 24% of the change in total debt ratio is explained by the independent variables. Since the F-statistic is also significant at 1% level, the model is statistically significant, too.

The coefficient estimates of independent variables such as size, money supply to GDP ratio and interest rate are positive. It means that there is a positive relationship between the total leverage ratio and the variables of size, money supply to GDP ratio and interest rate.

The existence of positive relationship between the total leverage ratio and size supports Hypothesis 6. This suggests that bigger firms borrow more than the small firms. The ratio of money supply to GDP ratio also revealed positive relationship with the total leverage ratio suggesting that if the money supply in the country increases the leverage ratio will also increase. This finding is consistent with the Hypothesis 3 which predicts positive relationship between money supply to GDP ratio and total leverage ratio.

The most interesting case is that the regression analysis revealed positive relationship between total debt ratio and interest rate. It implies that as the interest rate tends to increase the total debt to total assets ratio will also increase. This result does not coincide with the Hypothesis 1 which assumed that there is a negative relation between total leverage ratios of Turkish firms and the interest rate.

The coefficient estimates of independent variables such as market capitalization to GDP ratio, profitability and tangibility are found to be negative. Hence, it indicates that the direction between independent variables such as market capitalization to GDP ratio, profitability and tangibility with the total debt ratio is opposite.

According to these results, an inverse relationship between stock market capitalization to GDP ratio and total debt ratio is consistent with the Hypothesis 2 which indicates that as the stock market becomes more capitalized the investors choose to invest in equity rather than in debt. Because, as the stock market becomes more capitalized the problems with the asymmetric information decreases.

The direction between profitability and total debt ratio also found to be negative which is consistent with the pecking-order theory and with the Hypothesis 4. It can be concluded that profitable firms are less leveraged. Tangibility of assets was found to be negatively related to the total leverage ratio. Hence, the result indicates that the Hypothesis 5 is rejected.

Table 3.6: Regression Results: Short-Term Debt Ratio as The Dependent Variable

Dependent Variable: SHORT
Method: Panel Least Squares
Cross-sections included: 136
Total panel (unbalanced) observations: 1160

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.461453	0.089193	5.173652	0.0000
PROFIT	-0.168553	0.030214	-5.578583	0.0000
TANG	-0.510580	0.024167	-21.12701	0.0000
SIZE	0.004743	0.006481	1.731841	0.0644
MARKET	-1.13E-08	3.85E-09	-2.940121	0.0033
MONEY	0.005969	0.002134	2.797842	0.0052
INTEREST	0.000462	0.000359	1.286688	0.1985

R-squared	0.314774	Mean dependent var	0.364689
Adjusted R-squared	0.311208	S.D. dependent var	0.179690
S.E. of regression	0.149131	Akaike info criterion	-0.961966
Sum squared resid	25.64281	Schwarz criterion	-0.931455
Log likelihood	564.9402	F-statistic	88.27614
Durbin-Watson stat	2.075080	Prob(F-statistic)	0.000000

Table 3.6 provides the regression results of the model in which the short-term debt ratio is taken as dependent variable.

The p values of the coefficient estimates of profitability, tangibility, market capitalization to GDP ratio and money supply to GDP ratio are less than α at the 1% confidence level and the p value of the coefficient estimate of size is less than α at the

10% confidence level which means that they are statistically significant and that they influence the short-term leverage ratio.

The p value of the coefficient estimate of interest rate is above α at the 10% confidence level implying that it is statistically not significant and is not related to short-term debt ratio. In other words, the relationship between short-term debt ratio and interest rate was not found. On the other hand, the model is statistically significant since F-statistic is significant at 1% level.

The coefficient estimates of size and money supply to GDP ratio are found to be positively related to short-term debt ratio. The results show that the hypotheses predicted for size and money supply to GDP ratio are correct and are consistent with Hypothesis 6 and 3, respectively.

