Capital Structure in Iran: Case of Chemicals and Petrochemicals Products, Rubber and Plastic Products, Refined Petroleum and Nuclear Fuel Sectors

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Submitted to the
Institute of Graduate Studies and Research
in partial fulfillment of the requirements for the Degree of

Master of Science
in
Banking and Finance

Eastern Mediterranean University
June 2010
Gazimağusa, North Cyprus

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ABSTRACT

The purpose of this study is to identify and examine the financial sources for Iranian corporations and the capital structure in Iran particularly for Chemicals and Petrochemicals products, Rubber and Plastic products, Refined Petroleum and Nuclear Fuel sectors. The second aim is to find out the strength and weaknesses of managerial policies in Iran and the problems involved in the capital market of Iran. Finally, the comparison between the capital structure in Iran and Turkey is examined in this study. Both quantitative and qualitative methods were applied in this thesis and it was aimed to find the methods of financing in Iran from the financial statements of chosen companies listed in Tehran stock Exchange. This survey focused on the time period from 2004 to 2008.

The results of this study showed that Iranian corporations use more debt in their financial strategies, even though they do not issue bonds. It was found that Tehran Stock Exchange is not an efficient market for companies to raise capital due to the unavailability of proper regulations and broad government ownership. The results indicated that selected companies in Iran rely more than 80% on short-term financing. The revealed results are consistent for Turkish companies as well.

Keywords: Capital Structure, Capital Market, Internal financing, External Financing, Equity.

ÖZ

Bu çalışmanın amacı, İran menşeeli şirketlerin finansal kaynaklarının ve özellikle kimyasal ve petrokimyasal, kauçuk ve plastik, arıtılmış petrol ve nükleer yakıt sektörlerinde faaliyet gösteren şirketlerin sermaye yapılarının saptanması ve incelenmesidir. İkinci amaç ise, İrandaki yönetimsel politikaların güçlü ve zayıf noktalarının ve İran sermaye pazarındaki problemlerin ortaya çıkarılmasıdır. Son olarak da İran ve Türkiye'de ki sermaye yapılarının karşılaştırılması yapılmıştır. Bu tezde hem nitel hem nicel metodlar kullanılmış ve Tahran Menkul Kıymetler Borsasında listelenmiş şirketlerin finansal tablolarına bakılarak, finansman metodlarının bulunması amaçlanmıştır. Yapılan anket 2004-2008 yıllarını kapsamaktadır.

Bu çalışmanın sonuçları, İran menşeeli şirketlerin piyasaya bono sürmemelerine rağmen finansal strateji olarak daha çok borç kullandıklarını göstermiştir. Tahran Menkul Kıymetler Borsası, kendine has tüzüğü olmaması ve hükümet mülkiyeti dışında olması sebebiyle, şirketlerin sermaye arttırımına yönelik verimli bir pazar değildir. Sonuçlar, İran'da seçilmiş şirketlerin % 80'inin kısa vadeli finansmana yöneldiğini göstermektedir. Bu ortaya çıkan sonuçlar, Türk şirketleri içinde geçerlidir.

Anahtar Kelimeler: Sermaye yapısı, sermaye piyasası, iç finansman, öz kaynak

To My Family

ACKNOWLEDGMENTS

I am vigorously thankful to my supervisor, Assoc. Prof. Dr. Cahit Adaoglu, whose encouragement, guidance and support from the initial to the final level enabled me to develop an understanding of the subject.

I would also like to acknowledge the advice and the guidance of Assoc. Prof. Dr. Hatice Jenkins, Chair of Banking and Finance Department, and Assoc. Prof. Dr. Mustafa Besim, graduate program coordinator of Banking and Finance Department. I also thank the members of my graduate committee for their guidance and suggestions, especially Assist. Prof. Dr. Nesrin Ozatac for all her advice and encouragement.

I am heartily grateful to my family members, especially my parents, who gave me life and their endless love and my brother, Mr. Amir Saeid Boorang and his wife, Ms. Sahar Taati for their great moral support. I would like to thank Mr. Arian Shahmar for his great moral support and help during this study and my whole study period in Cyprus. I have to confess that without Arian's and my family's encouragement, I would not have finished the degree.

Lastly, I offer my regards and blessings to all of those who supported me in any respect during the completion of this thesis and I appreciate their support. Besides, I am responsible for any omission throughout this thesis.

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LIST OF ABBRAVIATION

BBS	Bank-Based System
CEO	Chief Executive Officer
IPO	Initial Public Offering
MBS	Market-Based System
MM	Modigliani and Miller
NPV	Net Present Value
PV	Present Value
POT	Pecking Order Theory
SEO	Seasoned Equity Offering
TOT	Trade-Off Theory
TSE	Tehran Stock Exchange
WACC	Weighted Average Cost of Capital

Chapter1

INTRODUCTION

Considering the point that capital markets reached an enormous growth in developed countries, the need to enhance these markets in developing countries such as Iran is so obvious. The capital market is the main source for companies to raise their required capital. Companies have two external sources of financing: debt and equity. The combination of debts and equities is called capital structure. Financial managers of companies try to have the best combination of these two external sources of financing to maximize the companies' shareholders value. The best mixture of debts and equities became an important issue since Modigliani and Miller in 1958 showed that the capital structure is irrelevant. They stated that the value of company is determined by the left side of the balance sheet, by the value of real assets, not by the proportion of debts and equities. Moreover, there is no optimal capital structure for a company. MM shaped the basis for modern proposals on capital structure, and in reality, after this theory, economists and financial experts studied capital structure in many different ways with different characteristics such as Trade-Off Theory, Pecking Order Theory, Signaling Theory, Asymmetric Information Theory and others.

1.1 Aims of Study and Scope

In this thesis, the effort will be made to clarify the capital structure in Iran and the reasons behind these financial strategies of Iranian companies, specifically companies listed in Chemicals and Petrochemicals sector, Rubber and Plastic,

Refined Petroleum and Nuclear Fuel sector. After examining the sources of financing, and capital structure theories in chapter two, there will be a comparison of capital structure between different categories of countries in terms of developing and developed countries, bank-based and market-based systems and civil law and common law countries in chapter three. The case study of capital structure in Iran will be conducted in chapter four by looking at selected financial ratios, in order to identify how Iranian corporations finance their investments and eventually there will be a comparison between the capital structure in Iran and Turkey. In chapter Five, a summary of survey results and recommendations for enhancing the management strategies in Iran will be stated.

1.2 Methodology and Limitations of Study

This study will be carried out by using different sources such as: books, articles, theses, well-known websites, reputable financial reports, reliable historical data and real market data. In addition to mentioned sources, required data for Iranian corporations will be extracted from Tehran Stock Exchange website, and some personal connections have been used in order to get the data due to the problem that Iranian managers are not eager to release their actual financial statements. By using the financial statements of the companies, chosen financial ratios will be calculated and the trend analysis for each selected sector will be studied.

Chapter 2

CAPITAL STRUCTURE: SOURCES OF FINANCING

Companies have two main sources for their financing which are internal and external financing. In term of internal financing companies use their retained earnings and if their internal fund is not sufficient, they issue either debt instruments or equity. The mixture of debt and equity is called capital structure for a company. In this chapter, these main sources of financing will be studied and advantages and disadvantages of them will be identified and explained. In addition, there will be a look at some capital structure theories such as MM, Trade-off theory and Pecking order theory. Eventually some empirical evidences will be provided in order to have the better understanding of different types of capital structures.

2.1 Internal Financing

Companies invest in long term assets such as equipments, lands and also in short term net working capital. They finance their required cash mostly from retained earnings, the money that is not paid out as dividends to shareholders. If the company needs more funds for its future or current investments, it can use either debt or equity instruments as external sources. The issue of external financing will be discussed later in this chapter. Using internal financing is very common in U.S. as well as in United Kingdom, Japan and Germany (Quiry, 2007).

In Figure 1, sources of funds for U.S. non-financial corporations are expressed as a fraction of the total sources. As it can be implied from this figure, internal financing is the most used source of financing among other sources in U.S.

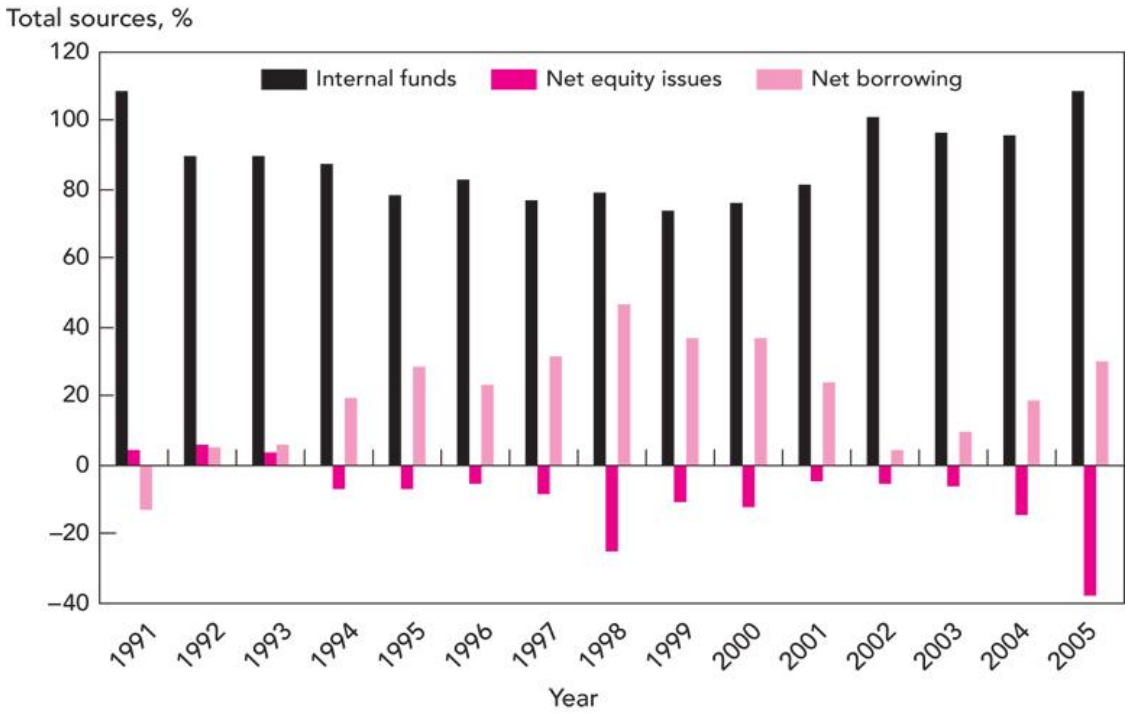


Figure 1: Sources of Funds for U.S. Non-Financial Corporations Expressed as a Fraction of the Total.(Bearley, Meyers, Allen,2008)

If the company aims to finance itself without any external sources, it can use reserves like pension funds, asset swaps, that is, to sell tangible assets or property of the company and as it was mentioned above, firms can use retained earnings. By using internal financing, companies do not have the concern of interest payments and there is also no influence of third party and no control procedure regarding to creditworthiness. In addition, the capital that company needs will be immediately available in case of need. Preceding points are some of the advantages of internal financing and of course, it has some disadvantages such as the capital is not tax deductible and the fund is limited in amount (Buckley, 1998).

Managers use internal financing so as to avoid the cost of issuing debt and equity instruments, and not to send bad signal to the market. Signaling issue is an important matter for financial managers and it will be discussed later in this chapter. Moreover, shareholders of the company are happy not to receive the dividends and instead to let the company using the cash to invest in the projects with positive NPV, as any positive NPV projects generate a higher price and greater future dividends for their shares. Consequently, shareholders are usually satisfied with internal financing because it makes their shares more valuable and it causes capital gain and in reality, in all around the world, taxes on capital gain are less than dividends. Shareholders prefer capital gain if all the other things are constant, they prefer retention rather than periodical dividends (Brealey, 1995).

Financial managers prefer internal financing because there is no need to go to capital market for either finding debt holders or shareholders; therefore, they have more flexibility in performance. Likewise, creditors prefer internal financing because it reduces default risk and increases the value of their claims. In addition, financial managers by using internal financing reduce the probability of facing more agency cost. In this case, agency problem may occur between financial managers and debt holders and/or debt holders and shareholders of the company. An agency problem refers to disagreement between agents and principals resulting in direct and indirect cost for company that is called agency cost. Agency problem and agency cost will be discussed later in this chapter in detail in order to clarify the importance of this issue for financial managers.

2.2 External Financing

External financing is kind of source of funding, which lies outside a business firm or other economic units (Marcus, 1995). There are other definitions for external financing like, money obtained from outside investors and lenders and not from a firm's internal reserves or retained earnings. Companies by issuing debts and equities step into external financing area and in fact, external financing is opposite of internal financing concept. In following sections, external financing will be discussed in detail, focusing on debt financing and equity financing.

2.2.1 Debt Financing

Companies need capital to develop their performance level at different stages of growth. If their internal source is not sufficient, they have to use external sources such as issuing notes and bonds, which this action is called debt financing. In this sort of financing strategy, company promises to pay interests to creditors in return the money that company borrows. There are many different types of debt that can be issued. Here, some of them are listed in Table 1.

Table 1: Different Types of Debts(Brealey, 2008)

Bank Loans	Commercial papers	Notes
Unsecured Debentures	Floating rate bonds	Zero-Coupon Bonds
Money Multiplier notes	Ind. Development bonds	Callable Bonds
Euro Bonds	Funded Debts	Warrants
Convertible Bonds	Accounts Payable	Lease (Rent)

Here in figure 2, Ratios for total liabilities to total liabilities plus equity for manufacturing industries in sample of countries is illustrated.

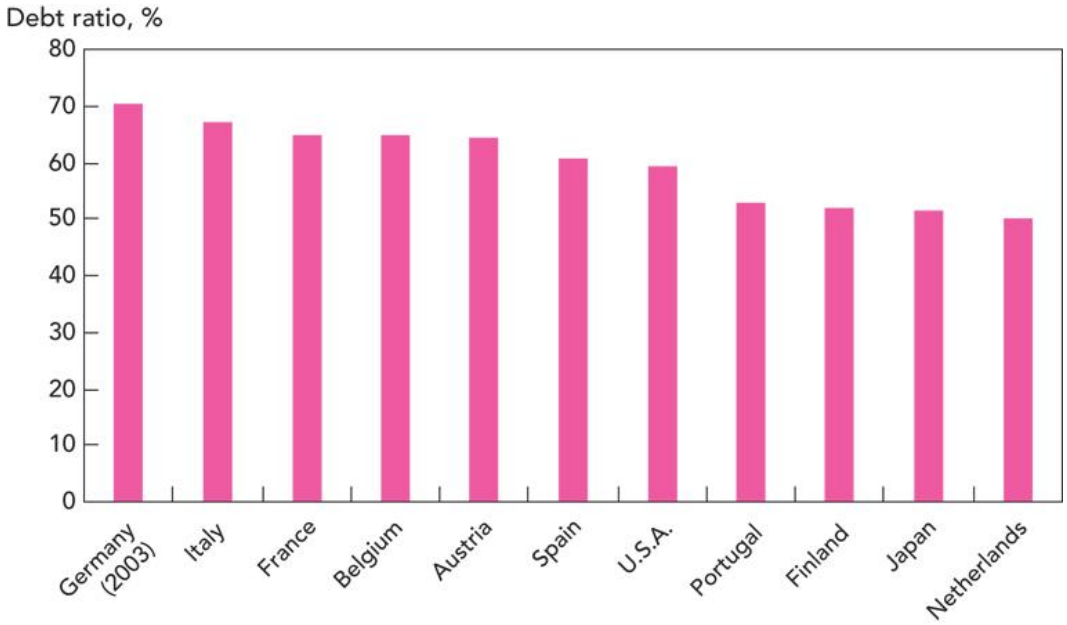


Figure 2: Ratios for Total Liabilities to Total Liabilities Plus Equity for Manufacturing Industries, 2005. (Bearley, Meyers, Allen. 2008)

As it can be understood from Figure 2, Germany and Italy have the highest ratios while United States is roughly in the middle of the pack. This fact refers to the different sort of financing systems of these countries. For example, Italy and Germany are bank based system and United States is market based system, therefore, U.S. companies have less debts in comparison with Italian and German companies. Overall, debt financing is the primary source of external financing, and then followed by equity financing.

Financial managers should always try to use the best combination of different securities to maximize shareholders wealth and firm's value as well. The mixture of debts and equities which creates the firm's value is stated below:

V (Company's Value) = D (Value of Debt) + E (Value of Equity)

It should be mentioned that there is a government share in the firm's income that is called tax. The bigger the tax companies pay to government, the fewer dividends they pay to shareholders. One way to reduce the tax amount is using debts. The interests which are paid to creditors are paid from pretax income and as a result these are tax deductable (D.Chew, 2001).

The amount of income that company can save from using debts is equal to corporate tax rate *(T_C)* multiple interest payment, which is the amount of debt times the interest rate to debt holders, *(r_D*D)* divided by the expected return on debt *(r_D),* which is called "tax shield".

$$PV\ (tax\ shield) = \frac{T_C\ (r_{D*}D\ )}{r_D} = T_C\ D$$

Therefore, by using debt, shareholders would be better off but if only, there will be a future profit in the company to use tax-shield and in addition, managers can retain their maximum control over the firm. However, if a company does not have enough revenue to cover its debts it may go bankrupt. Besides, debt has a positive relation with risk. It means, excessive debt makes a company unattractive for investors because of its high risk. These debates will be carried on in details in the following sections and it will be also focused on several capital structure theories.

Debt financing have advantages and disadvantages. The managerial decisions are shared neither with the creditors nor with the debts holders. The debt holders cannot share the ownership rights and the future profits of the organization. The borrowed capital helps the company to book in the profits and share the same with the owners of the company. The interest amount paid towards debts is also tax deductible. The disadvantage of debt financing is to maintain the sufficient cash flow for repaying the amount. Mostly, it is observed that the profits in the form of cash are used for paying the debt financiers. Excessive debt liabilities can spoil the credit rating of the organization. Debt financing can also lead to collateralizing the assets of the company. The other problem with debt financing is to deal with lenders and the criteria for obtaining such loans (M. Walma. 2000). Debt holders usually ask for some restrictions and limitations on the company financing approach, which is called debt covenants. Debt covenant is one of the sections within the debt contract, which restrict Borrower company to obtain new loan, not paying dividends to share holders, and to check financial statements of company in a very regular basis to become confident that company can pay back its loans.

There are various motives and reasons behind the decisions made by financial managers to choose how and when to issue debts. Companies' debt policies are usually unique because there are different factors and situations that may affect the financial decisions of companies in relation with debt policy. In Table 2, which is a result of survey conducted regarding capital structure, some factors that may affect the company's policy are indicated. This survey had targeted European financial managers in 2001.

Table 2: What Factors Affect the Firm's Debt Policy (Bancel and Mittoo. ,2001)

What factors affect the firm's debt policy.	Important or very important (%)
With the use of debt, we try to minimize the weighted average cost of capital	69.77
We issue debt when interest rates are low	44.83
We issue debt when our equity in undervalued by the market	43.68
We issue debt when our recent profits are not sufficient to fund our acyivities	24.14
Using debt gives investors a better impression of our firm's prospects that issuing stocks	20.00
Changes in the price of our common stock	15.12
We prefer banks to bonds because it aviods our firm to disclose too much information	14.12
We delay issuing or retiring debt because of transactions costs and fees	5.81
We use debt because of our relationship with a bank (house bank)	3.49
We issue debt when we have accumulate profits	1.18

As it can be understood from the Table 2, there are high percentages of companies that they use debts when their internal funds are not adequate and also when the interest rates are low. Moreover, as it can be derived from the Table 2, issuing debts

change the investors and market's point of view concerning company. Issuing debts send a positive signal to the market, because when a company aims to borrow it shows that managers are optimistic to the future profit of the company and it will be caused the price of stock of the company goes up.

2.2.2 Equity Financing

Companies can raise capital by issuing new shares to individual investors or financial institutions in exchange for giving ownership. Maximum number of shares that companies can issue is called "authorized share capital". If the company needs more equity, it requires shareholders' agreement. Individuals hold some of the issued shares in the market but financial institutions such as pension funds, insurance companies and mutual funds hold the greater proportion of issued shares. As Figure 3 shows, financial institutions hold almost 60% of stocks in U.S.

