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DETERMINANTS OF CAPITAL STRUCTURE: EVIDENCE FROM LISTED FIRMS OF SOME SELECTED EASTERN EUROPEAN COUNTRIES IN COMPARISON WITH TURKEY

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Marmara Üniversitesi
Sosyal Bilimler Enstitüsü Müdürlüğü

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İŞLETME Anabilim Dalı MUHASEBE FİNANSMAN(İNG) Bilim Dalı Doktora öğrencisi ENDER DEMİR nın DETERMINANTS OF CAPITAL STRUCTURE:EVIDENCE FROM LISTED FIRMS OF SOME SELECTED EASTERN EUROPEAN COUNTRIES IN COMPARISON WITH TURKEY adlı tez çalışması ,Enstitümüz Yönetim Kurulunun 11.07.2012 tarih ve 2012-18/10 sayılı kararıyla oluşturulan jüri tarafından oybirliği/~~oyçokluğu~~ ile Doktora Tezi olarak kabul edilmiştir.

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ABSTRACT

Since Modigliani and Miller (1958) which argues that subject to some conditions the impact of financing on the value of the firm is irrelevant, the literature on capital structure has been expanded by many theoretical and empirical contributions. Although, determinants of capital structure have been widely studies for developed countries, the number of studies on developing countries is relatively limited. This thesis contributes to the literature by analyzing the impact of firm-level variables on the capital structure choices of the listed firms in 5 new member countries of EU namely Slovenia, Poland, Hungary, Lithuania, and Czech Republic and Turkey. The impact 6 firm-level variables namely size, asset structure, profitability, non-debt tax shield, growth opportunities, and liquidity on capital structure is analyzed. In addition, an EU membership dummy and 2008 financial crisis dummy are introduced. The study uses the firm level data from the balance sheets and income statements of firms in Slovenia, Poland, Hungary, Lithuania, and Czech Republic and Turkey which is collected from the WRDS - Wharton Research Data Services Compustat Global Industrials and Commercials database. The time period for each country is 1996-2010.

First, we run regressions with the pooled data and then separate regressions for firms in each country. We find that profitability (ROA), asset tangibility (NFATA), and liquidity (LIQ) have a negative impact on current liabilities to total assets ratio (CLTA) whereas size (SIZE) has a positive impact on CLTA. For long-term debt to total assets (LTDTA), profitability and non-debt tax shield (NDTS) are found to have negative impact. On the contrary, liquidity and size variables have positive impact. We also show that profitability, tangibility, growth opportunities (GROWTH), and liquidity negatively affect total liabilities to assets ratio (TLTA) of listed firms in 6 countries. There is a positive association between TLTA and size. European Union membership dummy has a negative impact on CLTA whereas no impact is observed for LTDTA and TLTA.

2008 Financial crisis dummy does not have any statistically significant impact on leverage ratios.

ÖZET

Modigliani ve Miller (1958)'ın firmaların seçeceği finansman politikalarının firma değerini etkileyemeyeceğini belirttiği sermaye teorisinden bu yana, firmaların sermaye yapısı politikaları ve bunların etkileri hem teorik hem de ampirik olarak geniş çapta çalışılmıştır. Sermaye yapısı belirleyicilerinin gelişmiş ülkeler için oldukça fazla ele alınmasına rağmen, gelişmekte olan ülkelerdeki firmalar için yapılmış çalışma sayısı kısıtlıdır. Bu tez 6 adet firma bazlı değişkenin Avrupa Birliği'ne yeni üye olan Slovenya, Polonya, Macaristan, Litvanya ve Çek Cumhuriyeti ve Türkiye'deki firmaların sermaye yapısını inceleyerek literatüre katkıda bulunmaktadır. Firmaya özgü değişkenler olarak firma büyüklüğü, sabit varlıklar, karlılık, vergi kalkanı, büyüme olanakları ve likidite kullanılmıştır. Ayrıca, Avrupa Birliği üyesi 5 ülke için üyelik öncesi/sonrası için bir kukla değişkeni ve 2008 finansal krizi için de bir kukla değişkeni modele eklenmiştir. Verinin kapsadığı dönem ise 1996-2010 aralığıdır.