On the other hand, the regression analysis revealed a negative relation between the dependent variable which is short-term debt ratio and the independent variables which are profitability, tangibility and market capitalization to GDP ratio. Similar to the previous model, these variables indicate negative relationship with the leverage ratio. It means that, as the stock market develops it becomes a good substitute to debt making investors to rely on stock market. The negative relationship of profitability and tangibility with short-term debt ratio support pecking-order theory.

Hypothesis 4 predicted negative relationship between leverage ratios and profitability and Hypothesis 2 also predicted that market capitalization to GDP ratio is negatively related to leverage ratios. Hence, these Hypotheses are true. On the other hand, relying to the empirical researches until today Hypothesis 5 predicted positive relationship between tangibility and short-term debt ratio but it doesn't hold in this analysis.

Similarly, Table 3.7 presents the regression results of model in which long-term debt ratio is taken as dependent variable.

The p values of the coefficient estimates of size, profitability, tangibility and interest rate are less than α at the 1% confidence level and the p value of market capitalization to GDP ratio is less than α at the 10% confidence level. It can be said that there is significant relationship between the long-term debt ratio and these independent variables. In spite of this, money supply to GDP ratio was found not to be related to long-term debt ratio since its p value of the coefficient estimate is above α at the 10% confidence level. Therefore, the coefficient estimate of money supply to GDP ratio is statistically not significant.

Table 3.7: Regression Results: Long-Term Debt Ratio as The Dependent Variable

Dependent Variable: LONG
Method: Panel Least Squares
Cross-sections included: 136
Total panel (unbalanced) observations: 1160

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.141419	0.063078	-2.241962	0.0252
PROFIT	-0.090756	0.021368	-4.247306	0.0000
TANG	0.065327	0.017091	3.822232	0.0001
SIZE	0.024531	0.004583	5.352169	0.0000
MARKET	0.028123	0.025750	1.092187	0.0991
MONEY	0.001826	0.001509	1.210262	0.2264
INTEREST	0.000666	0.000254	2.622927	0.0088

R-squared	0.118523	Mean dependent var	0.127884
Adjusted R-squared	0.113624	S.D. dependent var	0.108414
S.E. of regression	0.105467	Akaike info criterion	-1.654814
Sum squared resid	12.82524	Schwarz criterion	-1.624303
Log likelihood	966.7921	F-statistic	11.94523
Durbin-Watson stat	1.895707	Prob(F-statistic)	0.000000

Unfortunately, R-squared of the model is 12% and adjusted R-squared is 11% referring that only 11% of the variation in long-term debt ratio is explained by the variations in the firm-specific and macro-economic factors. The model is statistically significant since F-statistic is significant at 1% level.

Independent variables such as tangibility, size, market capitalization to GDP ratio and interest rate are found to be positively related to long-term debt ratio but profitability is found to be negatively related to long-term leverage ratio.

Consistent with the Hypotheses 5 and 6, tangibility and size are positive. It means that large firms and firms with more tangible assets have more long-term debt in their capital structure. As supposed in Hypotheses 4, the leverage ratio of Turkish firms is negatively related to the profitability. Hence, the result of long-term debt ratio regression analysis is consistent with the Hypothesis 4.

Market capitalization to GDP ratio revealed positive relationship with long-term debt ratio and is not consistent with the Hypothesis 2. The results indicate that as the market develops, investors begin to invest in long-term debt meaning that there is less information asymmetry and investors rely on market.

Interest rate is found to be positively related to long-term debt ratio. It means that if interest rates in a short period of time tend to increase then companies issue long-term debt in order to hedge themselves from future instabilities.

CONCLUSION

One of the most puzzling issues in corporate finance is considered to be capital structure of firms. Nearly for fifty years capital structure has attracted intense debate in the financial management arena. The basic question of whether a unique combination of debt and equity capital maximizes firm value, and if so, what factors determine a firm's optimal capital structure have been the subject of frequent debate in the capital structure literature.