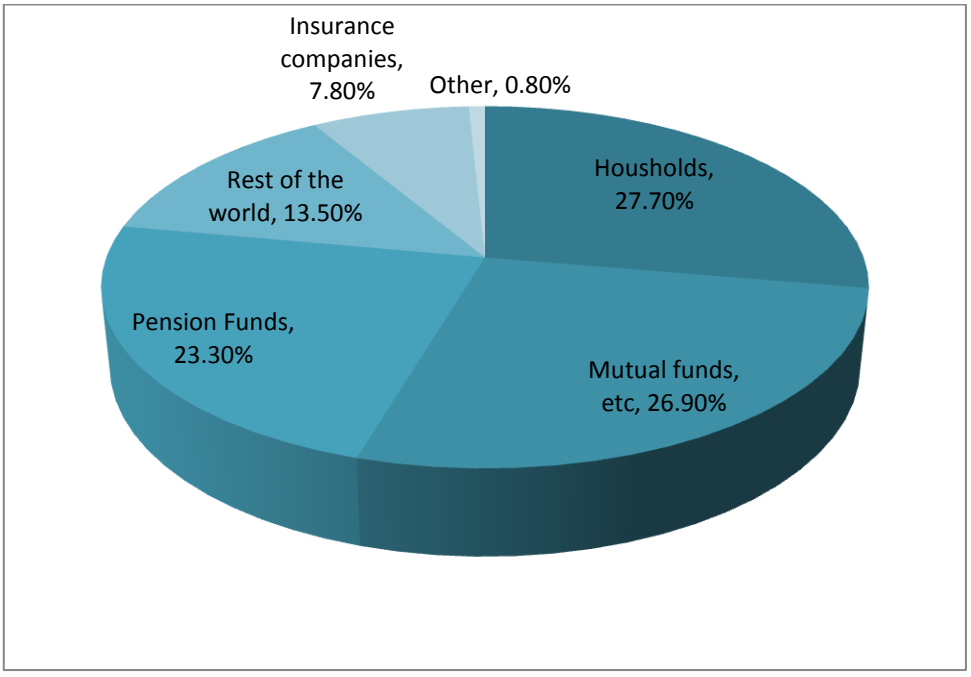


Figure 3: Holders of Corporate Equities, Third Quarter of 2006 (Board of Governors of the Federal Reserve System, Table L.213.)

Companies may issue common stocks or preferred stocks. In case of issuing common shares, stockholders become owner of the company, they have voting power and they can elect the board of directors. Board of directors is responsible for hiring professional managers to act on behalf of stockholder's interest. This separation between owners and their agents may cause agency problems, which is the conflict of interests among them. Agency problems are costly for a corporation, therefore directors always try to minimize this cost using some effective ways such as linking the manager's salary to company's share price or replace them if their performance is not in line with the of shareholder's interest.

Stockholder's right to control the corporation is pure until company borrows money. Once the firm does such, creditors may protect their claims by putting some restriction on what the firm can or cannot do. For example, they may limit the company for future borrowing and/or selling assets and/or paying exceeds dividends to shareholders. Because of the shareholder's power to control the company and its high level of risk, this kind of financing is one of the most expensive ways to raise capital.

Companies may have different classes of shares such as class A and class B (dual-class shares), which are different in voting power but same in cash flows right. Usually shares with superior voting power sell at premium; relative to regular shares. Companies can also issue some preferred stocks in which the investors will receive the fixed-payments similar to debt but they have no voting right on firm's decisions.

Usually preferred stocks are issued as cumulative shares meaning that company must pay all past their dividends before paying any money to common stock shareholders.

Shareholders have residual claims on company's profit. Firm should pay all its debt, taxes, and if it has preferred stocks, pay their claims and then, company may pay shareholders. As equity is riskier than debts so equity investors are looking for higher returns to justify their risks.

There are some sources that company can use to issue securities such as angel investors, venture capitals or initial public offering (IPO). In IPO or unseasoned equity offering, companies issue new securities and they sell their stocks to the market investors. In this case, this is the first time that a company goes to the public market. Seasoned equity offering (SEO) is kind of equity offering from a company which is already publicly traded in the market. It should be mentioned that both seasoned offering and IPO have primary offering which new stock issued and secondary offering which existing shareholders cash in/sell their stocks to the public. The main reason of going public for companies is to raise new capital, but there are some other reasons that encourage managers to do so, that is shown in Figure 4.

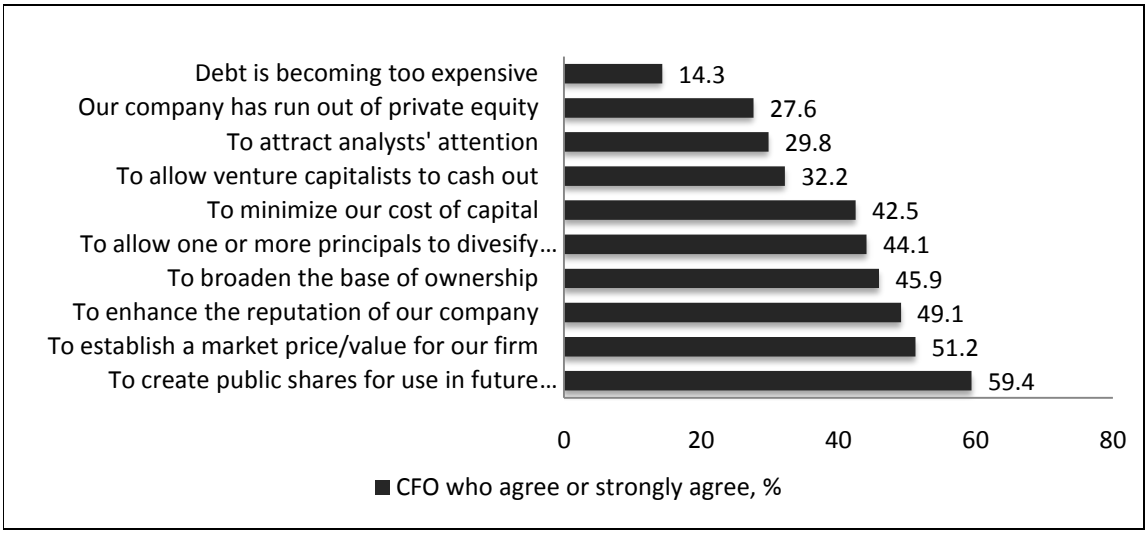


Figure 4: Survey Evidence on the Motives for Going Public
(Brau and Fawcett,2006).

As it can be understood form Figure 4, when companies need more capital and using debt is expensive for them, or when they want to minimize their cost of capital, they issue equity. Additionally using equity is a way for advertising the company because it attracts analysts' attention and it increases the reputation of the company.

If companies want to go public, they need investment banks to help them as an underwriter. They provide financial advice to company, buy their shares and then sell them to investors. In return, they receive underwriting fees and they buy each share with price less than the offering price to investors. In addition, of underwriting fees, company should pay administrative costs and registration fees of new securities, therefore, issuing stocks is too expensive for a company. It should be also mentioned the fact, when a company announces the issuing new securities, on average market price of the stock declines. As Smith shows in his study (1986), there is about 3% decline in the price of stock in the market after the announcement of issuing new shares by the company, hence it is so essential for managers to understand the

market's reactions to the company's announcements. In Table 3, the main steps involved in making an initial public offering of stock in the U.S are listed.

Table 3: The Main Steps Involved in Making an Initial Public Offering of Stock in the U.S.A. (Bearley, Meyer, Allen, 2008).

1. Company appoints managing underwriter (book runner) and co manager (s). Underwriting syndicate formed.
2. Arrangement with underwriters includes agreement on spread (typically 7% for medium-sized IPOs) and green shoe (typically allowing the Underwriters to increase the number of shares bought by 15%)
3. Issue registered with SEC and preliminary prospectus (red herring) issued.
4. Road show arranged to market the issue to potential investors. Managing Underwriter builds book of potential demand.
5. SEC approves registration. Company and underwriters agree on issue price.
6. Underwriters allot stock (typically with overallotment).
7. Trading starts. Underwriters cover short position by buying stock in the Market or by exercising green shoe option.
8. Managing underwriter makes liquid market in stock and provides research coverage.

There are also advantages and disadvantages for equity financing like debt financing. One of the advantages of equity financing is that at the time of liquidation, the equity financers are to be paid in last, if the property or the valuables are remaining. However, on bankruptcy, the equity financers are not paid anything. The assets and the properties of the company need not to be pledged for obtaining the equity investment. Equity finance helps to boast the credit rating of the organization, as more the equity, lesser would be the debts. The disadvantage of this finance is the ownership-sharing ratio. As, the equity financier, the ownership and the managerial powers have to be shared (M. Walma, 2000). The control over the business also gets

affected because of equity financing. The different idea sharing can create the problem for speedy decisions. The cash reserve of the company would be more, as no payments are to be made to debt financiers but it would result in less optimum use of resources. Finally, this conflict between managers and shareholders of the company may result in agency cost, which this issue will be discussed later in this chapter in detail.

As a final point, it can be understood that among all sources to raise capital, companies may put the equity financing at the bottom line of its choices because of all the costs that it may bring to the firm.

2.3 Capital Structure Theories

In following sections, various capital structure theories will be examined and some international evidence regarding these theories will be discussed and studied in order to identify how financial managers in real market act and whether these theories are applicable in practice.

2.3.1 Modigliani and Miller (MM)

The optimal balance between debt and equity financing has been a central concern in corporate finance since Modigliani and Miller showed in 1958 that capital structure was irrelevant. There are some underlying assumptions before explaining MM's theorem: All the investors have the same level of information and obtaining these information has no cost. There is no transaction cost and no tax on both personal and corporate level. Besides there is no bankruptcy cost.

Modigliani and Miller state their theory by two propositions. MM's proposition (I), also known as debt irrelevance proposition, states that firm's value is determined by the left side of the balance sheet by its real assets not by the proportions of debt and equity securities issued to purchase the assets. Therefore, there is no optimal capital structure for a company because change in capital structure does not affect the firm's value, thus the value of the levered firm must be equal to unlevered firm. As long as investors can borrow or lend on their own account with the same risk free rate of interest as firm can do, they can undo the effect of any change in firm's capital structure. MM proposition (I) can be exhibited by using the total value of a firm as a pie. The value of the pie is independent of how it is sliced. Figure 4 shows one company with 40% debt and 60% equity and the other company with the converse situation.

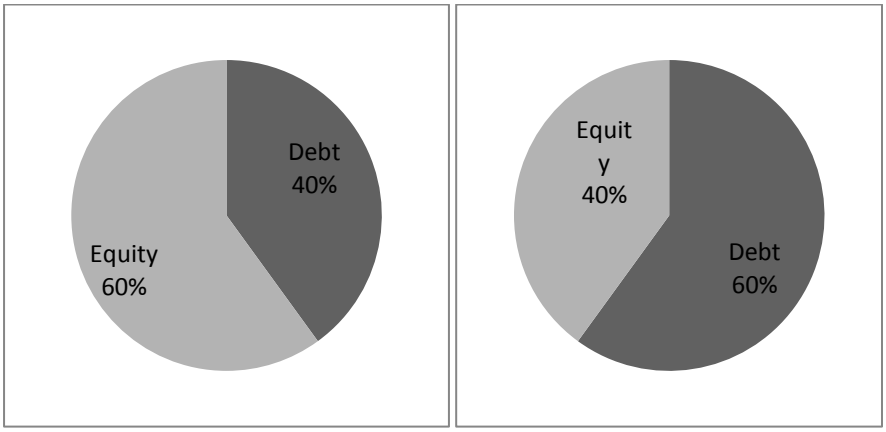


Figure 5: Exhibition of Total Value of Firm as a Pie.

As it can be implied from Figure 5, the total value of corporation stands constant and it is autonomous of the debt and equity percentages applied.

MM proposition (II) states that expected rate of return on common stock of a levered firm boosts in proportion to the Debt-Equity ratio. From MM proposition (I) can be understood that expected return on assets is equal to expected operating income divided by the total market value of the firm's securities.

$$r_A = \frac{\text{Operating income}}{\text{Market value of all securities}}$$

In perfect capital market, the company's borrowing does not affect either the firm's operating income or the total market value of its securities, therefore, the borrowing decision also does not affect the expected return on the firm's asset (r_A) which is also called the cost of capital or the weighted average cost of capital (WACC). Suppose that an investor holds all of a company's debt and all of its equity. This investor is entitled to the entire firm's operating income, for that reason the expected return on assets is equal to weighted average of the expected return on individual's holdings.

$$r_A = \left(\frac{D}{D+E} \times r_D\right) + \left(\frac{E}{D+E} \times r_E\right)$$

This formula can also be shown as below:

$$r_E = r_A + (r_A - r_D) \times \frac{D}{E}$$

If firm has no debt, required rate of return on equity (r_E) will be equal to required return on Assets (r_A). Accordingly, it can be figured out from the formula that increase in debt-equity ratio will increase the expected return for shareholders. Here there could be a question, how can they be indifferent to change in amount of debt? MM notes that any increase in expected return on equity is closely offset by an increase in risk and consequently, in shareholders required return. According to MM's proposition II, the cost of capital (r_E) amplifies by just enough to keep the weighted average cost of capital constant. Figure 6 shows the summation of MM Proposition II.

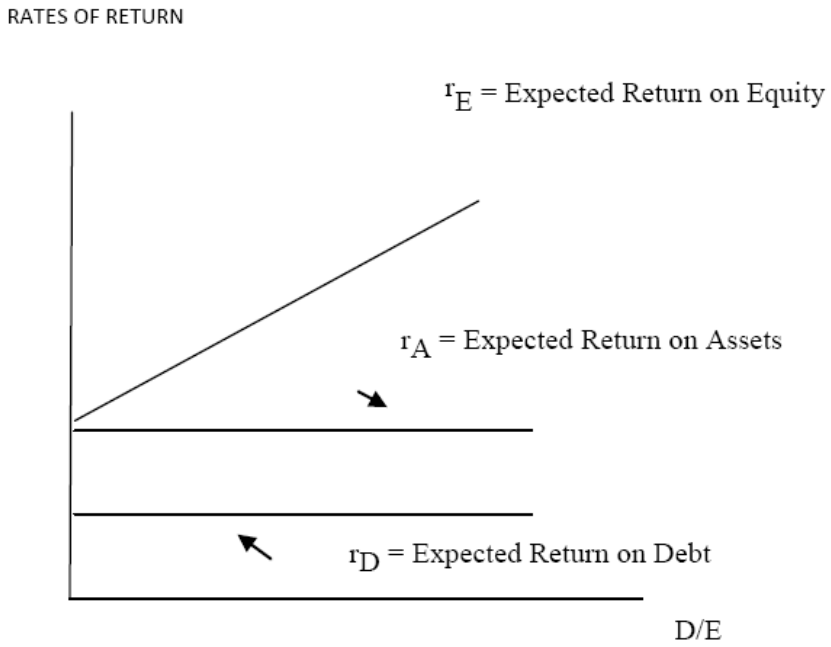


Figure 6: When Debt is Risk Free, Indeed It is not Realistic.(Aln J. Marcus, 1976)

Raising the amount of debt will increase the debt holders' risk and lead to a rise in the return that debt holders required. Figure 7 sums up the implications of MM's propositions for the cost of debt and equity, and the WACC. The figure assumes that

the firm's debt is in effect risk free at low debt levels, thus, (r_D) is independent of debt-equity ratio and (r_E) increase linearly as D/E increase. As the firm borrows more, the risk of default increases and the firm is required to pay higher rates of interest. Proposition (II) predicts that when this occurs the rate of increases in (r_E) slows down. The more debt the firm has, the less sensitive (r_E) is to the further borrowings. As the firm borrows more, more of that risk is transferred from shareholders to bondholders.

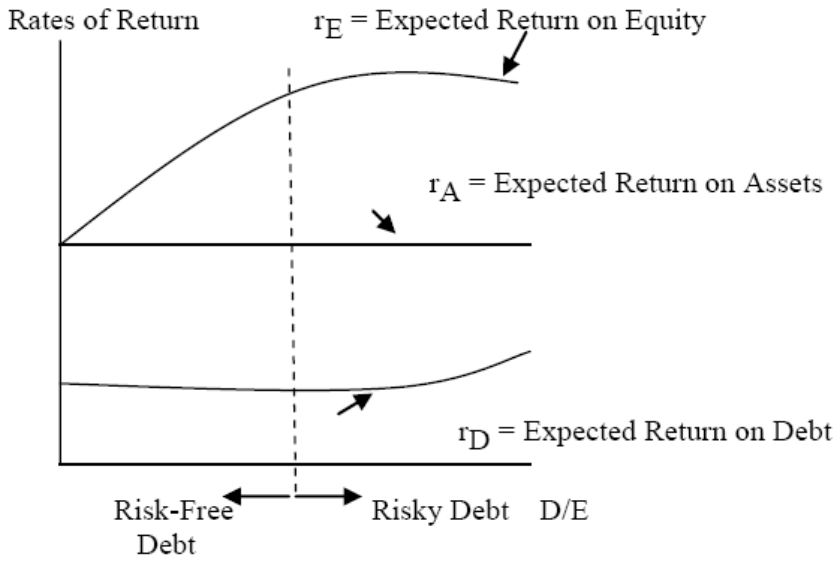


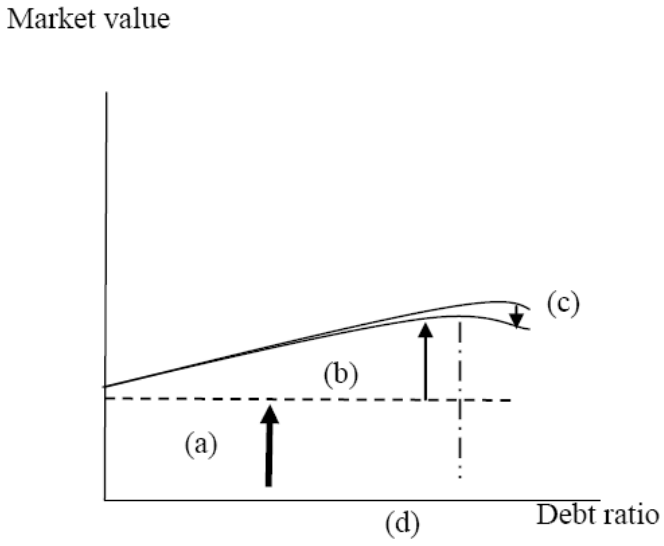
Figure 7: MM's Proposition II When Debt is No Risk-Free.(Alan J. Marcus, 1976)

For this reason, debt would generate benefit to shareholders as long as the firm earned more than interest rate on its assets. However, debt also increases shareholders' risk and causes shareholders to demand a higher return on their investments. Therefore, debt is not cheaper than equity and the return that investors require on their assets is unaffected by the firm's borrowing decision.

2.3.2 Trade-Off Theory

Financial managers often think of the firm's debt-equity decision as a trade-off between interest tax shield and the costs of financial distress (Allen et al., 2008). The main objective for financial managers of a firm should be to minimize all taxes paid by both debt holders and equity holder, and therefore maximize the after tax income of a corporation. Most of financial managers believe that debt has an advantage of tax over equity, at least for companies that have enough income to use tax shield.

However, as the amount of debt in a firm increases, the costs of financial distress increase as well. Financial distress means company is unable to pay off its debt obligations and it causes decline in the market value of the company's securities. Financial distress may lead to bankruptcy and once this process starts, the assets should be liquidated at much lower than their real values. Financial distress will cost some legal and administrative fees for the insolvent company, and it causes in some indirect costs such as cost of investors, suppliers, managers and shareholders. As it illustrates in Figure 8, present value (PV) of tax shield increases with the increase in the amount of debt until the modest debt level, advantage of tax for debt is dominated, but after that, the probability of financial distress increases with the additional borrowings.



(a) = Value if all-equity-financed (b) = PV tax shield (c) = PV costs of financial distress

Figure 8: The Static-Trade Off Theory of Capital Structure.(Myers, 1990).

Taking into an account the factors, financial managers try to attain a best possible ratio for debt and equity to maximize the firm's value. A firm's optimal debt ratio is typically looked as the trade-off between the costs and benefits of borrowing, holding the firm's assets and investment plants constant (Saleem, 2006). Managers try to obtain this target debt ratio for their companies and follow it to maximize the firm's value.

In Figure 9, companies in U.K, U.S., France, Netherlands and Germany are examined regarding the target debt ratio and it shows how much the trade-off theory is globally applied.

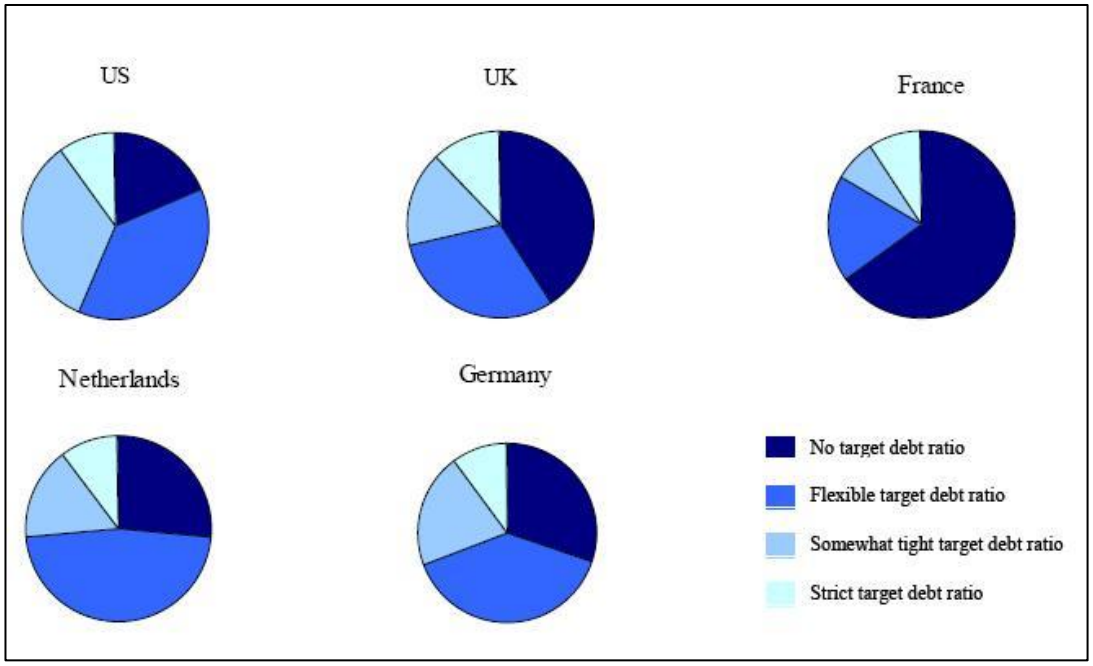


Figure 9: Use of Target Debt Ratio (D. Brounen, 2005).