Karlılık, sabit varlıklar ve likidite firmaların kısa vadeli borç kullanımı üzerinde negatif etkiye sahipken, firma büyüklüğü kısa vadeli borç kullanımını pozitif yönde etkilemektedir. Uzun vadeli borç kullanımını ise karlılık ve vergi kalkanı negatif yönde etkilerken; firma büyüklüğü ve likidite pozitif yönde etkilemektedir. 2008 Finansal krizinin firmaların sermaye yapısı üzerinde bir etkiye sahip olmadığı da tespit edilmiştir. Avrupa Birliği üyeliğine ait kukla değişkeni ile kısa vadeli borç kullanımı arasında negatif yönlü bir ilişki bulunmuştur. Karlılık, sabit varlıklar, büyüme fırsatları ve likidite firmaların toplam borç kullanımı üzerinde negatif etkiye sahipken, firmanın büyüklüğü ise toplam borcu pozitif yönde etkilemektedir.

PREFACE

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LIST OF ABBREVIATIONS

CLTA	Ratio of current liabilities to total assets
EBIT	Earnings before interest and taxes
EU	European Union
F_{2008}	2008 Financial crisis dummy
FDI	Foreign direct investment
GDP	Gross domestic product
GROWTH	Growth opportunities
LIQ	Liquidity
LTDTA	Ratio of long-term debt to total assets
NDTS	Ratio of depreciation to total assets (nondebt tax shield)
NFATA	Net property, plant, and equipment to total assets (tangibility)
ROA	Ratio of earnings before interest and taxes to total assets (profitability)
SIZE	Natural logarithm of total assets
TLTA	Ratio of total liabilities to total assets

INTRODUCTION

Since Modigliani and Miller (1958), there has been substantial effort in testing the Modigliani-Miller Theorem however the evidence is still inconclusive and there is not a generally accepted answer on how firms choose their capital structure. Modigliani-Miller Theorem basically argues that the value of a firm is determined by the present discounted value of its expected cash flows and not by how those are allocated to claimholders in a world where investors can borrow and lend as easily as corporations. Therefore, a firm's capital structure is irrelevant to its value and debt and equity are perfect substitutes. However, when the assumption of perfect capital markets is relaxed, the capital structure choice becomes an important factor because a firm can change its value by changing its capital structure. As the conditions of Modigliani-Miller theorem (1958) do not hold in real world markets, the literature on capital structure has been studied and expanded by many theoretical and empirical contributions especially by relaxing the assumptions.

Literature about the capital structure can be divided in two main theoretical streams. First is the trade-off theory which indicates that value-maximizing firms should follow an optimal capital structure by considering the marginal benefits and costs of additional financing. And optimal capital structure is achieved when the benefits and costs are balanced. The second is the pecking order theory which relies on the financing hierarchy hypothesis of Myers and Majluf (1984). Firms will tend to seek financing sources that are less subject to the costs of informational asymmetries. Thus, firms are assumed to prefer internal financing over external funds, however, when internal funds are not sufficient enough, firms will first use debt and then issue equity. The first theory depends on a perfect rationality approach whereas second theory depends on asymmetric information (Di Guilmi, 2008). Although, theoretical differences between two theories are clear, it is not easy to distinguish them in practice. Fama and French (2002) indicate that two theories have common predictions about the determinants of leverage. The evidence on trade-off versus pecking order theories remains inconclusive (Prasad et al. 2001). As Myers (2001, p.81) indicates *"There is no universal theory of*

the debt-equity choice, and no reason to expect one". The capital structure puzzle still remains a puzzle.

There is a vast literature on the capital structure choices of firms in the developed countries. The majority of the studies on capital structure has focused on analyzing the financing behavior of firms in developed countries especially US, however in the last decade capital structure studies has become increasingly internationalized (Chen, 2004). The differences in institutions and financial markets between developed and developing countries merits the need to consider the capital structure choice of firms from the perspective of developing economies, especially within the context of new members of EU (Abor and Biekpe, 2007). There is limited number of studies on the determinants of capital structure focusing on firms in Eastern Europe Countries. For example, Cornelli et al. (1996) for Hungary and Poland, De Haas and Peeters (2004) for CEE countries, Hussain and Nivorozhkin (1997) for Poland, Klapper et al. (2002) for Eastern and Central European countries, Bauer (2004) for Czech Republic, Berk (2005) for Slovenia, Nivorozhkin (2005) for five EU accession countries of Central and Eastern Europe and the former Soviet Union (Bulgaria, the Czech Republic, Poland, Romania and Estonia), Delcoure (2007) for CEE countries, Dragota and Semenescu (2008) for Romania, Deari and Deari (2009) for Macedonia analyze the capital structure decisions of firms.