While, most of the literature seeks the nature of relations between the capital structure, the macro-economic and the firm specific characteristics in developed economies and developing countries, unfortunately, Turkey, as an emerging market, has rarely been the subject of research in this field. In this context, using the methodology of panel data estimation the impacts of macro-economic and firm specific characteristics on the corporate capital structures of Turkish firms was analyzed.

The main purpose of this study is to see whether macro-economic factors play an important role in capital structure decisions or not and to see which variables, macro-economic or firm-specific, play the most important role in variations of capital structures. It also attempts to determine the direction of each independent variable with each dependent variable.

In the first chapter, the theories of capital structure and their predictions about the relationship between dependent and independent variables are discussed in a detail. A firm adjusting its capital structure tends to move toward a target debt ratio consistent with the theories based on tradeoffs between costs and benefits of debt. Hence, target leverage models and the factors that influence target leverage models are shown. First chapter also looks at the financing hierarchies which play an important role in the determination of debt to equity ratio.

In the second chapter, empirical studies on the determinants of capital structure including firm-specific factors, the ownership structure, corporate governance and

macro-economic factors are discussed. The sub-section of firm-specific factors discusses profitability, assets tangibility and size which empirically are found to have a great impact on capital structure. Similarly, the sub-section of macro-economic factors shows the most important factors which are found to have impact on capital structure. Consequently, the ratio of market capitalization to GDP, the ratio of money supply to GDP, and the interest rate are discussed which are considered to act as the determinants of capital structure. Macro-economic developments in Turkey, capital structure of Turkish firms and some implication are also discussed in this chapter.

The empirical analyses are provided in the third chapter. The sample of this study consists of 136 manufacturing firms which are traded at ISE. The basic data of the analysis were taken from the balance sheets and income statements of each firm. The macro-economic data which is included in the investigation were obtained from the web-site of National Bank of Turkey. The analysis is based on the year-end observations of nine consecutive years running from 1996-2004.

The descriptive statistics are found based on the data. The correlation analyses between the variables are done in order to see if the variables are suitable for the analysis. Finally, the regression analysis is conducted for hypothesis testing. Leverage ratios, which are the ratios of total debt to total assets, short-term debt to total assets and long-term debt to total assets, are regressed against firm-specific and macro-economic factors. The results of the analysis show that firm-specific factors explain most of the variance in leverage ratios.

In all the three regression analysis size is found to have positive impact on leverage ratios. A possible explanation is that larger firms are better diversified and have a lower probability of being in financial distress. Lower expected bankruptcy costs enable them to take on more leverage. The results also indicate that profitability is negatively related to the leverage ratio implying that profitable firms use internal cash first for their financing and hence they are less leveraged. In a total and short-term

model tangibility is negatively related to the leverage and in contrast to this it was found to have positive impact on long-term debt ratio.

Regression analyses of market capitalization to GDP ratio in the total and short-term model indicate a negative relationship with the leverage ratios. It can be argued that the developing of the market lessens information asymmetry. Hence, investors trust to the market and choose to invest more in equity than in debt. But, in the long-term model it can be seen from the results that market capitalization to GDP ratio are positively related to the leverage ratio. Money supply to GDP ratio in a total and short-term model is positively related to leverage ratio. It means that money supply increases leverage ratio. This ratio was not found significant in a long-term model. Interestingly, the results indicate that the interest rate is positively related to total and long-term debt ratios, but it is not significant in a short-term model meaning that it has no effects on a short-term debt ratio.

There are few limitations in the study. First, the period is restricted to 9 years. Second, only some firm-specific and macro-economic factors are used. With addition of more variables to the model, more accurate results can be obtained.

For further studies:

- It can be better to conduct the analysis with greater sample size which are gathered throughout many years,
- More firm-specific and macro-economic and institutional variables can be used in the analysis,
- The analysis can be conducted within several industries
- The analysis can be conducted according to their size

These issues are important topics for future research. In the light of this study, it can be said that the importance of the capital structure determinants is one of the most important issues in corporate finance and is still being investigated in order to find

which factors determine capital structure and have the most important impact on capital structure decisions.

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