The trade-off theory considers that the target debt ratio varies among companies. Companies with lots of income to shield, having tangible and safe assets should have high optimal ratio and small risky companies such as high tech companies with intangible assets should be financed with more equity relative to debt. Consequently, the trade-off theory is successful in explaining why different industries have different capital structures. However, in format of this theory, companies that are more profitable should borrow more due to having more income to shield, but in reality, it is reverse due to the fact that the most profitable companies commonly borrow the least (Allen et al., 2008).

In the following Table 4, survey result are shown regarding what factors affect in choosing the appropriate amount of debt. This survey had targeted European financial managers in 2001 (Bancel and Mittoo, 2001).

As it can be seen from Table 4, about 60% of managers have ranked the tax deductibility of debt important, that is the advantage side of debt financing regarding the trade-off theory, and also more than 30% of managers pay attention toward the potential costs of bankruptcy of debt which is disadvantage side of debt financing.

Table 4: What Factors Affect How to Choose the Appropriate Amount of Debt for the Firms. (Bancel and Mittoo, 2001.)

What factors affect how to choose the appropriate amount of debt for firms.	Important or very important (%)	Size		Industry	
		Small	Large	Manu.	Others
Financial flexibility	90.8	3.43	3.32	3.50	3.36
Our credit rating (as assigned by rating agencies)	73.17	2.34	3.5	3.00	2.73
The tax advantage of interest deductibility	58.14	2.42	2.74	2.72	2.56
The volatility of our earnings and cash flows	50.00	2.53	1.9	2.13	2.38
The transaction costs and fees for issuing debt	33.33	1.86	1.94	2.06	1.91
We limit debt so our costumers/suppliers are not worried about our financial stability	32.56	2.04	1.93	1.94	1.97
The potential costs of bankruptcy or near bankruptcy financial distress	30.95	2.00	1.37	1.44	1.85
The debt level of other firms in our industry	23.26	1.68	2.13	178	1.85
The personal tax cost that our investors face when they receive interest income	10.59	0.90	0.93	1.00	0.96
To ensure that upper management works hard and efficiently	6.98	0.90	0.39	0.59	0.77
We try to have enough debt so that we are not an attractive target	4.65	0.92	0.77	0.94	0.83
If we issue debt our competitors know that we are very unlikely to reduce our outputs	1.16	0.46	0.45	0.40	0.45
A high debt ratio helps us bargain for concessions from our employees	0.00	0.32	0.16	0.18	0.29

2.6 Pecking Order Theory

Pecking order theory states that firms have a desired hierarchy of financing decisions. The highest preference is to use internal financing, which is retained

earnings plus depreciation, before resorting to any form of external funds (Liez, 2002). Internal funds acquire no flotation costs and require no additional disclosure of proprietary financial information that could lead to more rigorous market discipline and a possible loss of competitive advantage. In case of need for external financing, corporations prefer to use external financing instrument along a desired order, which contains (i) debt, (ii) convertible securities, (iii) preferred stock and common stock (Myers, 1993). This way of ordering demonstrates the incentive of the financial mangers to retain control of the firm, to reduce the agency cost of equity and to avoid negative market reaction to issue new equity or to keep away from sending bad signals to the shareholders market investors.

There are two assumptions concerning financial managers in POT (Pecking Order Theory) which can be stated as: (i): Asymmetric information: managers know more about company's current earnings and the future growth opportunities than do outside investors. (ii): Managers act in the best interest of corporation's existing shareholders. Managers may forgo a positive NPV projects even if they need to issue new equity (Liez, 2002).

There is potentially an issue under name of signaling when a corporation steps to issue debts or to issue new shares in the market. Financial managers should always be aware of good (positive) and bad (negative) signals that they may send to the investors in the market, by their actions, because investors always keep eyes on their actions and performances over the market to forecast the future outcomes of corporations to take action against the future movements of market to earn profit or

to avoid loss. For this reason, every single action of managers in corporations may have a meaning for investors and these signals sometimes cause tangible changes in value of shares.

Issuing new securities and/or new equities in capital market may send following signals to the market; (i) issuing new debts send a positive signal to the market because investors assume that managers are certain to be able to serve the debt expenses and mostly there should be a positive NPV project behind the corporation investment plan to give this confidence to financial managers to go under debt; (ii) issuing new equities send a negative signal to the market in as much as investors think that stocks are overvalued and managers wish to take advantages of a market opportunity to revalue the stocks. It may also send a signal of financial difficulty in corporation that may lead to panic the market and investors, for this reason market always experience a decrease in price of shares after reissuing new equities.

There is a touchable advantage of POT over TOT (trade-off theory). The Trade-Off Theory implies a static approach to financing decision based upon a target capital structure while Pecking Order Theory allows for the dynamics of firm to dictate an optimal structure for a given firm at any particular point in time (Copeland, 1988). Pecking Order theory, however, does not explain the influence of taxes, financial distress, security issuance costs, agency costs or the set of investment opportunities available to firm upon that firm's actual capital structure. It also ignores the problem that can arise when a firm's managers accumulate financial slack too much that they become immune to market discipline. In such a matter, it would be possible for a

firm's management to prevent ever being penalized via a low security price and if augmented with non-financial takeover defenses, protected to being removed in a hostile acquisition (Weston, 1988). For this rationale, Pecking Order Theory is offered to be as a complement rather than being a substitution for the Trade-off Theory. In Table 5, a comparison between TOT and POT is illustrated.

Table 5: Comparison of Trade-Off Theory and Pecking Order Theory Traits(Thomas J. Liesz. 2002)

TRADE-OFF THEORY	**PECKING ORDER THEORY**
Conforms with value maximizing construct	Considers managerial motivations
Assumes a relatively static capital structure	Allows for a dynamic capital structure
Considers the influence of taxes, transaction costs, and financial distress	Considers the influence of financial slack and availability of positive-NPV projects
Ignores the impact of capital market "signals"	Acknowledges capital market "signals"
Ignores concerns regarding proprietary data	Acknowledges proprietary data concerns
Cannot explain many real-world practices	Explains many real-world practices

Chapter 3

CAPITAL STRUCTURE IN DEVELOPED AND DEVELOPING COUNTRIES

Capital structure varies from a company to due to the financial situation and investment policies and systematic factors in a country. Some of these factors include the sources of financing for companies, such as economical conditions of their countries, the availability of funds, the efficiency and the functionality of countries' capital markets. In this chapter, factors which have impact on capital structure will be examined and moreover, the differences of capital structures and capital markets of companies in developed and developing countries will be studied.

In regards to level of government's income, nation's income, living standards, technology, and capacity of financial markets, health and education countries are divided in two main categories: Developed and Developing countries. There is no unique definition for developing countries, which is internationally recognized. In terms of living standards and level of income, a country is a developing country that has low level of material well being and a low level of income in average of nations. In financial and economical terms, developing and developed tags address the functionality, strength and capacity of capital market of countries. In case of availability, being easy to use, functionality and size, developed capital markets are advanced in comparison with developing capital markets. In appendix number 1, the list of developing and developed countries categorized based on level of their income

is provided. This classification was issued by World Bank in 2009 (Country and Lending Group, World Bank, 2009).

In this chapter, capital markets of developed and developing countries will be the centre of attention and in the following sections, several comparison between these two types of markets will be conducted.

3.1 Capital Market and Capital Structure in Developing Countries

There are many studies done concerning the capital markets of developing countries and in this section, some of these studies' results will be compared in order to clarify the common outcomes of these studies. Additionally, some international evidence regarding capital markets in developing countries will be provided in order to have a better understanding of these markets' conditions and trends.

Tabrizi (2004) points out that in developing countries, the main problem of economic development is the insufficiency of capital. Tabrizi believes that if a country could have a capital market which is connected to the other international capital markets in the world; it can provide more investment opportunities for market participants in its capital market. Accumulated capital is one of the most important sources of economic development, and this capital can be supported by a powerful and efficient capital market.

Studies show that the level of development of financial markets and specifically, stock markets has a significant role in the capital structure of companies. Financial markets are the most important sources of financing for companies and an advanced

capital market can play an important role in economic development of a country. In fact, in capital markets that the possibility of risk diversification and proper capital structure for companies are created, development and wealth enhancement get accelerated (Tabrizi, 2004).

As it can be implied from recent and earlier studies concerning capital structure and capital market in developing countries, the major problem in developing countries is the shortage of fund or capital. The main source of fund for companies is the capital market and companies need to reach these markets in order to raise the required capital to carry out their projects, at the same time, there is a need for having an organized, applicable, efficient and functional capital market so as to respond the need of companies. In most developing countries, capital markets are not efficient and capable to respond to companies' financial needs. In developing countries, the sources of funds are limited, and for this reason, capital markets should be internationally or at least regionally connected in order to be able to respond to the demand of capital in their local markets.

In case of economic boom cycles, most of developing capital markets do not have the capacity of providing enough capital to their demanders in local market and these markets usually need to be bailed out by foreign capital markets or to be helped by government's extra capital (Ahmadzadeh, 2005). For instance, after the Islamic revolution in Iran, most of foreign companies listed in Tehran Stock Exchange left the market due to the political issues and after a while, the government stopped trading of foreign stocks and bonds (Ansari, 2009). Because of sovereign risk of

Iranian financial market and other financial and political sanctions imposed by the United States on Iran, there is no foreign financial institution participating in Iran's local capital market. Consequently, in all cases of capital deficit in Iran's local financial market, government must take action, and it is the role of government to supply the required capital to demanders. The crucial matter is the tangible role of government that takes the capital market out of pure competition. This issue will be discussed in following the paragraphs.

Investment opportunities in financial markets of developing countries are limited due to the lack of proper restructure of the market and efficiency. Possibilities for trading-off the risk and expected return are also inadequate in developing countries' capital market due to the lack of alternative investment opportunities in such markets. Transaction costs in developing capital markets are respectively high due to the small size of transactions and transaction cost covers the large part of whole investment cost. Transaction costs in developed countries' capital markets are respectively lower than the costs in developing capital markets due to the huge scale of competition and larger size of transactions. Competition is often limited in developing countries and as it was mentioned before, the government plays a key role in such countries (Kadkhodaee, 1994).

The other issue concerning competition in capital markets of developing countries can be described as restrictive government's regulations for entering to the capital market as a supplier of fund. Governments usually like to keep their share of market and to maximize the possible profit from such markets. For this reason, cost of

capital and transaction costs are not competitive in developing countries, and they are relatively higher than competitive markets like in developed countries. In Table 6, the number of listed companies in some developed and developing countries are illustrated.

Table 6: Number of Listed Companies in Some Developed and Developing Countries and Regions. (World Bank, World development indicators, 2005.)

Regions and Countries	**Listed Companies (Number)**	
	1990	**2004**
Latin America and Caribbean	**1,784**	**1,648**
East Asia and Pacific	**774**	**3,582**
Middle East and North Africa	**817**	**1,803**
South Asia	**3,231**	**6,909**
World	**25,424**	**50,038**
UK	**1,701**	**2,311**
USA	**6,599**	**5,295**

As it can be implied from Table 6, only 27.86 percent of companies in the world are listed in developing countries and United States itself has 10.58 percent of total number of companies. The large scale of competition in the capital market of United States creates more opportunities for both capital suppliers and capital demanders to transact in lower costs and prices, and to have more alternatives to reduce the risk of their investments and to benefit from market diversity.

One of the most important components of capital markets is the bond market. As it was mentioned in chapter 2 of this thesis, debt financing is the main external source for the companies in developed countries (Myers, 2008). Advanced bond markets are usually found in developed countries, but there are few developing countries like South Korea, Malaysia, China, Australia and Singapore working hard to develop their bond markets in order to have a more efficient and functional capital markets. Knight (2005), states that the biggest markets for bond in developing countries are located in China, South Korea and Australia. Each of these countries has more than $100 Billion in outstanding issues, but, U.S. bond market has a size equal to $13 Trillion and Euro zone's corporate bond market has a size equal to $7 Trillion. This evidence proves the strength of Euro zone and North American bond markets, which are mostly developed countries, in comparison with other developing countries with fairly lower size of bond market. In Table 7, the amount of outstanding corporate bond and market capitalization in some developing and developed countries are shown.

Table 7: Size of Corporate Bond Market and Other Channels of Financing

	Corporate bonds[1]		Other channels as % of GDP		
	Amounts outstanding (USD billions)	As % of GDP	Domestic credit	Stock market capitalisation	Government bonds
Australia	187.5	27.1	185.4	111.5	13.8
China	195.9	10.6	154.4	33.4	18.0
Hong Kong SAR	61.9	35.8	148.9	547.7	5.0
India	24.5	3.3	60.2	56.8	29.9
Indonesia	6.8	2.4	42.6	24.5	15.2
Japan	2,002.0	41.7	146.9	76.9	117.2
Korea	355.6	49.3	104.2	74.7	23.7
Malaysia	49.7	38.8	113.9	140.8	36.1
New Zealand	29.9	27.8	245.5	41.1	19.9
Philippines	0.2	0.2	49.8	37.5	21.8
Singapore	21.7	18.6	70.1	211.4	27.6
Thailand	31.9	18.3	84.9	67.1	18.5
Memo: United States	*15,116.6*	*128.8*	*89.0*	*138.4*	*42.5*

[1]Domestic and international bonds and notes in domestic currency issued by residents and non-residents.

Sources: IMF; World Federation of Exchanges; Dealogic Bondware; national data; BIS

There is no unique capital structure for companies in the world and even not in the same region or in a country however, there are many similarities in capital structures of many companies in different countries that are similar in several aspects and economic structures. For example, in developing countries, financing strategies of companies are usually similar and in their capital structure, many similarities can be found. This point can be true concerning capital structure of developed countries as well. In below, determinants of capital structure of developing countries will be examined and some international evidences will be provided.

As it was mentioned before, in developing countries, the broad government ownership and restrictive regulation of financial system by the government are important. For instance, in India, government impose ceilings on interest rates and it

could motivate companies to rely more on debt financing. Governments also control the issue price of equity and it may obligate companies to issue convertible debts to compensate part of their loss due to the equity under pricing (Booth, 2001). As it can be understood, governments' financial patterns and regulations directly affect the capital structures of companies in these countries.

In addition to the impacts that governmental decisions have on capital structures of companies, there are other factors that affect the way that companies decide to raise their capitals. These factors can be called as institutional factors of capital structure, which are tax rate, business risk, asset tangibility, profitability, size, return on asset, and market to book ratios. In this section, some international studies and evidence are provided regarding the impacts of institutional factors on capital structure of developing countries. In Table 8, survey evidence conducted by Booth (2001) points the institutional factors affecting capital structures in ten developing countries for the largest companies of each country during 1980 to 1990. It should be also mentioned that the numbers in the first row are the averages and the seconds are the standard deviations.

Table 8: Institutional Factors Affecting Capital Structures in Some Developing Countries, 1980 to1990.(Booth, 2001)

	Brazil	Mexico	India	South Korea	Jordan
Tax rate	13.9	26.3	21.8	29.9	16.3
	16.7	57.1	20.9	19.7	17.9
Business risk	9.0	5.6	4.5	3.1	7.5
	4.7	2.9	2.6	1.8	4.2
Asset tangibility	67.5	32.8	41	48.9	47.3
	18.5	30.1	17.5	15.2	21.5
Size (local currency)	0.112	0.114	0.142	0.117	0.076
	0.043	0.017	0.009	0.008	0.015
Size (U.S. dollars)	0.131	0.112	0.184	0.189	0.098
	0.010	0.014	0.010	0.009	0.003
Return on assets	6.7	8.1	7.1	3.7	6.8
	11.5	8.1	6.7	3.8	10.6
Market-to-book ratio	N/A	N/A	1.4	0.7	1.4
			1.1	0.7	0.7

	Malaysia	Pakistan	Thailand	Turkey	Zimbabwe
Tax rate	32.2	12.4	28.8	29.7	28.9
	44.4	20.1	8.7	18.5	21.2
Business risk	4.5	6.2	3.4	5.5	5.7
	3.3	3.8	2.7	2.6	5.7
Asset tangibility	57.6	38.2	36	41.1	44.4
	21.8	19.8	17.2	19.2	12.7
Size (local currency)	0.115	0.06	0.136	0.103	0.103
	0.013	0.010	0.011	0.017	0.010
Size (U.S. dollars)	0.174	0.171	0.167	0.172	0.167
	0.016	0.011	0.013	0.017	0.016
Return on assets	6.9	9.4	13	9.9	11.6
	7.3	9.7	7.1	8.8	8.8
Market-to-book ratio	2.3	0.9	3.2	1.9	0.6
	1.8	0.7	2.1	1.3	0.6

It can be implied from the results of the survey conducted by Booth (2001) that higher tax rates, size and profitability can result in a decrease of long-term debt ratio, and more tangible assets can result in an increase of long-term debt ratio. In the other words, debt ratio is negatively correlated with average tax rate, profitability and the market to book ratio and it is positively correlated with the tangibility of the assets for those developing countries.

There are other studies conducted regarding the impacts of institutional factors on capital structures of developing countries. For example, Harris and Raviv (1991) summarize some specific characteristics of companies and how they are related to total debt ratio. Total debt to assets ratio increases with fixed assets, non-debt tax shields, growth opportunities, and companies' size and this ratio decreases with volatility, advertising expenditures, research and development expenditures, bankruptcy probability, profitability, and uniqueness of products.

According to Rajan and Zingales (1995), four factors namely fixed assets, firm size, market to book ratio as a proxy for growth opportunities, and profitability, are consistently correlated with debt ratio. The target of this study was focused on the determinants of capital structure in United States and in other seven developed countries. Conclusion of this study has many similarities with the results of survey conducted by Booth (2001), and it shows that capital structure in developing countries seem to be affected in the same way and by the same types of variables that are significant in developed countries.

In the study about capital structure of Latin American countries, Titman (1988) states that the profitability has a negative relation with leverage ratio and there is a positive relation between growth opportunities and leverage ratio in Latin America. Regardless of institutional factors that affect the debt ratio, leverage ratio in Latin American countries is usually higher than other developing countries with similar economical conditions and financial capacity. This can be explained by the desire of Latin American firms to avoid equity issuance and the consequent loss of company's control. Ownership concentration is one of the issues that makes companies to use

less equity in order to keep the control of company and to not give rights to shareholders so as to influence the companies, future decisions and strategies. This phenomenon can be abundantly observed in Latin American countries. Latin American countries, contrary to developing countries, have less equity and more debt partly due to the factor of ownership concentration.

Concerning the issue of capital structure determinants, Hijazi (2004) examined the potential determinants of capital structure and their relation with leverage ratio in India and Pakistan, Hijazi finds that the tangibility and the company's growth have directly positive relation with leverage ratio, that is, increase in tangibility and growth of companies causes an increase in leverage ratio. Conversely, size and profitability of companies have negative relation with leverage ratio, that is, increase in profitability and size of companies causes the leverage ratio to decline.

What makes capital structure of developing countries different from developed countries' capital structure, is the amounts and types of debts that companies in developing countries use. There are many evidences showing that companies in developing countries use more equity and less debt in their capital structure. This is one of the biggest differences of companies' capital structure between developing and developed countries. In Table 9, three types of debt ratios for some developing countries and G-7 countries are demonstrated. It should be mentioned that G-7 countries named in this survey are United States, Germany, Canada, Italy, France, Japan and the United Kingdom.

Table 9: Debt Ratios in Selected Developing Countries and G-7 Countries (Booth, 2001)

	No. of Firms	Time Period	Total Debt Ratio (%)	Long-term Book-debt Ratio (%)	Long-term Market-debt Ratio (%)
Brazil	49	1985–1991	30.3	9.7	N/A
		1985–1987	30.7	8.4	N/A
Mexico	99	1984–1990	34.7	13.8	N/A
		1985–1987	35.4	15.6	N/A
India	99	1980–1990	67.1	34.0	34.7
		1985–1987	66.1	35.7	36.7
South Korea	93	1980–1990	73.4	49.4	64.3
		1985–1987	72.8	50.3	59.3
Jordan	38	1983–1990	47.0	11.5	18.6
		1985–1987	44.7	10.9	20.1
Malaysia	96	1983–1990	41.8	13.1	7.1
		1985–1987	40.9	13.1	7.7
Pakistan	96	1980–1987	65.6	26.0	18.9
		1985–1987	65.2	32.5	17.6
Thailand	64	1983–1990	49.4	N/A	N/A
		1985–1987	50.9	N/A	N/A
Turkey	45	1983–1990	59.1	24.2	10.8
		1985–1987	61.8	24.5	10.8
Zimbabwe	48	1980–1988	41.5	13.0	26.3
		1985–1987	40.3	11.4	26.0
United States	2,580	1991	58	37	28
Japan	514	1991	69	53	29
Germany	191	1991	73	38	23
France	225	1991	71	48	41
Italy	118	1991	70	47	46
United Kingdom	608	1991	54	28	19
Canada	318	1991	56	39	35

As it can be understood from the Table 11, almost all developing countries exercise debt less than G-7 countries and fall into low-debt group. Additionally, companies in developing countries rely more on short term financing rather than long term. As Demirguc-Kunt (1999) shows, this issue is the most important difference between developed and developing countries (Booth, 2001). This issue can be explained by the significant amount of inflation in these countries, and the uncertainty about the politics and economics in the future. It makes the investors to invest in short-terms rather than long-term investments and avoid the use of debt.

Overall, the use of equity in developing countries is more common. The amount of equity that companies in developing countries hold is usually higher than the amount of debt that they have. Many studies are conducted regarding this fact, and results of these studies altogether have found couple of issues leading companies in developing countries to apply more equity rather than debt in their capital structure. The inefficiency of bond market, restrictive government regulations, lack of competition in capital market, unavailability and inadequacy of fund in developing countries are the issues that surveys conducted concerning capital structure of developing countries address to be roots of this trend of using more equity and less debt. In Figure 10 and Table 10, some international evidence regarding the use of debt and equity in developing countries are illustrated.

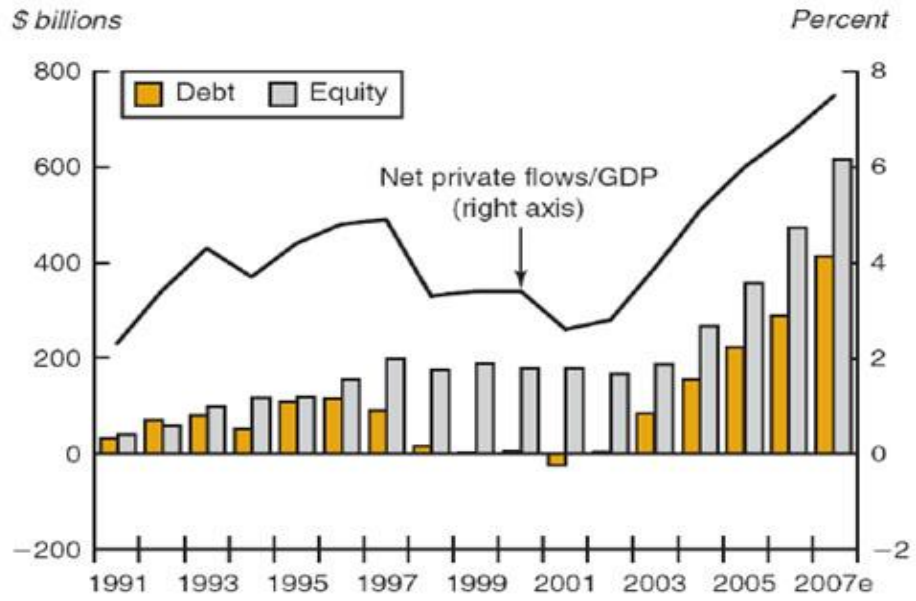


Figure 10: The Amount of Debt and Equity in Developing Countries During 1991-2007.

(J.Y. Lin., 2008).

As it can be implied from Figure 10, the amount of equity is much higher in developing countries than the amount of debt in developed countries. This issue can prove the above-mentioned arguments.

Table 10: Capital Structure in Developing Countries and Emerging Stock Markets. (D. Kunt. 1992).

Country	LTD/E (in %)	Number of Listed Co.	Market Capitalization (in mil. of US $)	Trading Value(in mil. of US $)	Turnover Ratio (in %)
Thailand	163.5	214	23896	4334	18.5
Korea	116.7	669	110594	22664	22.2
India	46.1	2435	38567	5680	12.6
Turkey	26.6	100	19065	1531	6.7
Pakistan	24.5	487	2850	58	2.0
Mexico	12.5	199	32725	2705	8.9
Jordan	12.3	105	2001	37	1.8
Zimbabwe	9.7	57	2395	15	0.7
Malaysia	8.7	282	48611	1798	4.1

As it can be seen from Table 10, the ratio for long-term debts to equities for most of the chosen developing countries is low, and it indicates that companies in these countries rely more on equity financing due to the previously mentioned problems.

3.2 Capital Market and Capital Structure in Developed Countries

Developed capital markets differ in many aspects from developing capital markets. As developing capital markets and capital structure of companies in developing

countries were studied in previous sections, the understanding of these differences will be easier by making some comparisons between developing and developed capital markets.

There are some specific characteristics in developed capital markets, which make them more efficient and functional in comparison to developing capital markets. Capability of market diversification, abundance of alternatives in the market, transparency of the market, competitive market, and availability of funds due to the international connections of developed markets together are the factors that make developed capital markets more attractive for financiers to invest in and more easier for companies to raise the required capital for their investments and projects.

One of the problems in developing capital markets is the scarcity of the different investment alternatives. This issue leads to make the hands of financiers and investors tight in case of abundance of different investment options in the market and this issue apparently declines the functionality and efficiency of these markets. In a market that investors cannot diversify their investment portfolio, and there are not plenty of options for them to choose among and there is no hard competition among the suppliers of capital. Companies and market investors cannot maximally benefit from the existence of such a market. In developed capital markets, one of the factors that help companies to reduce their cost of capital and to have better options in order to raise their capital is the competition advantage of such markets. In competitive markets, prices are functions of magnitude of demand and supply that are determined in equilibrium conditions of the market. Therefore, prices change during different

stages of the economic cycles, and in fact, this phenomenon can help companies to raise their capital with a lower cost in a highly competitive market (Edwards, 2005).

Another issue that could be an advantage for investors in developed capital markets is the market transparency. In developed financial markets, especially in stock markets, listed companies' financial statements and information are widely provided, and it can help investors to choose better companies to invest and it gives them this opportunity to mitigate the risk of their investments. Risk reduction strategies highly demand market information, and having market information requires a very regulated and efficient market system and supervision to be able to provide necessary information of the market alternatives to insiders and outsiders of the financial market. In developing financial markets, the lack of market transparency causes the apprehension among investors, and followed by that, it causes to increase the level of potential risk in the market. Increase in risk has a direct relation with increase in prices and cost of investments, hence, the other reason for higher cost of capital in developing capital markets can be the higher level of potential risk in the market (Edwards, 2005).

In Figure 11, there is a good example of market competition and market participation in developed securities markets in comparison with developing securities markets. By looking back again to Table 6, in 2004, the whole region of Latin American and Caribbean securities markets hold 1,648 listed companies and East Asia and Pacific area holds total number of 3,582 listed companies. Middle East and North Africa regions hold together 1,803 listed companies, which these numbers can be easily

compared with numbers of developed securities markets in Figure 11. As a result, on average, number of listed companies in developed markets is much higher than developing countries.

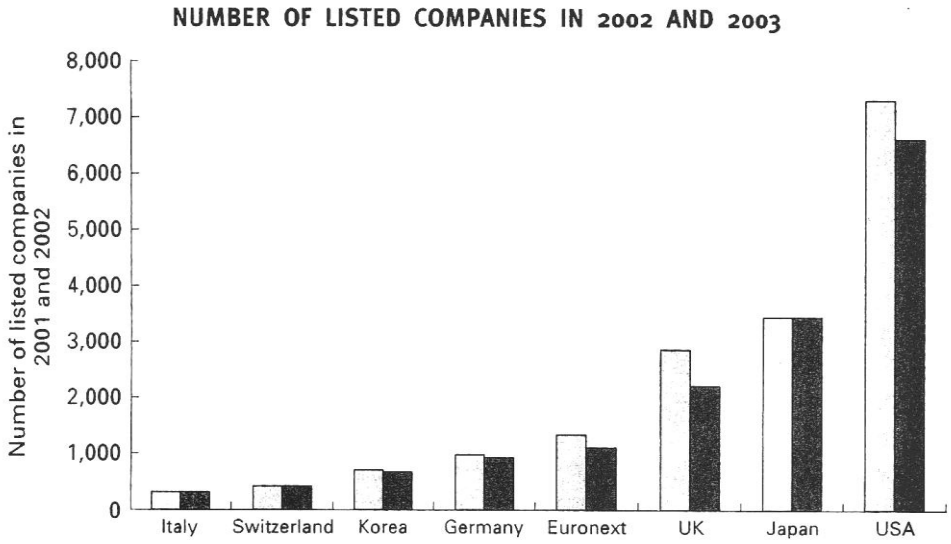


Figure 11: Number of Listed Companies from 2001 to 2003 (World Federation of Exchanges.)

There are many studies conducted regarding capital structure of companies operating in developed countries and most of these studies altogether reached similar results concerning this issue. Graham (2001) conducted a survey by applying questionnaire distributed among 392 CFOs in U.S. and Canada. His study's target was focused on capital structure, debt and equity policies of big corporations in North America. There are other similar studies done by Batellino regarding capital structure and corporate bond market of Australia in 2005, Moore and Reichert in 1983, and Gitman and Forrester in 1977 concerning developed capital markets and capital structure of companies in developed countries. Graham's results support many findings of previous studies related to capital structure of developed countries

and in Table 11 and Figure 12, some of these findings are pointed out. Table 11 and Figure 12 are constructed based on answers that CFOs of 392 companies in United States and Canada have given to the questions in distributed survey questionnaire.

Table 11: Graham's Finding Concerning Capital Structure of Companies in Developed Countries. (What Factors Affect Your Firm's Debt Policy?) (Graham, 2001)

	% important or very important	Mean	Size		*P/E*	
			Small	Large	Growth	Non-G
(c) We issue debt when interest rates are particularly low	46.35	2.22	2.07	2.40**	2.35	2.42
(a) We issue debt when our recent profits (internal funds) are not sufficient to fund our activities	46.78	2.13	2.30	1.88***	2.09	1.86
(d) We use debt when our equity is undervalued by the market	30.79	1.56	1.37	1.76***	2.14	1.85
(g) Changes in the price of our common stock	16.38	1.08	0.91	1.25***	1.45	1.38
(e) We delay issuing debt because of transactions costs and fees	10.17	1.06	1.25	0.83***	1.06	0.87
(f) We delay retiring debt because of recapitalization costs and fees	12.43	1.04	1.04	1.05	1.16	1.04
(b) Using debt gives investors a better impression of our firm's prospects than issuing common stock	9.83	0.96	0.85	1.05*	1.19	1.14
(h) We issue debt when we have accumulated substantial profits	1.14	0.53	0.50	0.55	0.61	0.55

As it can be implied from Table 11, companies in North America consider some factors to issue debt instruments such as interest rates, price of stocks and signaling issue to the market. If the interest rates in the market are low and their internal funds are not sufficient, they issue debt. Moreover, when their stock price is undervalued in

the market, they use debt to raise capital because using debt gives investors a better notion of their firm than issuing stock and it leads to increase the market price of the stock due to the positive signal that issuing debt sends to the market. In Figure 12, debt policy factors are ranked by their level of importance. This ranking is result of CEOs opinion concerning factors that affect debt policy of their companies.

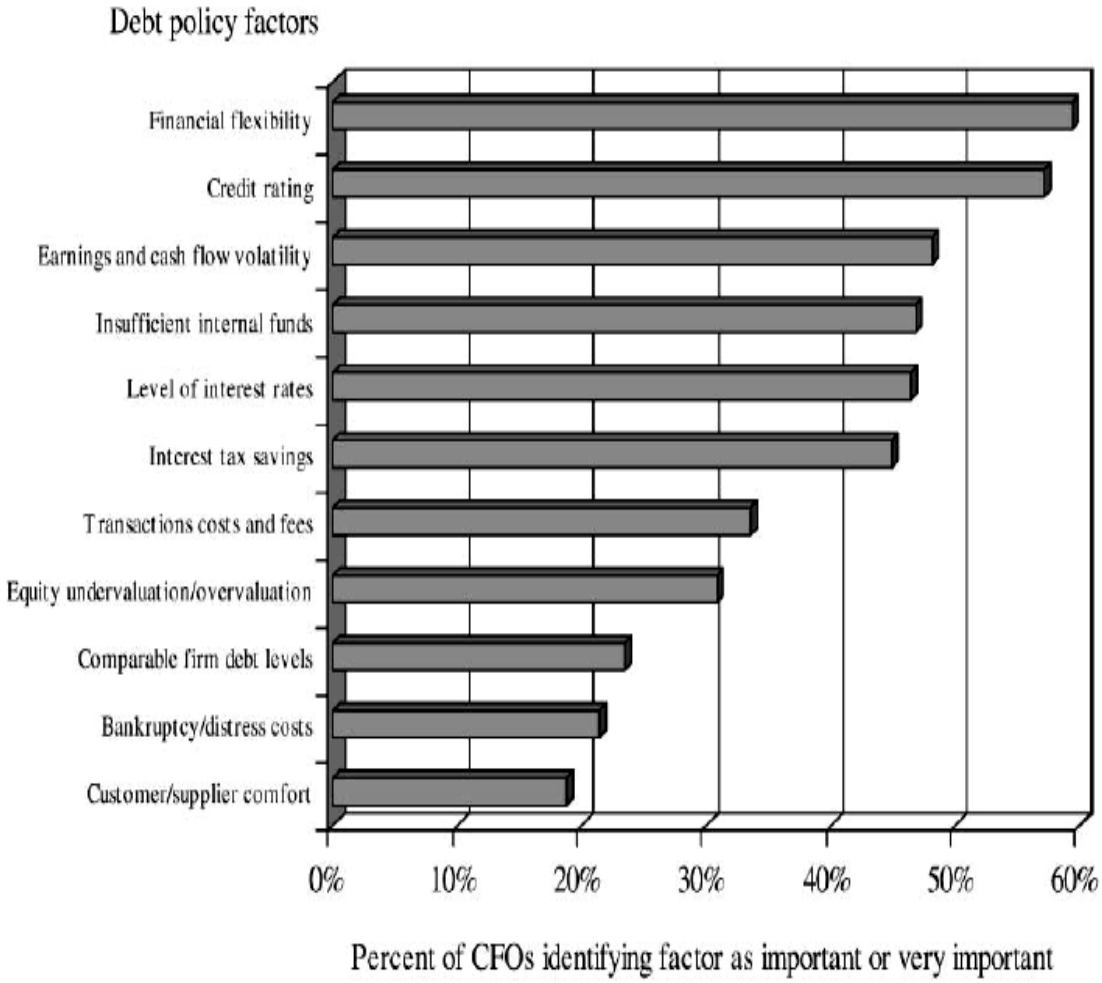


Figure 12: Factors Affecting Debt Policy of Companies. (J.R Graham, 2001)

As it can be implied from Figure 12, financial flexibility, credit rating, earning and cash flow volatility, insufficient internal funds, level of interest rates, interest tax savings and transaction costs and fees are respectively the most important factors that

affect debt policy of companies. One of the issues that Figure 12 notes is corporate tax advantage of debt is moderately important in capital structure decisions and in addition, distress cost due to the use of debt is not that important concern in their debt policy.

In Figure 13, the target debt-equity ratio of North American corporations is illustrated and it shows that 19% of companies do not have target ratio, 37% of them have flexible target ratio, 34% of them have somewhat tight target ratio, and 10% of them have strict target ratio. These numbers in Figure 13, and the above-mentioned factors in Figure 12 show the mixed support of an opinion that companies trade off costs and benefits of debt to drive an optimal debt ratio. These facts moderately support the use of trade-off theory in capital structure of North American Companies.

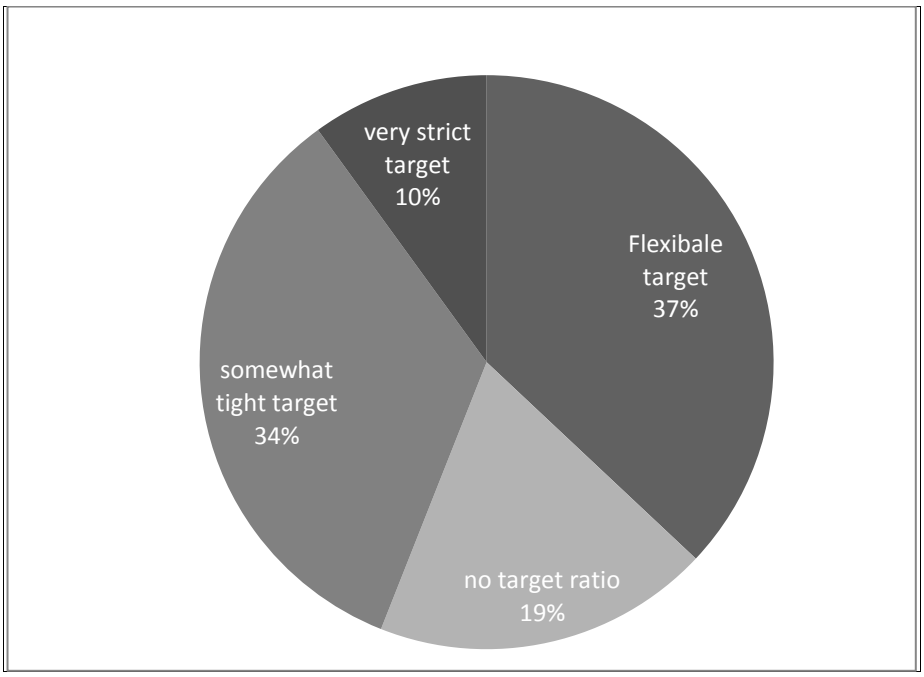


Figure 13: Target Debt-Equity Ratios (Graham, 2001)

In Figure 13, factors that affect equity (common stock) issuance policy of companies are illustrated.

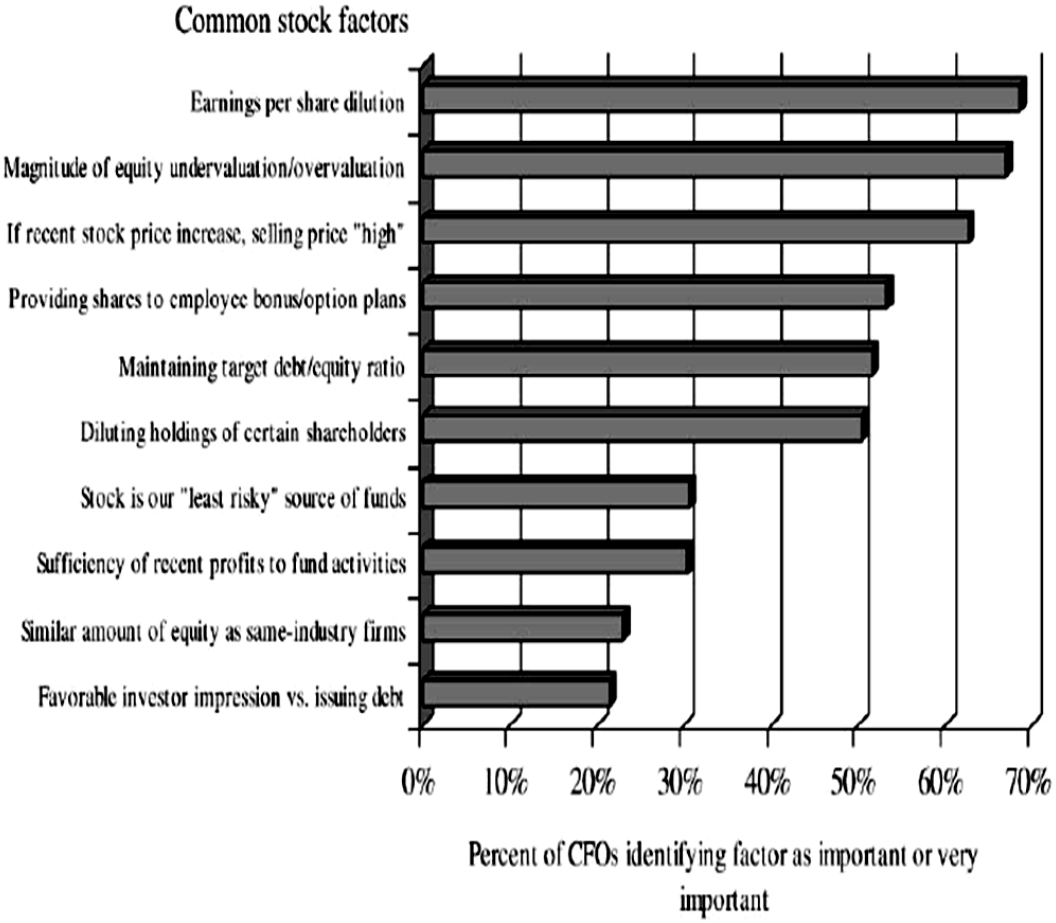


Figure 14: Important Factors Affect Issuing Common Stock (Graham, 2001)

As it can be implied from Figure 14, companies issue equity to maintain their target debt-equity ratio and in addition, they use equity for compensating their managers and employees. As it was mentioned before, management compensation is one of the ways to reduce the agency problems and costs. Furthermore, there are some other factors which are important for CFOs to use equity instruments such as earnings per share dilution, magnitude of equity undervaluation/overvaluation, which are more consistent with pecking order theory.

In the Figure 15, the capital structure in three different areas, EU, USA and Japan are illustrated.

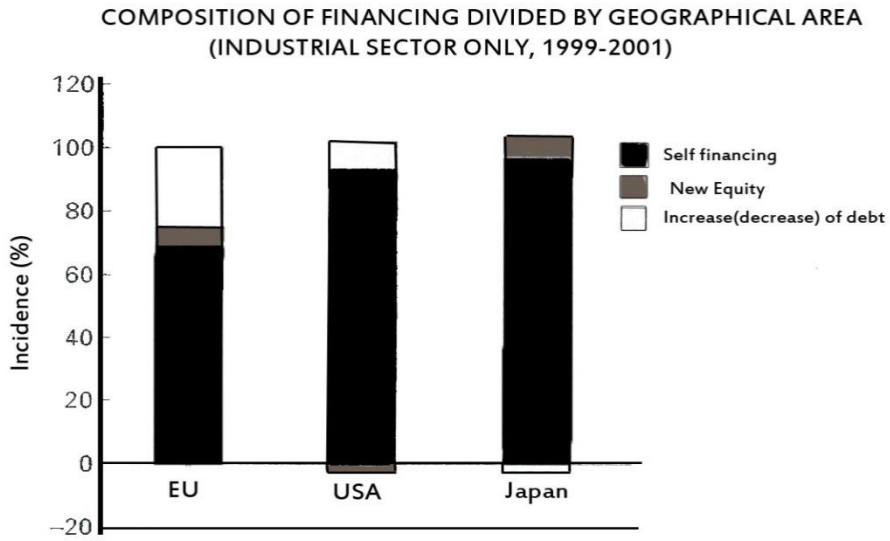


Figure 15: Composition of Financing Divided by Geographical Area(Quiry, 2007).

As it can be pointed out from Figure 15, the main source of financing in developed countries is self-financing or internal funds, which is retained earnings plus depreciation. If the internal funds are not adequate to start or carry on the projects, financial managers will issue debt. By examining Figure 15, it can be noted the last source for raising capital in developed countries is to use equity financing.

As a conclusion, in developed countries, companies rely heavily on their internal funds and in case of shortage in internal funds; they issue debt as the first choice of external financing. The last choice of external financing for the companies in developed countries is equity financing. Equity financing in comparison with debt financing is more expensive. Issuing equity sends a negative signal to the market and

in addition, it causes agency problem. For all these reasons, companies in case of shortage in internal funds, they prefer to use debt rather than equity.

In Table 12, some differences of capital markets and capital structures of companies in developing and developed countries are illustrated.

Table 12: Main Differences of Capital Markets and Capital Structures of Companies in Developing and Developed Countries

Developing Countries	**Developed Countries**
Short-term debt financing	Long-term debt financing
In the case of the need for external financing, more Equity financing (family inflows)	In case of the need for external financing, more debt financing, and less equity financing
Less number of market participants compared with developed countries	Large number of market participants
Capital markets are not usually efficient, unavailability of sufficient fund, expensive to raise capital compared with developed countries.	Easy to raise capital, lower cost of capital compared with developing countries, less regulated and efficient.

3.3 Different Categories of Countries and Capital Structure

In the finance literature, countries can be categorized in different groups and categories. In the following sections, countries will be categorized based on their financial system and their law system in order to make the comparison among countries easier. Financial systems can be divided in two main groups: Market-Based System (MBS) and Bank-Based System (BBS), and law system of countries can be divided in different groups such as Social Law System, Islamic Law system,

Common Law and Civil Law (Armstrong, 2009). In the following section, only two categories common law and civil law countries, will be the centre of attention.

3.3.1 Civil Law and Common Law Countries

Legal system of each country has impact on its financial system. In this section, comparison of countries' capital market will be carried out between two main legal systems, which are common law and civil law legal systems. Common law legal system originated in England. Anglo-Saxon countries like Canada, United States, United Kingdom, Australia, New Zealand and Republic of Ireland are common law countries (Neubauer, 2007). Civil law legal system is evolved in France, Germany, and Scandinavia and this sort of legal system can be observed mainly in countries that had been under control of France and Germany before (Neubauer, 2007). Here in Table 13, major legal systems of the world will be highlighted.

Table 13: Major Legal Systems of the World. (Neubauer, David W. and Stephen S. 2007).

	Common law	Civil law	Socialist law	Islamic law
Other names	Anglo-American, English, judge-made	Continental, Romano-Germanic	Communist	Religious law
Source of law	Case law, legislation	Statutes, legislation	Statutes, legislation	The Holy Quran
Judges' qualifications	Experienced lawyers	Career judges	Career bureaucrats, Party members	Religious as well as legal training
Degree of judicial independence	High	High; separate from the executive and the legislative branches of government	Very limited	Very limited
Examples	Australia, England, Hong Kong, Ireland, USA (except Louisiana), Canada (except Québec), Pakistan, India, Malaysia	France, Spain, Germany, Louisiana, Brazil, Japan, Mexico, Québec, Switzerland, The Netherlands	Soviet Union	Saudi Arabia

Studies show that common law countries have the best legal protections to shareholders and bondholders (La porta, 1998). This vigorous legal protection in common-law countries makes investors feel safer to invest in financial markets. Common law countries provide companies with better access to equity financing than civil law countries. On the contrary, companies in civil law countries rely less on market and more on banks and other financial institutions (Brealey, 2008). In a survey conducted by La porta and Lopez in 1997, indicates that some quantitative measurements such as aggregate market value relative to GNP and the number of

listed firms and IPOs to population were used in order to evaluate and compare the functionality of capital markets in different countries. Result of this survey states that common-law countries have the average ratio of outsider held stock market to GNP of 60 percent, compared to 21 percent for the French civil-law countries, 46 percent for the German civil-law countries, and 30 percent for the Scandinavian countries. This finding shows the strength of capital market in common-law countries due to the investor protection issue and their specific legal system. Most of the developing countries in the world are listed as civil law countries such as Iran, although there are a few developed countries, which are listed in this category as well such as Germany. As in previous sections, the capital market of developing countries was studied and the result was the inefficiency of these markets in comparison with developed countries capital markets. The weakness of law in protecting shareholders and bondholders can be one of the main reasons to not let developing countries capital markets to grow as developed countries capital markets have been grown.

3.3.2 Market Based and Bank Based System Countries

There are two dissimilar types of financial systems with different functions and structures in global financial markets. Bank-based and Market-based financial markets differ in many characteristics and components. Countries like Germany and Japan have bank-based financial system and in this sort of financial system, banks play a key and leading role in mobilizing of savings, allocating capital, overseeing the investment decisions of corporate managers, and providing risk management vehicles. In market-based systems, securities markets share centre stage with banks in transferring individuals' and households' savings to firms, in exerting corporate control, and easing risk management (Ross, 1999). There are various ideas and

debates regarding which of market or bank based financial system works better in the same way of investors' and companies' benefits. In a study conducted by Kunt and Ross (1999), some patterns and components of these two markets are examined and the results of this study are stated in Table 14.

Table 14: Some Patterns in the Market Based and Bank Based Systems(A. D. Kunt and L. Ross 1999).

Banks, other financial intermediaries, and stock markets all grow and become more active and efficient as countries become richer. As income grows, the financial sector develops.
In higher income countries, stock markets become more active and efficient than banks. Thus, financial systems tend to be more market based.
Countries with a common law tradition, strong protection for shareholders rights, good accounting standards, low levels of corruption, and no explicit deposit insurance tend to be more market-based, even after controlling for income.
Countries with French civil law tradition, poor accounting standards, heavily restricted banking systems, and high inflation generally tend to have underdeveloped financial systems, even after controlling for income.

Myers (2008) argues that Bank-based system is somewhat a better and suited financial system to establish industries and this system can also help to shield individuals from direct exposures to stock market risk. Myers also believes that bank-based system has the advantage of monitoring and controlling opaque firms by checking their financial statements in detail. Banks have long-outstanding relationship with their corporate customers and for this reason; banks have better

information about corporations than outside investors. This market transparency, which is outcome of banks' monitoring and controlling of companies, can help and protect outside investors in order to invest in safer companies. Totally, opaqueness is not too dangerous in bank-based system (Myers, 2008).

Market-based system is more efficient at obliging companies and industries to shrink and release capital. Once a company cannot cover its cost of capital and supplementary growth will destroy the value of shares and in parallel with this matter, stock price falls and this drop sends a clear negative signal to the market investors. This issue is rare in bank-based financial system due to the fact that uneconomic companies are often bailed out in this type of financial system (Brealey, 2008).

In bank-based system countries, there are small proportion of households' portfolio that are linked to the market and the risk of corporate sector. The business risks in such countries are passed on to the banks and government. Myers (2008) states that companies in bank-based system countries are free to invest in long terms, because there are few investors invested in the market directly, and companies are not supposed to payoff quick earnings to the investors.

In some of developing countries such as Iran, the difference between bank and market-based financing is further sophisticated by extensive government ownership and regulation of financial system. Iran seems to be an Islamic law country with similarities to civil-law countries. Controls on the prices in security market, along

with government directed credit programs to preferred sectors, could have a significant impact on corporate financing patterns (Booth, 2001).

Most of developing countries are categorized as bank-based countries and rely more on their banks, but there are some developed countries such as Japan that are categorized as bank-based systems as well, but the important difference in these two kind of bank-based countries is their bond markets. As it was mentioned before, developed countries have efficient and developed bond markets, but in most of developing countries, bond markets are not capable.

Chapter 4

CAPITAL STRUCTURE IN IRAN: CASE OF CHEMICAL AND PETROCHEMICAL PRODUCTS, RUBBER AND PLASTIC PRODUCTS, REFINED PETROLEUM PRODUCTS AND NUCLEAR FUEL

In this chapter, the capital structure in Iran will be studied and in order to make the study more precise and concentrated, three of the TSE sectors will be center of this survey's attention. Chemicals and Petrochemicals products, Rubber and Plastic products, Refined Petroleum products and Nuclear Fuel are the sectors, which will be examined in this study. At the beginning, there will be a review of external sources of financing in Iran, which are equity financing and debt financing. Companies can use equity financing through Tehran Stock Exchange and use debt financing through banks or by issuing debt instruments. Problems and difficulties of using these sources will be identified and stated. Additionally data, methodology and limitations of this thesis will be mentioned in the following sections. Eventually there will be an examination of calculated data for Iran, and a comparison between Iran and Turkey's capital structure.

4.1 Sources of External Financing in Iran

Companies have two main external sources of financing: equity financing and debt financing. In Iran, companies can use equity financing by issuing stocks in the TSE or they can use debt financing, which is to get loans from banks or to sell bonds to

investors. In this section, problems, difficulties and limitations involved in each method of financing will be identified taking into an account the Iranian settings.

4.1.1 Equity Financing

Tehran Stock Exchange (TSE) is the market for trading companies stocks in Iran located in Tehran, the capital city of Iran. TSE opened in February 1967 and during its first year of activity; only six companies were listed in TSE. In that time, governmental bonds and certain State-bank certificates were traded in the market. Now, there are over 420 companies involved in TSE, and institutions and individual investors trade among each other (Iran bourse, 2010), TSE development process could be divided in three different phases:

The first period is from the beginning of TSE activity until Islamic revolution of Iran, which is between 1967 until 1978. The second period is from the revolution until the end of the imposed war between Iran and Iraq, 1979 until 1988. The third time period is from the end of imposed war until now, 1988 until 2010.

In the following Table 15, some historical highlights of TSE are mentioned:

Table 15: Historical Highlights of TSE, 1966 – 2006(Iran bourse, 2010)

Historical Highlights	
1966	The Law for the Establishment of the Stock Exchange was approved by The parliament.
1967	The Tehran Stock Exchange commenced operation on Feb. 4.
1969	Trade of Treasury and Land Reform bills started.
1972	Stocks of 23 companies and three bonds were traded at TSE.
1983	The law for Usury-Free Banking was enacted. Trading in bonds was abandoned.
1988	Eight-year war between Iran and Iraq came to an end.
1989	Sharp increase in trade from the beginning of Autumn.
1992	TSE admitted as a full member of the International Federation of Stock Exchanges.
1995	TSE joins the Federation of Euro-Asian Stock Exchanges as one of its founding members. (TSE is ranked 41st largest stock exchange market in terms of volume trade in FIBV, 1995)
2002	Capital market physical development occurs; principal steps in dissemination of information, education and development of financial products.
2003	Listed companies are allowed to issue corporate bonds
2005	The TSE new law is ratified by parliament. Increase the number of Regional floors to 21.
2006	TSE Demutualization is accomplished

The demutualization process in TSE started in 2005 and this process moved on highly quickly. There were huge jumps between 2005 (76.4 M$), 2006 (342.9 M$) and 2007 (3804 M$) together with the unlimited support of government for the demutualization program. In the following Figure 16, demutualization process is illustrated.

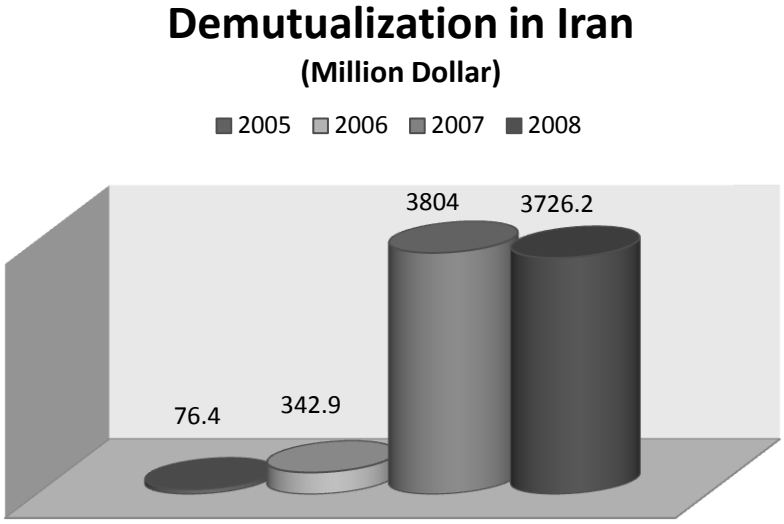


Figure 16: Demutualization Process in Iran From 2005- 2008. (Iran Privatization Organization, 2010)

Starting in 2005 many changes in the ownership structure of Iranian companies have occurred such as demutualization Iran's capital market is still vastly owned by the government. To prove this issue, in 2008, in the process of demutualization an individual shareholder bought 30% of the shares of one of the government owned company in Iran, Follade Khozestan. This trade was the biggest transfer of government owned company to the public. After two years from that event, in 2010, the investor sewed the company and wanted them to buy back their shares, because during this two years, government did not allow him to play any role in the company's decisions, even though he is an expert in the field of company's operation and has an experience. Finally, the court forced the company to pay his money back and cancelled the contract (BBC, 2010).

Extensive scope of governmental ownership is one of the main downsides of Iran's capital market and even after recent demutualization programs, the largest part of the

market is still owned by the government of Iran. There are other problems with TSE that make it inefficient to be a reliable source of financing for companies in Iran. Few foreign market participants, fewer number of listed companies in comparison to European and North American stock markets , lack of new financial instruments and innovation in the market, and the weakness of market regulations for investor protection are some of these all other problems with TSE. These issues lead to make market much riskier and in parallel with these matters, fewer investors will aim to participate in this market making the market inefficient and hard to invest in and to raise capital (Hesab Iran, 2007).

4.1.2 Debt Financing

In Iran, there is no fixed income, interest-bearing bonds, because of Islamic laws (Riba) which is called "Haram" or in another name "Forbidden". There are some other instruments that companies can issue instead of bond like participation bonds. Issuing government's participation bonds have long history in Iran, but companies were allowed to issue these bonds from 2003 up to now. In case of bond, investors can sell their instruments to the issuing company just on the expiration day not before that unless in the secondary market, but in participation bonds, investors can ask their money whenever they need it. Due to this reason, these kinds of bonds are not very common for companies in Iran and issuing these bonds are very expensive. In case of bonds, companies can use the raised money for any purpose, but in participation bonds, companies can issue them just for a specific project and companies cannot issue them if they need money for their operations or deficits. People in Iran are not that eager to buy these bonds. For example, in 2007, more than

30% of participation bonds issued by the Central Bank of Iran were not bought by investors.

In addition, companies can issue "Sukuk" in Iran like other Islamic countries. Sukuk is an Arabic name for the financial certificate that can be seen as an Islamic equivalent of bonds. This kind of bond has same real value (nominal value) and its holder will be the beneficiary of one or some of the issuer's assets or projects. Islamic organization of accounting and auditing financial institutions introduced 14 kinds of Sukuk which are issued in Islamic countries such as Malaysia, Bahrain, Qatar, UAE, as well as in non-Islamic countries such as England, USA, Germany and Japan for Muslim investors (M. H. Fatras, 2008).

Another source for debt financing in Iran is to get loans from banks. After the revolution in Iran, 31 years ago, all the banks were nationalized and all the foreign banks left the Iran's market. As it was mentioned before, in 2005, the demutualization process in Iran was started and this program includes banks but more than 60% of banks are still owned by the government and regulated by the central bank and government. Moreover, the big proportions of private banks are indirectly controlled by the government. Jahan-khahi (2002), states that most of the state banks in Iran do not play an efficient role in the economy because of the influence of government, its regulations and restrictions. For example in Iran, interest rates are determined by the government (Jahankhahi, 2002) and government has right to change it anytime under any conditions.

The considerable function of banks are limited to the basic affairs of costumers such as opening an account and transferring money or to raise capital for public and governmental projects. Companies can borrow money from banks under very difficult circumstances, and in case of eligibility, interest rates are too high. There are some special sectors and industries that government support them a lot and they can get loan cheaper and easier than others can. For small businesses, this process is much harder. They need some specific collateral and they have to prove their ability to pay back their loans, and to show some specific and strong financial statements and documents (Mojnews, 2009).

In Iran due to financial market limitations and lack of knowledge in management and function of banks, banks' services are not well suited with investors and companies . Services are defined and banks cannot change anything out of this framework, therefore, the economy’s needs are not met and it makes the growth sluggish, intangible and insubstantial (Khosravi, 2005).

Governments' debts and deficits are usually covered by the public banks, and this issue causes the limitation of free sources of banks i.e., crowding-out effect. and in parallel with this matter, banks are not capable of covering the capital needs of private and non-public organizations (Seif, 2004) .

As it was discussed in Chapter 2 of this thesis, debt is one of the external sources in the capital structure of companies. Trade-off theory states that companies look that debts as trade-off between tax deductibility of it, and financial distress caused by

using debts. Regarding to Trade-off theory, big, profitable companies with lots of income to shield, having tangible assets should have more debts. In following Table 16, the survey results of previous studies that have been done on the subject of debt policy in listed companies in Tehran Stock Exchange is shown.

Table 16: Survey Results of Researches on the Subject of Debt Policy in Iranian Companies

Researcher	Chosen Variables	Relation with Debt
PourHeydari (1995)	Size Profitability Collateral assets	Positive Negative Insignificant
Marmarchi (1999)	Size Profitability Collateral assets	Positive Negative Positive
Bagherzadeh (2003)	Size Profitability Tangible assets	Positive Positive Positive
Salimi (2004)	Size	Insignificant
Izady (2007)	Size Profitability Collateral Assets Risk Current ratio	Negative Negative Insignificant Insignificant Negative

Notes:

Profitability = Ebit / Total Sales

Collateral Assets = Tangible Assets / Total Assets

Risk = Change in Ebit / Change in Sale

As it can be figured out from Table 16, the survey results are somewhat different in each research. In most of the studies, size of companies has a positive relation with debt, in addition the profitability of companies has a negative relation with the amount of debt that companies use. Bagherzadeh (2003), in his study showed that companies in Iran follow the Trade-off theory, but Izady (2007), stated that debt policy in Iran is not consistent with this theory.

4.2 Survey of Capital Structure in Iran: Case of Chemical and Petrochemical Products, Rubber and Plastic Products, Refined Petroleum Products and Nuclear Fuel

In this section, the procedure of data collection, methodology and limitations in this thesis will be identified and the characteristics of selected sectors in TSE will be highlighted. At the end, the calculated data sets will be analyzed in order to figure out how Iranian's corporations obtain their financing or in another word, how Iranian financial managers finance their companies.

4.2.1 Survey Data, Methodology and Limitations

In this thesis, the focus is on selected manufacturing corporations listed in Tehran Stock Exchange. Chemical and Petrochemicals, Rubber and plastic products, Refined Petroleum Products and Nuclear Fuel are the chosen sectors for this survey. In the following sections, the importance and characteristics of these sectors will be identified.

Data set which is used in this thesis were collected from the Tehran Stock Exchange website and financial statements of the companies that have been provided by Tehran

Stock exchange experts. Releasing the financial statements of companies in Iran is a recent rule. Some companies in TSE are not eager to provide all the data. This issue forced the author to make a personal and private connection with TSE experts and convinced them to provide the required data. They did not accept to provide data for all the companies in TSE for all the years, and only accept to provide data for some limited number of companies, therefore the attempt was made to choose some of the most important sectors of the market. The process of collecting data for this thesis was a tough job and took time for more than 2 months.

From the financial statements of the companies, the total amount of debts, the proportion of short-term debt, total amount of assets, and total amount of equity for each company have been obtained and in addition, some financial ratios have been calculated for the chosen years using Microsoft Excel. The calculated financial ratios are; Total Debt to Total Assets, Total Debt to Total Equity, Short-term Debt to Total Debt. The median and average for each sector has been calculated to figure out how Iranian corporations are financed. All the derived data and ratios is provided in appendix B.

To understand the capital structure of Iranian corporations, the previous studies have been examined and an attempt has been made to understand the differences and shortages of financial strategies of Iranian financial managers. It should be mentioned that, the time period of this study is from 2004 to 2008, which are the latest available data.

As it was mentioned before, all financial statements for all the companies were analyzed so as to obtain the required financial ratios during the procedure of data collection, there were some problems due to the lack of information and data insufficiency. In Iran, there is a recent rule that obligates companies to provide their financial statements to the investors, therefore, because of the fact that this is a new rule, data for all the years were not available and some of the provided numbers were also not readable due to the low quality of scanned documents provided on the TSE website. For all these reasons, 10 companies in this study were eliminated due to data insufficiency

There were some mistakes in the balance sheets of the companies. For example, for a company, when the ratio of Total Debt/Total Assets is more than 1, it means that this company is bankrupt, and the amount of total equity should be negative, but it was a positive number. Therefore, such companies with incorrect data were removed from the list of study. In addition, there are some bankrupt companies which are still traded in the market, they have negative numbers in their equities, and these companies are eliminated as well. The number of omitted companies for each year is different. For 2004 8 companies, for 2005 3 companies, for 2006 and 2007 4 companies and for 2008, 2 companies were eliminated from the data list.

4.2.2 Chemicals and Petrochemicals Sector

One of the sectors that will be studied in this thesis is Chemicals and Petrochemicals sector of TSE. This sector having 35 companies is among the medium-sized sectors of TSE and the largest sector among the non-financial sectors or manufacturing sectors. Total market value of chemicals and petrochemicals sector is equal to

31,047,241,190,054 Iranian Rial which is equal to 31,047,241,190 USD and this amount of market value places this sector in seventh place of market in comparison with other existing sectors in TSE (Iranbourse, 2009).

Chemicals and petrochemicals industries are fundamental industries and the economic development of countries are dependent on these basic industries. Governments usually concentrate on basic industries with comparative advantages in order to improve their capacity to serve and help to make better other dependent industries, and Iran is not exception of this global movement. In the last economic improvement plan, Iran's government profoundly emphasizes on chemical and petrochemical industries in order to reduce the import volume of such products and to become an exporter of chemicals and petrochemicals products in future. There are also other reasons that make this sector stand out among other industries in Iran. Iran is located at the middle of largest energy sources in the world where it makes Iran the third largest oil producer and the second largest natural gas producer in the world. This fact makes petrochemicals industries an important sector among the rest of industries and accordingly, this sector can play a very significant role in Iran's economy.

Chemicals and by-products subsector includes 30 and Petrochemicals subsector includes 5 companies which will be illustrated in following Table 17. It should be mentioned that in this thesis, 28 companies out of 35 total companies will be examined due to the lack of information and recent delisting of some companies by Tehran Stock Exchange. Every year, there are some companies that are delisted from

TSE. This thesis will examine only those companies that currently exist in the TSE and an attempt will be made to identify the companies that are delisted from stock market to focusing on existing companies.

Table 17: Chemicals and Petroleum Sector, Listed Companies in TSE.(Iranbourse, 2009)

Companies				
Tolypers	Farabi Petro	FanavaranPetro	NiroCholor	Pars. Int. Mfg.
Petro. Inv.	FarsChem.Ind.	Goltash	HenkelPakvash	Rangin
Sepehr Dye.	Khark Petro	Fiber Prod.	SinaChem.Ind.	Iran Carbon
HerbicidesPrd	Parsylon	Saipa. Inv.	Doode Sanati	IranChem.Ind.
Pars Pamchal	Shiraz Petro.	Loabiran	Iran Polyacril	Kaf
Tolid Daru	Bonyad pp Fib	Arak Petro	Paxan	Abadan Petro
Iran Amlash	Aliaf	Isfehan Petro.	ParsAlvanDye.	Melli Agro.
Number of Shares			**10223963078**	
Number of Shareholders			**156448**	
Market Value (IRR)			**31,047,241,190,054**	

4.2.3 Rubber and Plastic Products

Rubber and Plastic sector is a young industry in Iran going back only 60 years and it is one of the industries in Iran which had a fast rate of growth, even under conditions that government had not invested a lot in this specific sector in comparison with other industries in Iran such as oil and metals.

There are 11 companies involved in the rubber and plastic sector of TSE and in this thesis only 8 of these 11 companies will be examined due to the reasons were mentioned in previous section which are lack of information, regulations in data and annual elimination of companies by TSE. Rubber and plastic sector is among the

industries which have low volumes of import and in some certain products, almost zero amount of import. Some companies have a large share of domestic production and also a large share in exporting plastic goods. In the following Table 18, the general information of this sector in TSE is pointed out.

Table 18: General Information of Rubber and Plastic Sector of TSE(Iranbourse, 2009)

Companies	
Sahand Rubber Industry Co.	Artavil Tire Industrial Complex
ShahinPlasticManufacturingCo.	Iran Tire Mfg Co.
Plascocar Saipa	Gazlouleh Company
Iran Yasa Tire and Tube	Iran Va Gharb Mfg. Co.
Number of Shares	**1,553,378,369**
Number of Shareholders	**31,744**
Market Value (IRR)	**2,379,910,186,375**

4.2.4 Refined Petroleum Products and Nuclear Fuel

Refinery and nuclear products are usually at the centre of governments' attention and concentration. For the past 20 years, Iran's government has invested heavily in oil refiners and nuclear reactors, and these industries have had a considerable growth. Although Iran is under United States sanctions, it could use its capacity to develop its basic and fundamental industries. Based on Iran's general nuclear plan, nuclear reactors will be set up in 2011 and four of them will start working from 2012. It should be mentioned that more than 80% of technology in design, building, supervision, operation and control of projects are done by Iranian experts (K. Ghanbarizade, 2008). Government has hugely invested in these two logistic industries and for this reason, one of the sections that will be studied in this thesis

will be refined and nuclear fuel products sector. In the following Table 19, general information of this sector of TSE is highlighted.

Table 19: General Information of Refined Petroleum and Nuclear Fuel Products(Iran bourse, 2009)

Companies	
Oil Industry Investment	Esfahan Oil Refinning Co.
Zangan Electrical Equipment Co.	Behran Oil Co.
Pars Oil Co.	Tabriz Oil Co.
Number of Shares	**5,470,258,100**
Number of Shareholders	**138,828**
Market Value (IRR)	**27912317023900.00**

4.3 Survey Results

In this part of chapter, the financial analysis' results of the conducted survey will be pointed out. A trend analysis will be carried out for each of the selected sectors and followed by that a market analysis will be also conducted in which each sector was compared with the overall market. In this analysis, the overall market was considered as the total of three mentioned subsectors, in order to investigate their positions with respect to the average overall market.

4.3.1 Trend Analysis

In this section, the trend of financial ratios for each of the selected sectors in Tehran Stock Exchange will be studied and the results will be examined by using illustrative figures.

4.3.1.1 Refined Petroleum Products and Nuclear Fuel

As depicted in Figure 17, this sector had a ratio of total debt to total equity of 0.84 in 2004, and it increased to 1.36 in 2005, which shows that companies in this sector used more debt relative to equity in this year. There was a decline in debt to equity ratio to 0.92 in 2006 and 0.92 in 2007. With looking at financial statements of listed companies in this sector, it can be seen that in these years most of the companies issued stocks and increased their equity. This ratio had a sharp increase in 2008 to 1.44. Therefore, the ratio of total debt to total equity for refined petroleum and nuclear fuel fluctuated between 0.84 and 1.44 during 2004 to 2008.

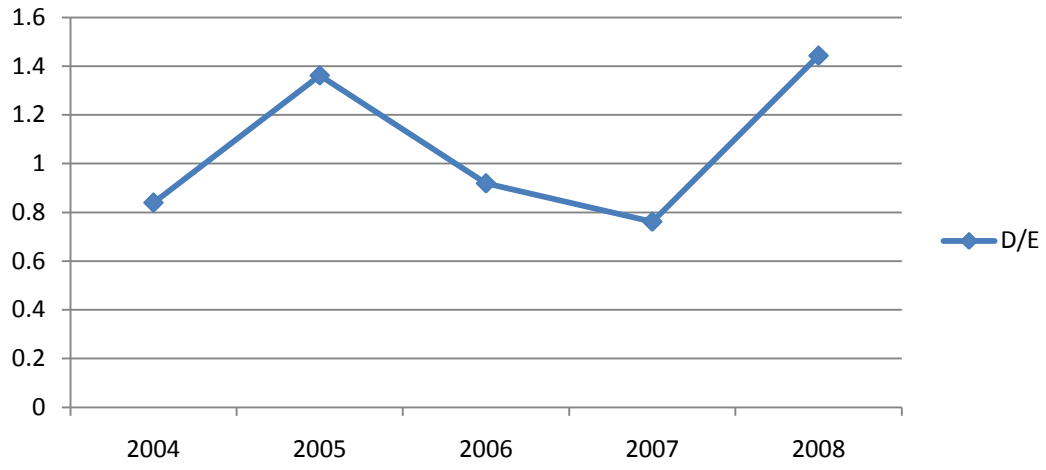


Figure 17: The Ratio of Total Debt to Total Equity for Refined Petroleum Products and Nuclear Fuel

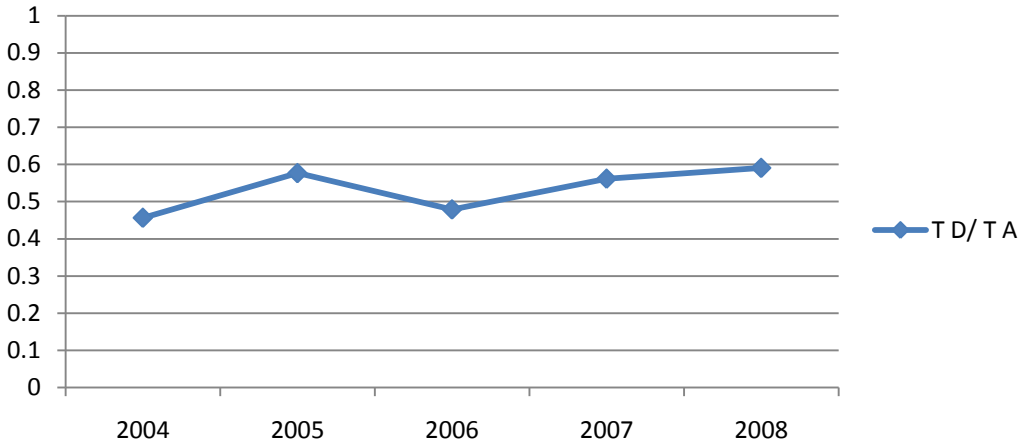


Figure 18: The Ratio of Total Debt to Total Assets for Refined Petroleum Products and Nuclear Fuel

By looking at the total debt ratio for this sector illustrated in Figure 18, it can be understood that it was more stable and the range was from 0.46 in 2004 to 0.55 in 2005 and decreased to 0.48 in 2006 and went up to 0.56 in 2007 and 0.59 in 2008. This ratio shows that this sector has a preference of using more debt rather than equity in most of the years. This issue can be explained by the support of government for this sector. As it was mentioned before, companies in the sectors supported by Iranian government are usually given the priority to obtain long-term loans with easy conditions of repayment.

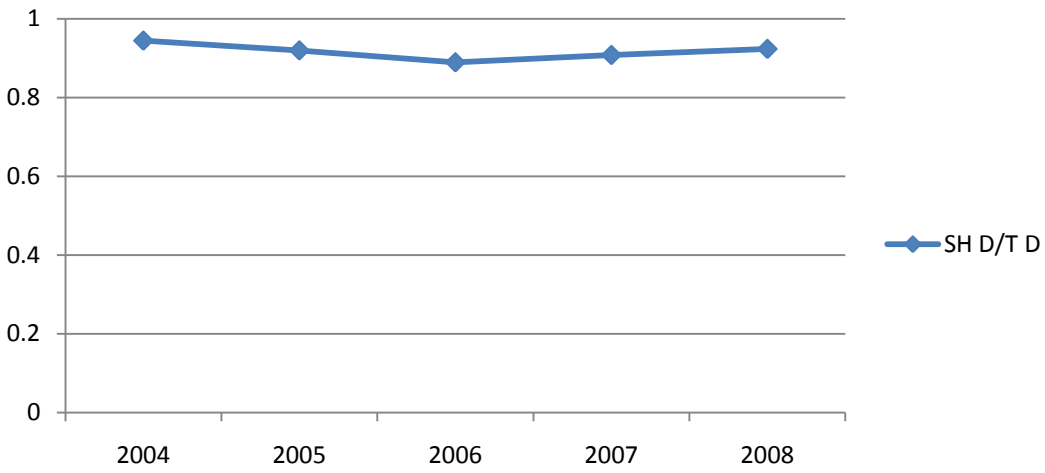


Figure 19: The Ratio of Short-Term Debt to Total Debt for Refined Petroleum Products and Nuclear Fuel

The ratio of short-term debt to total debt for refined petroleum products and nuclear fuel demonstrated in Figure 19 shows that this sector uses almost all of its debt as short-term financing. This ratio fluctuated between 0.89 and 0.94, which shows that at the lowest point in 2006, 89% of the total debt of this sector are in the short term. As it was mentioned before, in most of developing countries, companies prefer to use short term financing and this case is also true about Iran. This issue can be explained by the enormous fluctuation of interest rates in these economies and uncertainty about the future of market and relatively high inflation rates.

4.3.1.2 Rubber and Plastic Products

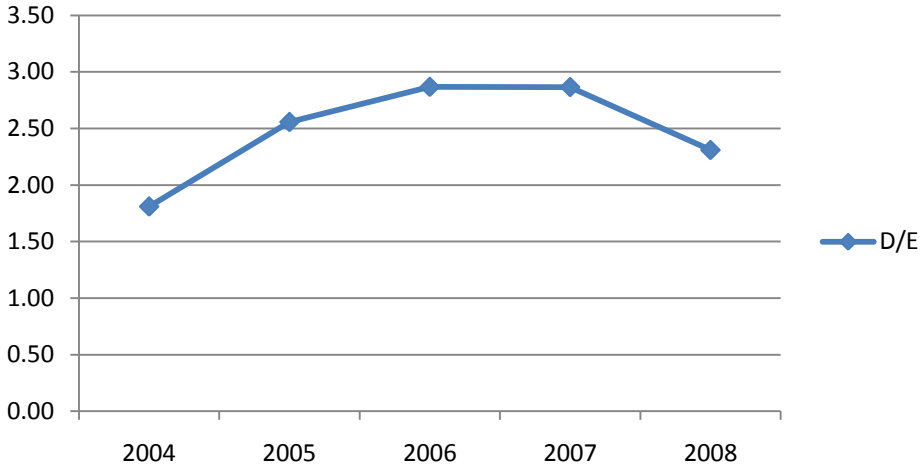


Figure 20: The Ratio of Total Debt to Total Equity for Rubber and Plastic Sector

The total debt to total equity ratio for rubber and plastic sector is exhibited in Figure 20. This ratio had a fluctuation between 1.81 and 2.87, which was 1.81 in 2004, increased sharply to 2.56 in 2005 and to 2.87 in 2006 and stayed romaine in 2007, but it finally decreased to 2.31 in 2008. This ratio shows that companies in this sector use more debt than equity in their financing strategies. This issue can be explained by the reason that, this sector is one of the profitable sectors in Iran and even without the government's support, had a good performance (Talebnia, 2006). Consequently, as it was pointed out before, profitable companies have better and easier conditions to get loans from banks; they had good and powerful documents to convince banks to give them loans. This argument can be followed by the total debt ratio for this sector depicted in following Figure 21.

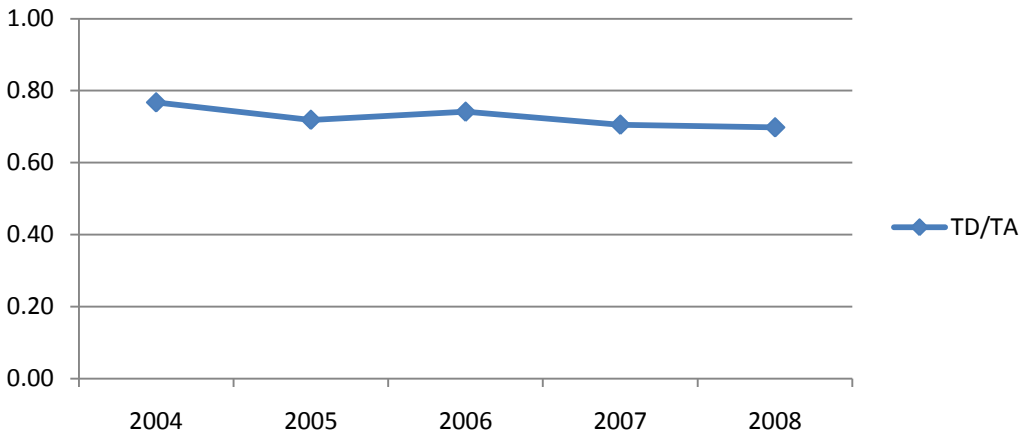


Figure 21: The Ratio of Total Debt to Total Assets for Rubber and Plastic Sector

As it can be seen from Figure 21, this ratio was 0.77 in 2004, 0.72 in 2005, increased to 0.74 in 2006, and again declined to 0.71 and 0.70 in following years of 2007 and 2008. This means that even at the lowest point in 2008, this sector had 70% debt to assets ratio.

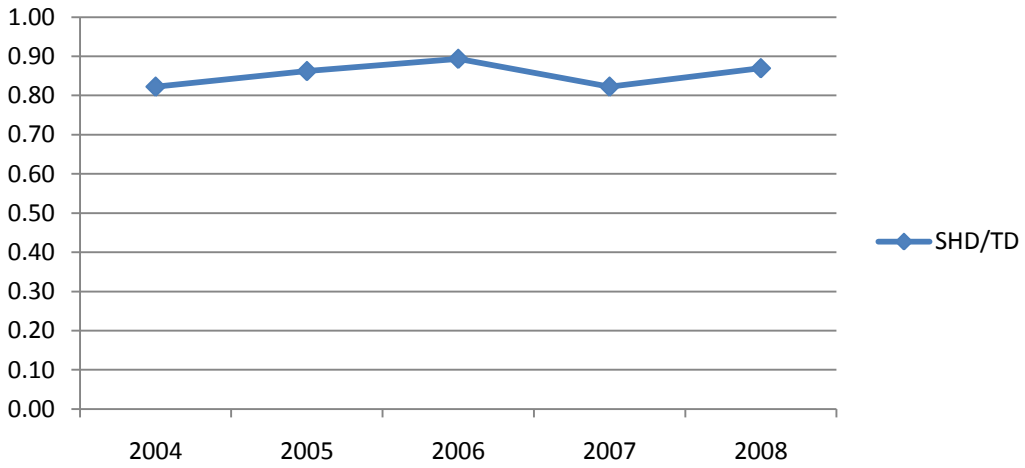


Figure 22: The Ratio of Short-Term Debt to Total Debt for Rubber and Plastic Sector

As it can be observed from Figure 22, a big proportion of total debt for rubber and plastic sector in Iran is in short term. The ratio of short-term debt to total debt was 0.82 in 2004, increased to 0.86 and 0.89 in 2005 and 2006. After that there was a

sharp decreased in 2007 to 0.82 and increased again to 0.87 in 2008. Therefore, this sector is using more debt financing and most of used debts are in the short term.

4.3.1.3 Chemicals and Petrochemicals Sector

The total debt to total equity ratio for chemicals and petrochemicals sector was 2.40 in 2004 remained almost the same in 2005 (2.44), then it declined to 1.79 in 2006 and increased to 2.12 in 2008.

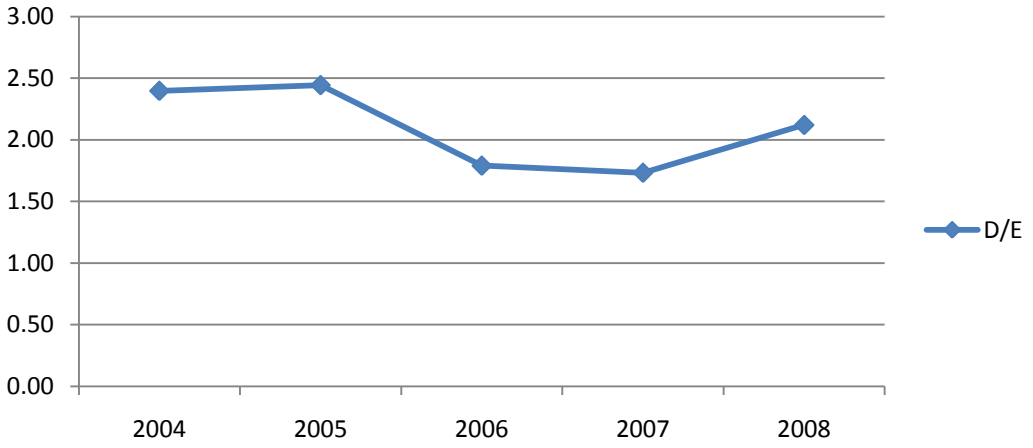


Figure 23: The Ratio of Total Debt to Total Equity for Chemicals and Petrochemicals Sector

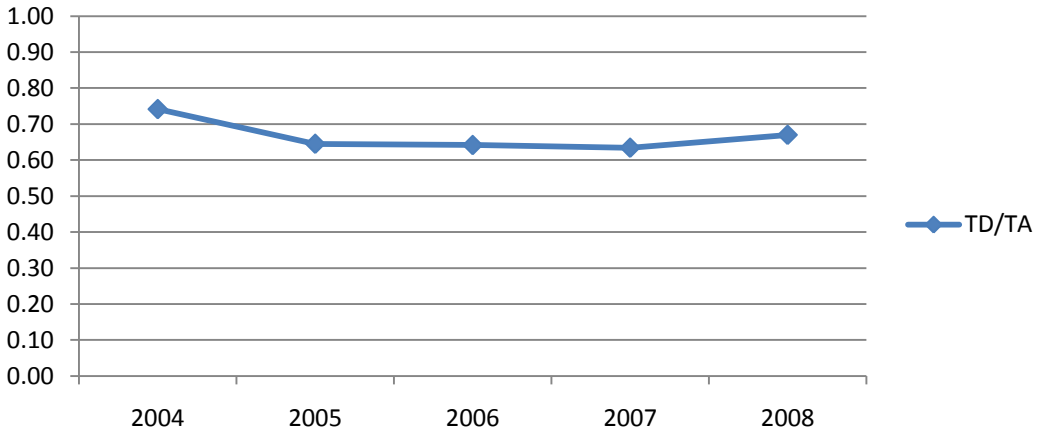


Figure 24: The Ratio of Total Debt to Total Assets for Chemicals and Petrochemicals Sector

The ratio of total debt to total assets was 0.74 in 2004 and 2005, there was a sharp decline to 0.65 in 2006 and had a somehow stable trend in 2006 and 2007. After these time periods, it jumped to 0.67 in 2008. This ratio shows that this sector relies more on debt financing rather than equity financing. This can be explained by the government's support for this sector in Iran as it was discussed in previous sections.

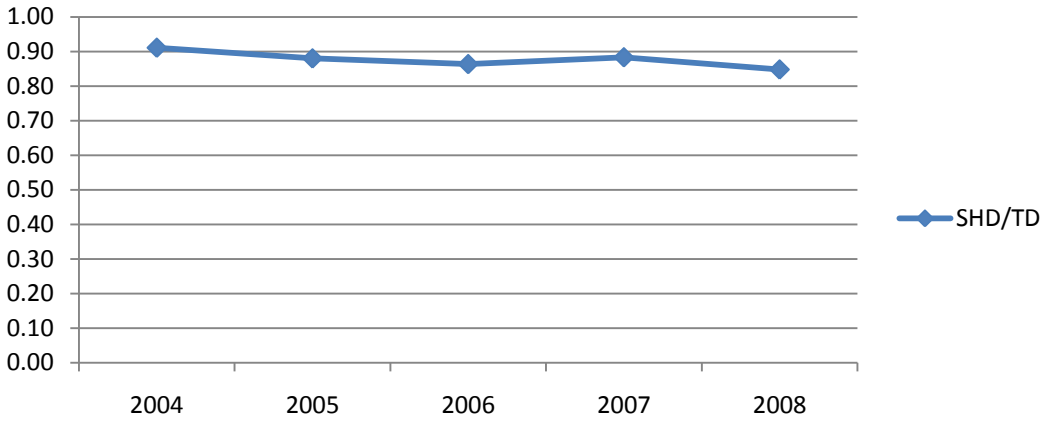


Figure 25: The Ratio of Short-Term Debt to Total Debt for Chemicals and Petrochemicals Sector

As it can be figured out from Figure 25, companies in chemicals and petrochemicals sector in Iran similar to others prefer to use short-term financing. The ratio of short-term debt to total debt for this sector was 0.91 in 2004, decreased to 0.88 and 0.87 in 2005 and 2006. After these time periods, there was an increase in this ratio in 2007 to 0.88 and again decreased to 0.86 in 2008.

As it was explained above, companies in three sectors of: rubber and plastic, chemicals and petrochemicals, refined petroleum products and nuclear fuel in Iran use more debts rather than equity in their financing strategies and also the bigger proportion of these debts is in the short terms due to the stated reasons above.

4.3.2 Market Analysis

In the previous sections, the trend analysis of financial ratios for each sector was explained. In this section, there is an observation of overall market for the selected sectors, and differentiation of each sector from market.

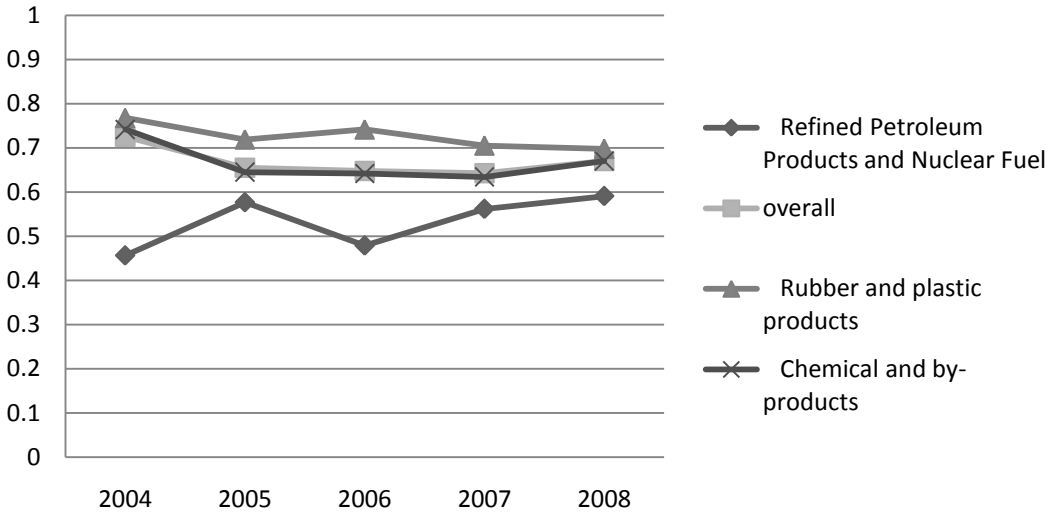


Figure 26: The Total Debt to Total Assets Ratio

By looking at the total debt to total assets ratio for the overall market and the subsectors in Iran illustrated in Figure 26, the chemicals and by products sector has the exact trend with overall market, rubber and plastic sector is above the market but it indeed follows the same trend of the market. The refined petroleum and nuclear fuel sector has somehow different trend from overall market, and in all of the years the ratio of total debt for this sector is below the market, and this sector is heavily supported by the government. Most of the companies listed in this sector have started to trade in Tehran Stock Exchange in 2003 and 2004; this issue can explain why the total debt ratio for this sector in 2004 is that below the market ratio, in other words, there is a strong equity support for this sector. Most of the companies in refined

petroleum and nuclear fuel sector have only one shareholder, which is “National Iranian Oil Refining and Distribution Company”, and it is totally owned by the Iran's government. Therefore, it is apparent that government supports this sector from both sides of financing: debt financing and equity financing. This issue can explain the abnormal trend of this sector. The total debt to total equity ratios for all three sectors are illustrated in Figure 27.

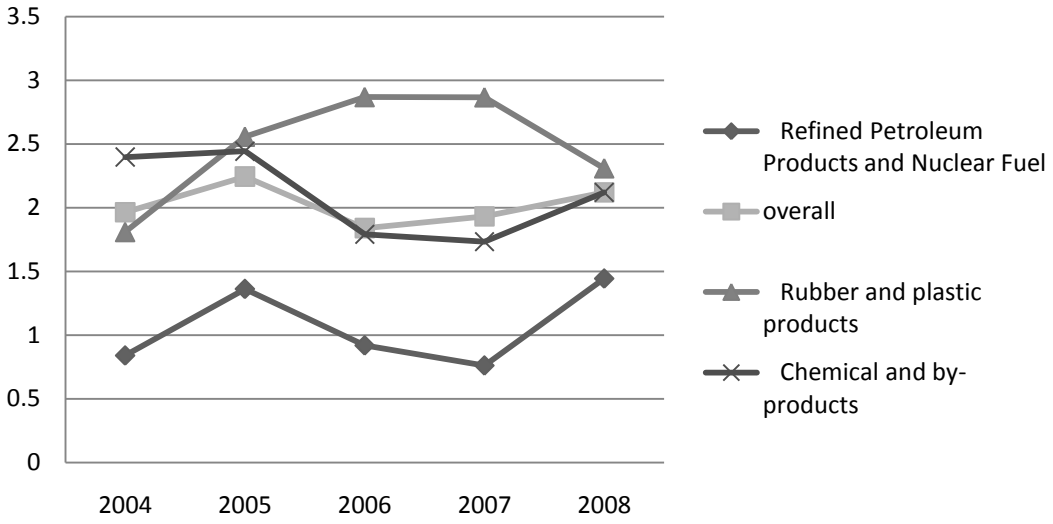


Figure 27: Total Debt to Total Equity Ratio

As it can be seen from Figure 27, chemicals and by-products sector has the same trend with the overall market. The refined petroleum and nuclear fuel has an abnormal trend and lower than the overall market ratio, which is caused by the same reasons discussed above. The rubber and plastic sector is again above the market in most of the years that can be explained by the high profitability of this sector and its power to use debt financing.

Short-term debt to total debt ratio demonstrated in the following Figure 28 shows that all the selected companies and subsectors heavily use short-term debt financing and, the survey result shows that companies in these sectors have 82% to 95% of their debts in the form of short-term liabilities.

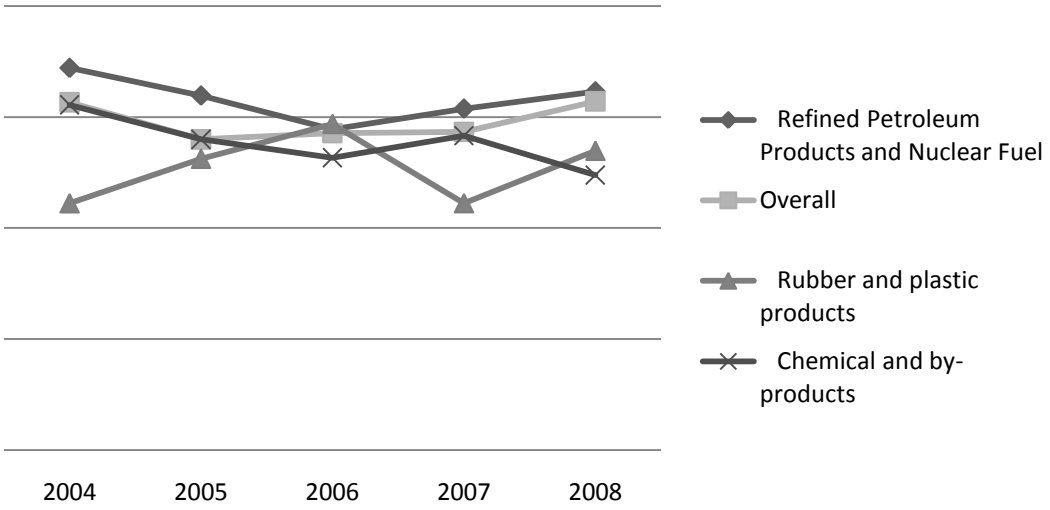


Figure 28: Short-Term Debt to Total Debt

4.3.3 Comparative Analysis between Capital Structure in Iran and Turkey: Chemicals, Petroleum, Rubber and Plastic Sector

In this section, there will be a comparison between capital structure in Iran and Turkey. Due to the unavailability of financial ratios for other countries, the comparison is only between Iran and Turkey. Financial ratios for all other countries are available in some websites such as S&P 500, but because Eastern Mediterranean University is not subscribed to these websites, there was no access to the required data. Therefore, this issue forced to only focus on available data in Turkey for chemicals, petroleum, rubber and plastic sectors.

As it was mentioned in the previous sections, Iranian corporations use more debt rather than equity; the ratio of total debt to total equity for the overall market fluctuates between 184% and 224% during 2004 and 2008. The point that Iran's economy is a bank-based system controlled by government and can clearly explain this issue, besides, as it was discussed before the government's support and profitability of companies can be other reasons for this high amount of debts in Iran. The amount of debts relative to equity used in Iranian corporations is shown in Figure 29 in comparison to Turkish companies.

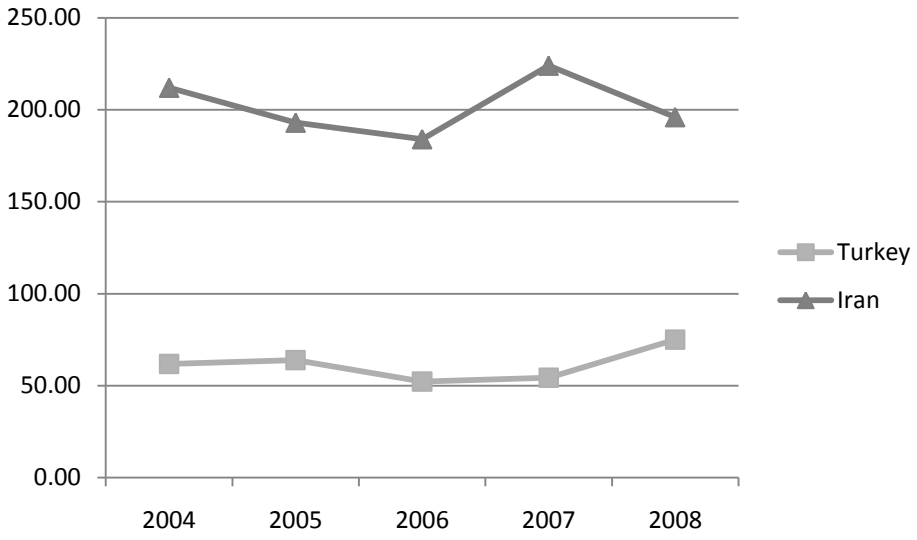


Figure 29: Total Debt to Total equity Ratio in Iran and Turkey: Chemicals, Petroleum, Rubber and Plastic Sector

As it can be understood from Figure 29, Turkish companies use almost the same proportion of debts and equities in their financing in most of the years. This ratio had a fluctuation of 52.30% and 75.07%. These numbers are quite lower than Iranian's debt to equity ratio. This issue may lead to the point that either Tehran Stock

Exchange does not work efficient in comparison with Istanbul stock Exchange or Iran's economy relies more on government stated banks than Turkish does.

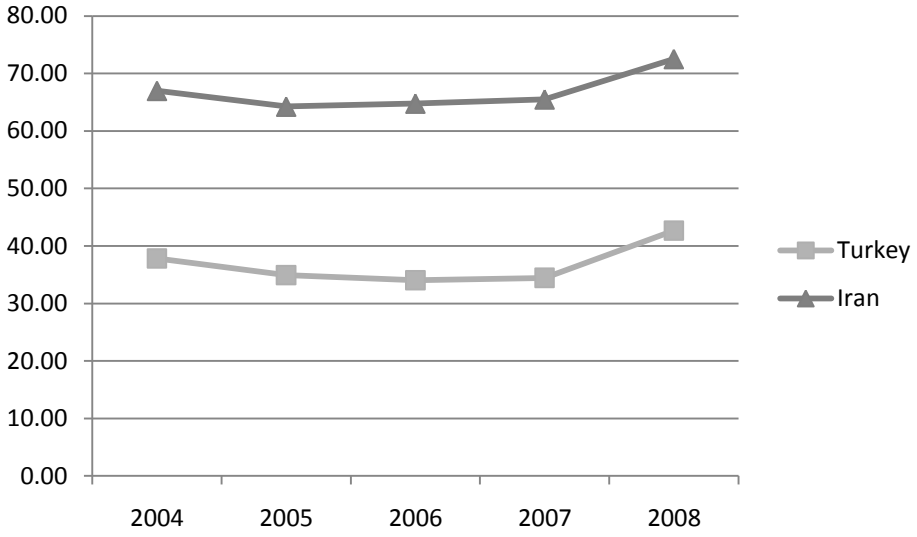


Figure 30: Comparison of Total Debt to Total Assets Ratio in Iran and Turkey

The comparison of total debt to total assets ratio in Iran and Turkey was illustrated in Figure 30. As it can be seen from Figure 30, less than 50% of Turkish companies' assets are debts in all of the years, then it can be concluded that these companies use either internal financing or equity financing rather than debt financing. Along with all mentioned facts, results of this comparison show that Turkish companies are less risky than Iranian companies are. Iranian companies in total have the range of total debt ratio between 64.25% and 75.52%.

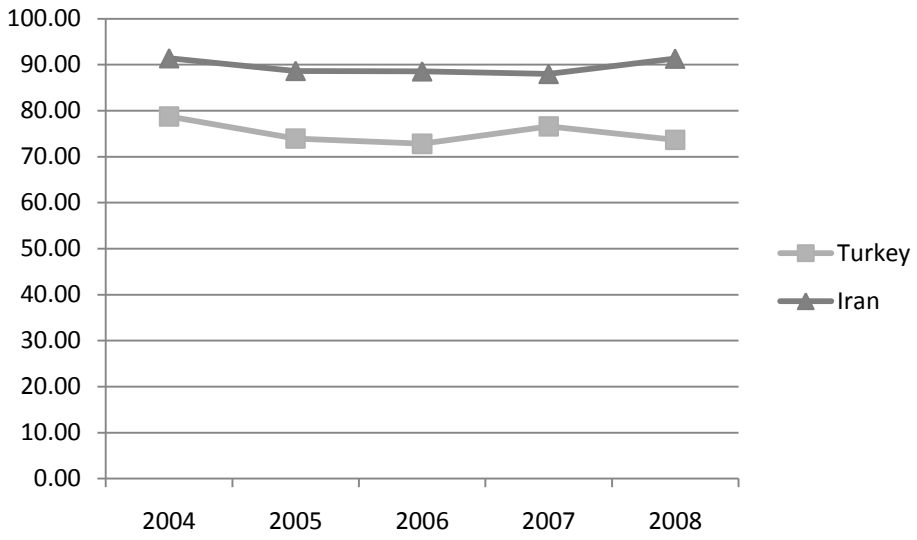


Figure 31: Comparison of Short-Term Debt to Total Debt in Iran and Turkey

It can be concluded from Figure 31, both Iranian and Turkish companies rely more on the short-term financing. The short-term debt to total debt ratio for Turkey fluctuated from 72.8% to 78.75%, this ratio is higher for Iran in all of examination years, between 87.99% and 91.41%. Both countries are categorized as developing countries, but in Iran because of political issues, Europe and U.S political and financial sanctions, the uncertainty about the future of economy is higher and it leads to have higher short-term investments in the market.

Chapter 5

CONCLUSION

In the preceding chapters of this thesis, the sources of financing, capital structure theories, the different determinants of capital structure in developing and developed countries were discussed. In chapter four, the capital structure for Iranian corporations had been studied specifically for three selected sources of: Chemicals and Petrochemicals, Rubber and Plastic and Refined Petroleum and Nuclear Fuel, and the comparison between capital structure in Iran and Turkey had been made.

As it was mentioned before, companies have two main sources of financing, internal financing and external financing. External financing can be divided in two categories: debt financing and equity financing. The combination of these two external sources is called capital structure. By looking at some capital structure theories, such as MM theory, Trade-Off theory and Pecking Order theory the best mixture of debt and equity for companies has been examined. By looking at empirical evidence from some developed countries provided in chapter two, it can be understood that companies use internal financing at the early stage, if their internal funds are not sufficient, they use debt financing and after all, they use equity financing, overall debt is the main source of external financing for companies.

Capital structure varies from a country to another due to the economic conditions, the availability of funds, the efficiency and functionality of countries' capital market. In most of developing countries, there is inadequate capital, inefficient capital market, closed economic, high risk, small number of participants in their capital market and broad government ownership, especially for Iran.

All these factors can lead to some forces for companies in term of choosing the capital structure. Because of inefficient capital market, they should rely more on banks rather than capital market, and due to the broad government ownership in such countries, mostly dependent to the government. The number of listed companies in developing countries is low in comparison with developed countries. It makes the market less competitive and creates higher risk for investors.

Most of developing countries have political problems, and economic conditions are not stable, the fluctuation of interest rate is high, then it makes the future unpredictable, therefore both investors and companies prefer to use short term invest or financing.

Iran is one of the developing countries and it is faced with same problems as other countries are. The economy of Iran is closed to the foreign funds due to political problems such as US sanctions. The government ownership is large and there is no applicable rule for protecting investors in case of problems. The economic conditions are instable in Iran that makes the market risky, also the number of participating companies in the capital market is small so there is not enough competition in the

market that can cause the market more efficient. In addition, of above-mentioned, there are other problems involved in Iran's economic and capital market such as: Lack of functionality of equity market, TSE and not having the new and varies capital market instruments, such as bonds.

In chapter four of this thesis, the mentioned problems were discussed in detailed. In addition, the survey results for capital structure in Iran for chosen sectors were studied.

Because of unavailability of data, three of most important sectors listed in Tehran Stock Exchange were chosen: Chemicals and Petrochemicals, Rubber and Plastic products, Refined Petroleum and Nuclear Fuel. Strategically, Iran's government supports the two sectors of Chemicals and Petrochemicals, Refined Petroleum and Nuclear Fuel, but Rubber and Plastic sector is a new, unsupported sector, which showed a good performance during last 60 years.

All the above-mentioned sectors in Iran rely more on debt financing, 60% of the overall's market assets are debt. Companies are not issuing debt instruments in Iran, so they rely more on banks. More than 80% of companies' debts are in short terms like the other developing countries such as Turkey for similar industries. The capital structure in Turkey follows the same pattern as Iran. The main external source of financing for companies is debt.

To have better and efficient capital structure in Iran, the economy needs the government to leave the economy to public sector and let them to manage, and set

some rules and regulations for investors' protections to encourage them to invest more on capital market. On the other hand, government should set some compensation for companies to encourage them to register in TSE and participant more in capital market, such as tax exemptions for listed companies in TSE. Additionally issuing bonds should be allowed for companies, to make the market more competitive and create more choices for companies to raise money.

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APPENDICES

Appendix A: List of Developing Countries

East Asia and Pacific (developing only: 23)		
American Samoa	Malaysia	Samoa
Cambodia	Marshall Islands	Solomon Islands
China	Micronesia, Fed. Sts	Thailand
Fiji	Mongolia	Timor-Leste
Indonesia	Myanmar	Tonga
Kiribati	Palau	Vanuatu
Korea, Dem. Rep.	Papua New Guinea	Vietnam
Lao PDR	Philippines	
Europe and Central Asia (developing only: 24)		
Albania	**Kosovo**	Romania
Armenia	Kyrgyz Republic	Russian Federation
Azerbaijan	Latvia	Serbia
Belarus	Lithuania	Tajikistan
Bosnia and Herzegovina	Macedonia, FYR	Turkey
Bulgaria	Moldova	Turkmenistan
Georgia	Montenegro	Ukraine
Kazakhstan	Poland	Uzbekistan
Latin America and the Caribbean (developing only: 29)		
Argentina	Ecuador	Panama
Belize	El Salvador	Paraguay
Bolivia	Grenada	Peru
Brazil	Guatemala	St. Kitts and Nevis
Chile	Guyana	St. Lucia
Colombia	Haiti	St.Vincent and the Grenadines
Costa Rica	Honduras	Suriname
Cuba	Jamaica	Uruguay
Dominica	Mexico	Venezuela, RB
Dominican Republic	Nicaragua	

Middle East and North Africa (developing only: 13)		
Algeria	Jordan	Tunisia
Djibouti	Lebanon	West Bank and Gaza
Egypt, Arab Rep.	Libya	Yemen, Rep.
Iran, Islamic Rep.	Morocco	
Iraq	Syrian Arab Republic	
South Asia (8)		
Afghanistan	India	Pakistan
Bangladesh	Maldives	Sri Lanka
Bhutan	Nepal	
Sub-Saharan Africa (developing only: 47)		
Angola	Gambia, The	Nigeria
Benin	Ghana	Rwanda
Botswana	Guinea	São Tomé and Principe
Burkina Faso	Guinea-Bissau	Senegal
Burundi	Kenya	Seychelles
Cameroon	Lesotho	Sierra Leone
Cape Verde	Liberia	Somalia
Central African Republic	Madagascar	South Africa
Chad	Malawi	Sudan
Comoros	Mali	Swaziland
Congo, Dem. Rep.	Mauritania	Tanzania
Congo, Rep	Mauritius	Togo
Côte d'Ivoire	Mayotte	Uganda
Eritrea	Mozambique	Zambia
Ethiopia	Namibia	Zimbabwe
Gabon	Niger	

Source:http://data.worldbank.org/about/country-classifications/country-and-lending-groups

Appendix B: Data for Iranian Corporations

Refined Petroleum Products and NuclearFuel	D/E	SHD/TD	T D/ T A
2004			
Oil Industry Investment Co.	0.33	0.99	0.25
Zangan Electrical Equipment Co.	0.88	0.94	0.47
Behran Oil Co.	0.84	0.94	0.46
AVERAGE	**0.68**	**0.96**	**0.39**
MEDIAN	**0.84**	**0.94**	**0.46**
2005			
Oil Industry Investment Co.	1.851	0.974	0.649
Zangan Electrical Equipment Co.	0.965	0.976	0.491
Esfahan Oil Refining Co.	1.362	0.360	0.577
Behran Oil Co.	0.162	0.666	0.079
Pars Oil Co.	2.330	0.919	0.700
AVERAGE	**1.334**	**0.779**	**0.499**
MEDIAN	**1.362**	**0.919**	**0.577**
2006			
Oil Industry Investment Co.	0.89	0.89	0.47
Tabriz Oil refining Co.	0.57	0.27	0.36
Esfahan Oil Refining Co.	1.77	0.20	0.64
Behran Oil Co.	0.92	0.96	0.48
Pars Oil Co.	1.74	0.89	0.63
AVERAGE	**1.18**	**0.64**	**0.52**
MEDIAN	**0.92**	**0.89**	**0.48**
2007			
Oil Industry Investment Co.	0.76	0.84	0.43
Zangan Electrical Equipment Co.	0.13	0.99	0.56
Esfahan Oil Refining Co.	0.06	0.91	0.38
Behran Oil Co.	12.33	0.97	0.56
Pars Oil Co.	2.38	0.89	0.70
AVERAGE	**3.13**	**0.92**	**0.53**
MEDIAN	**0.76**	**0.91**	**0.56**
2008			
Oil Industry Investment Co.	1.34	0.92	0.57
Zangan Electrical Equipment Co.	1.44	0.99	0.59
Esfahan Oil Refining Co.	0.80	0.96	0.45
Behran Oil Co.	2.69	0.92	0.73
Pars Oil Co.	3.61	0.92	0.78
AVERAGE	**1.98**	**0.94**	**0.62**
MEDIAN	**1.44**	**0.92**	**0.59**

Rubber and plastic products	D/E	SHD/TD	T D/ T A
2004			
Iran va Gharb Mfg. & Ind. Co.	0.76	1.00	0.76
Shahin Plastic Manufacturing Co.	0.34	0.93	0.77
Gazlouleh Co.	5.60	0.51	0.85
Iran Tire Mfg. Co.	4.86	0.86	0.83
Kerman Tire & Rubber Co.	1.57	0.63	0.61
Iran Yasa Tire & Tube	4.54	0.78	0.82
Artavil Tire Industrial Complex	0.90	1.00	0.42
Sahand Rubber Ind.Co.	2.04	0.76	0.67
AVERAGE	**2.58**	**0.81**	**0.72**
Median	**1.81**	**0.82**	**0.77**
2005			
Iran va Gharb Mfg. & Ind. Co.	5.320	0.985	0.842
Shahin Plastic Manufacturing Co.	2.557	0.949	0.719
Plascokar Saipa	0.917	0.816	0.478
Tehran Manufacturing Co.	2.63	0.92	0.72
Gazlouleh Co.	1.79	0.86	0.64
Iran Tire Mfg. Co.	6.00	0.93	0.86
Kerman Tire & Rubber Co.	2.21	0.63	0.69
Iran Yasa Tire & Tube	3.12	0.82	0.76
Sahand Rubber Ind.Co.	1.90	0.78	0.66
AVERAGE	**2.94**	**0.85**	**0.71**
Median	**2.56**	**0.86**	**0.72**
2006			
Iran va Gharb Mfg. & Ind. Co.	38.00	1.00	0.97
Shahin Plastic Manufacturing Co.	2.86	0.95	0.74
Plascokar Saipa	0.71	0.91	0.41
Tehran Manufacturing Co.	2.87	0.94	0.74
Gazlouleh Co.	3.88	0.78	0.80
Iran Tire Mfg. Co.	2.10	0.90	0.68
Kerman Tire & Rubber Co.	1.90	0.66	0.66
Iran Yasa Tire & Tube	2.88	0.81	0.74
Artavil Tire Industrial Complex	3.76	0.67	0.79
Sahand Rubber Ind.Co.	1.93	0.89	0.66
AVERAGE	**6.09**	**0.85**	**0.72**
Median	**2.87**	**0.89**	**0.74**

Rubber and plastic products	D/E	SHD/TD	T D/ T A
2007			
Shahin Plastic Manufacturing Co.	3.32	0.80	0.77
Plascokar Saipa	10.83	0.94	0.52
Gazlouleh Co.	17.61	0.84	0.95
Iran Tire Mfg. Co.	2.37	0.90	0.70
Kerman Tire & Rubber Co.	1.86	0.73	0.65
Iran Yasa Tire & Tube	2.42	0.76	0.71
Artavil Tire Industrial Complex	3.90	0.73	0.80
Sahand Rubber Ind.Co.	1.38	0.91	0.58
AVERAGE	**5.46**	**0.83**	**0.71**
Median	**2.87**	**0.82**	**0.71**
2008			
Shahin Plastic Manufacturing Co.	2.31	0.93	0.70
Plascokar Saipa	0.56	0.93	0.36
Iran Tire Mfg. Co.	4.90	0.91	0.83
Kerman Tire & Rubber Co.	1.90	0.57	0.66
Iran Yasa Tire & Tube	3.06	0.83	0.75
Artavil Tire Industrial Complex	6.99	0.87	0.87
Sahand Rubber Ind.Co.	1.63	0.85	0.62
AVERAGE	**3.05**	**0.84**	**0.68**
Median	**2.31**	**0.87**	**0.70**

Chemical and by-products (2004)	D/E	SHD/TD	T D/ T A
Iran Carbon Co.	1.74	0.98	0.63
Pars Carbon Black	3.72	0.81	0.79
Polyacryl Iran Co.	3.13	0.92	0.76
Bonyad PP Fiber Prod Co.	1.30	0.76	0.56
Kaf Co.	1.59	0.83	0.61
Paxan Corporation	5.86	0.96	0.85
Tolypers	57.30	0.97	0.85
Goltash Co.	3.24	0.90	0.76
Petroshimi Farabi	6.61	1.00	0.87
Iran Amlah Co. Mineral Salts	1.70	0.66	0.63
Teife Saipa Color & Resin Industries	2.64	1.00	0.73
Pars Pamchal Chemical Co.	4.06	0.93	0.80
Loabiran Co.	2.15	0.91	0.68
Petrochemical Industries Investment Co.	1.31	0.67	0.57
Sanayea Shimiaee Iran	3.29	0.86	0.77
Fiber Intermediate Products Co.	1.65	0.68	0.62
Sina Chemical Industries Co (SCIC)	1.38	0.75	0.58
Khark Petrochemical Co	8.23	0.98	4.23
Isfahan Pertrochemical Company	1.96	0.96	0.66
Arak Petrochemical Co.	1.84	0.76	0.65
Fars Chemical Ind.Co	4.74	0.91	0.83
NiroCholor Co.	0.64	0.63	0.39
Abadan Petrochemical Co.	0.64	0.94	0.82
Melli Agrochemical Co.	5.58	0.96	0.85
AVERAGE	**5.26**	**0.86**	**0.85**
Median	**2.40**	**0.91**	**0.74**

Chemical and by-products (2005)	D/E	SHD/TD	T D/ T A
Iran Carbon Co.	2.24	0.67	0.69
Pars Carbon Black	4.55	0.58	0.82
Polyacryl Iran Co.	5.50	0.94	0.85
Bonyad PP Fiber Prod Co.	1.22	0.78	0.55
Kaf Co.	1.82	0.88	0.65
Pars International Mfg. Co.	4.96	0.97	0.83
Paxan Corporation	4.44	0.95	0.82
Tolypers	7.77	0.98	0.89
Goltash Co.	3.51	0.93	0.08
Petroshimi Farabi	5.06	0.99	0.84
Iran Amlah Co. Mineral Salts	2.21	0.54	0.69
Teife Saipa Color & Resin Industries	0.18	0.99	0.15
Pars Pamchal Chemical Co.	4.86	0.97	0.43
Loabiran Co.	3.06	0.94	0.75
Petrochemical Industries Investment	1.17	0.70	0.54
Sanayea Shimiaee Iran	2.74	0.93	0.10
Fiber Intermediate Products Co.	2.44	0.85	0.71
Sina Chemical Industries Co (SCIC)	1.46	0.81	0.59
Khark Petrochemical Co	0.94	0.83	0.48
Isfahan Pertrochemical Company	0.14	0.68	0.07
Arak Petrochemical Co.	1.31	0.69	0.57
Fars Chemical Ind.Co	8.14	0.95	0.89
NiroCholor Co.	0.17	0.29	0.10
Abadan Petrochemical Co.	0.78	0.74	0.44
Melli Agrochemical Co.	5.30	0.96	0.84
AVERAGE	**3.04**	**0.82**	**0.57**
Median	**2.44**	**0.88**	**0.65**

Chemical and by-products (2006)	D/E	SHD/TD	T D/ T A
Iran Carbon Co.	1.84	0.77	0.65
Pars Carbon Black	1.76	0.50	0.64
Polyacryl Iran Co.	17.15	0.94	0.94
Bonyad PP Fiber Prod Co.	1.92	0.88	0.66
Kaf Co.	1.82	0.91	0.65
Pars International Mfg. Co.	5.80	0.98	0.81
Paxan Corporation	3.92	0.96	0.80
Goltash Co.	3.565	0.966	0.781
Petroshimi Farabi	2.432	0.982	0.709
Iran Amlah Co. Mineral Salts	0.491	0.366	0.329
Teife Saipa Color & Resin Industries	0.611	0.980	0.379
Pars Pamchal Chemical Co.	5.516	0.960	0.847
Petrochemical Industries Investment	1.596	0.682	0.615
Sanayea Shimiaee Iran	1.443	0.953	0.591
Fiber Intermediate Products Co.	2.722	0.850	0.731
Sina Chemical Industries Co (SCIC)	0.594	0.684	0.372
Khark Petrochemical Co	0.220	0.691	0.180
Isfahan Pertrochemical Company	0.443	0.722	0.307
Arak Petrochemical Co.	0.865	0.618	0.464
Fars Chemical Ind.Co	8.138	0.947	0.891
NiroCholor Co.	0.803	0.527	0.445
Abadan Petrochemical Co.	0.933	0.763	0.483
AVERAGE	**2.936**	**0.802**	**0.603**
Median	**1.79**	**0.86**	**0.64**

Chemical and by-products (2007)	D/E	SHD/TD	T D/ T A
Iran Carbon Co.	2.17	0.88	0.68
Pars Carbon Black	1.73	0.65	0.63
Aliaf Co.	6.18	0.80	0.86
Bonyad PP Fiber Prod Co.	1.31	0.85	0.57
Kaf Co.	1.30	0.93	0.56
Pars International Mfg. Co.	4.17	0.93	0.81
Paxan Corporation	4.26	0.97	0.81
Tolypers	7.46	0.95	0.88
Goltash Co.	2.94	0.99	0.75
Petroshimi Farabi	1.96	0.98	0.66
Iran Amlah Co. Mineral Salts	0.42	0.47	0.29
Teife Saipa Color & Resin Industries	1.28	0.48	0.56
Pars Pamchal Chemical Co.	5.89	0.93	0.85
Loabiran Co.	1.72	0.85	0.63
Petrochemical Industries Investment Co.	1.90	0.73	0.66
Sanayea Shimiaee Iran	1.11	0.93	0.53
Fiber Intermediate Products Co.	3.04	0.89	0.75
Sina Chemical Industries Co (SCIC)	0.74	0.80	0.43
Khark Petrochemical Co	0.38	0.81	0.27
Isfahan Pertrochemical Company	1.01	0.54	0.50
Arak Petrochemical Co.	1.22	0.75	0.55
Fars Chemical Ind.Co	5.47	0.93	0.85
NiroCholor Co.	0.69	0.48	0.41
Abadan Petrochemical Co.	1.13	0.98	0.48
Melli Agrochemical Co.	7.56	0.96	0.88
AVERAGE	**2.68**	**0.82**	**0.63**
Median	**1.73**	**0.88**	**0.63**

Chemical and by-products (2008)	D/E	SHD/TD	T D/ T A
Iran Carbon Co.	2.88	0.91	0.74
Pars Carbon Black	3.69	0.82	0.79
Aliaf Co.	7.11	0.61	0.88
Kaf Co.	13.26	0.99	5.51
Pars International Mfg. Co.	2.97	0.82	0.07
Paxan Corporation	2.79	0.97	0.74
Tolypers	4.99	0.94	0.85
Goltash Co.	1.91	1.00	0.65
Petroshimi Farabi	7.42	0.98	0.88
Iran Amlah Co. Mineral Salts	0.51	0.77	0.34
Teife Saipa Color & Resin Industries	0.16	0.31	0.61
Loabiran Co.	1.27	0.84	0.56
Petrochemical Industries Investment	1.94	0.78	0.66
Sanayea Shimiaee Iran	0.72	0.92	0.42
Fiber Intermediate Products Co.	5.43	0.94	0.84
Sina Chemical Industries Co (SCIC)	1.11	0.72	0.53
Khark Petrochemical Co	0.47	0.84	0.32
Isfahan Pertrochemical Company	2.12	0.69	0.68
Arak Petrochemical Co.	1.78	0.93	0.64
Fars Chemical Ind.Co	30.21	0.96	0.75
NiroCholor Co.	0.70	0.69	0.41
Abadan Petrochemical Co.	2.03	0.85	0.67
Melli Agrochemical Co.	11.75	0.96	0.92
AVERAGE	**4.66**	**0.84**	**0.85**
Median	**2.12**	**0.85**	**0.67**

Appendix C: Data for Turkish Companies

Companies	ShD/TD(%)	ShD/TD(%)	ShD/TD(%)	ShD/TD(%)	ShD/TD(%)
	2008	**2007**	**2006**	**2005**	**2004**
AKSA	64.21	82.11	68.60	65.88	80.00
ALKIM	68.89	69.87	73.01	75.11	77.07
AYGAZ	82.99	46.30	43.14	69.69	63.04
BAGFS	88.13	79.79	70.70	67.67	59.16
BRISA	60.21	89.31	87.06	70.83	66.86
DEVA	87.87	92.74	72.59	72.54	69.52
ECILC	73.75	81.53	69.75	93.10	83.22
EGGUB	73.74	56.49	96.04	96.28	96.30
GOODY	85.34	72.76	76.21	74.54	81.96
GUBRF	49.76	93.19	94.69	92.79	91.61
HEKTS	90.74	88.32	86.08	90.23	84.89
MRSHL	85.50	80.74	86.32	82.25	84.66
PETKM	73.55	67.71	66.49	67.43	57.09
PIMAS	68.19	65.07	90.14	90.87	91.10
PTOFS	54.74	50.27	60.71	62.02	64.99
SASA	90.86	89.27	90.78	67.64	77.50
SODA	53.00	47.77	53.98	52.65	43.97
TRCAS	67.00	73.38	68.91	94.74	91.84
TUPRS	80.97	82.87	78.14	73.31	80.23
DYOBY	45.20	48.46	32.14	75.80	73.67
Mean	**72.23**	**72.90**	**73.27**	**76.77**	**75.93**
Median	**73.64**	**76.59**	**72.80**	**73.92**	**78.75**

Companies	D/E (%)	D/E (%)	D/E (%)	D/E (%)	D/E (%)
	2008	**2007**	**2006**	**2005**	**2004**
AKSA	59.46	43.34	84.45	59.15	56.53
ALKIM	23.96	26.98	34.32	31.48	27.35
AYGAZ	70.80	56.10	81.76	68.78	62.13
BAGFS	68.84	58.37	82.33	88.43	139.86
BRISA	74.57	38.38	31.21	17.43	17.63
DEVA	91.71	43.82	53.54	138.58	144.38
ECILC	17.04	24.71	42.06	38.18	60.18
EGGUB	135.14	78.18	35.20	42.46	53.01
GOODY	76.54	64.14	75.33	91.11	70.53
GUBRF	361.96	106.63	197.11	180.48	231.19
HEKTS	33.88	28.62	23.48	35.68	31.73
MRSHL	36.83	28.78	39.39	30.27	33.79
PETKM	25.19	28.02	26.12	28.70	17.95
PIMAS	135.34	130.38	172.25	183.10	260.74
PTOFS	151.81	118.51	157.20	115.86	117.01
SASA	76.08	55.68	51.07	88.85	68.58
SODA	75.58	53.02	43.98	35.28	30.10
TRCAS	3.03	2.34	2.04	30.54	61.46
TUPRS	144.41	120.06	101.26	75.78	68.33
DYOBY	549.59	287.42	587.02	432.62	366.86
Mean	**110.59**	**69.67**	**96.06**	**90.64**	**95.97**
Median	**75.07**	**54.35**	**52.30**	**63.96**	**61.80**

Companies	D/A(%)	D/A(%)	D/A(%)	D/A(%)	D/A(%)
	2008	**2007**	**2006**	**2005**	**2004**
KİMYA	51.07	45.82	47.92	42.67	42.00
AKSA	36.80	29.71	34.25	25.12	22.79
ALKIM	17.16	18.93	22.94	21.36	18.00
AYGAZ	40.21	34.68	44.37	40.03	37.58
BAGFS	40.77	36.86	45.15	46.93	58.31
BRISA	42.72	27.74	23.78	14.84	14.99
DEVA	47.83	30.47	34.87	58.09	59.08
ECILC	14.45	19.64	29.27	27.31	37.14
EGGUB	57.47	43.88	26.03	29.80	34.64
GOODY	43.36	39.07	42.96	47.67	41.36
GUBRF	60.71	51.60	66.34	64.35	69.81
HEKTS	25.30	22.25	20.55	26.30	24.08
MRSHL	26.92	22.35	28.26	23.24	25.25
PETKM	20.12	21.27	20.71	22.30	15.22
PIMAS	57.51	56.59	63.27	64.68	72.28
PTOFS	60.30	54.19	61.08	53.63	53.89
SASA	43.21	35.76	33.80	47.05	40.68
SODA	42.64	34.23	30.00	26.08	23.14
TRCAS	2.94	2.28	2.00	23.39	38.06
TUPRS	58.82	54.36	50.12	42.97	40.45
DYOBY	84.60	74.18	85.43	81.22	78.58
Mean	**41.19**	**35.50**	**38.26**	**39.32**	**40.27**
Median	**42.68**	**34.45**	**34.03**	**34.92**	**37.82**