This thesis contributes to the literature by analyzing the impact of firm-level variables on the capital structure choices of the listed firms in 5 new member countries of EU namely Slovenia, Poland, Hungary, Lithuania, and Czech Republic and Turkey. The impact 6 firm level variables namely size, asset structure, profitability, non-debt tax shield, growth opportunities, and liquidity is analyzed. In addition, an EU membership dummy and 2008 financial crisis dummy are introduced. The study uses the firm level data from the balance sheets and income statements of firms in Slovenia, Poland, Hungary, Lithuania, and Czech Republic and Turkey which is collected from the WRDS - Wharton Research Data Services Compustat Global Industrials and Commercials database. The time period for each country is 1996-2010.

The remainder of the thesis is organized as follows. Section two gives a summary of capital structure theories. Section three includes the literature review on the determinants of capital structure. In the section four, we present the data, methodology, descriptive statistics, and regression estimates for listed firms in 6 countries.

1. CAPITAL STRUCTURE THEORIES

1.1. Introduction

Modigliani and Miller's (1958) Capital Structure Irrelevance Theory has been a cornerstone in finance. Since it was published there has been vast amount of theoretical and empirical studies investigating the capital structure choices and their effects on firms. The prediction of the Modigliani and Miller model assumes a perfect capital market and that the value of the firm is independent of its capital structure. Therefore, debt and equity are considered perfect substitutes. However, if the assumption of perfect capital markets is relaxed (which is the case in reality), the choice of capital structure becomes an important factor for firms. The literature shows that a firm can affect its value by changing the proportion between debt and equity. Given that conditions of Modigliani-Miller theorem (1958) do not hold in real world markets, theories of capital structure have been further developed.

After Miller and Modigliani (1958), the literature on capital structure has been studied and expanded by many theoretical and empirical contributions. Much of the emphasis has been on relaxing the strict assumptions of MM, such as by taking into account corporate taxes (Modigliani and Miller, 1963), personal taxes (Miller, 1977), bankruptcy costs (Stiglitz, 1972; Titman, 1984), agency costs (Jensen and Meckling, 1976; Myers, 1977), and informational asymmetries (Myers, 1984). In more detail, Modigliani and Miller (1958) show that the value of a firm is independent from its capital structure under certain strict assumptions. So internal and external funds can be regarded as perfect substitutes in a world where capital markets are perfect, where there are no transaction or bankruptcy costs. Thus, the firm is not able to change its value by changing its leverage. But in 1963, Modigliani and Miller extended their previous findings by relaxing some of their previous assumptions. Modigliani and Miller (1963)

discuss that, due to the tax deductibility advantage of interest payments, debt can be more attractive for firms compared to equity financing. Later, Miller (1977) focused on the effect of personal taxation. Then, DeAngelo and Masulis (1980) argued that interest tax shields may be unimportant to companies with other tax shields, such as depreciation. Based on asymmetric information, Meyers and Majluf (1984) predicted that companies would prefer internal to external capital sources. The literature developed by moving away from the strict assumptions of Modigliani and Miller.

The literature about the capital structure can be schematically divided in two theoretical streams (Barros and Silveira, 2007, p.3). First, moving chronologically, the trade-off theory (Kraus and Litzenberger, 1973) argues that value-maximizing firms will pursue an optimal capital structure by considering the marginal benefits and costs of additional financing and giving the decision in order to balance these benefits and costs. The second is the pecking order theory (Myers, 1984) which relies upon the financing hierarchy hypothesis proposed by Myers and Majluf (1984). This theory supposes that companies will tend to follow an order in the preference for alternative financing sources by considering the informational asymmetries between the managers and outside investors. Firms will seek financing sources that are less subject to the costs of informational asymmetries and they will prefer to use internally generated funds. They will choose to use external sources when necessary, preferably contracting bank loans or issuing debt securities (Barros and Di Miceli da Silveira, 2007, p.3). These two theories, trade-off and pecking order, are founded on two opposite backgrounds: A perfect rationality approach for the former and asymmetric information for the latter (Di Guilmi, 2008, p.1). The tradeoff theory emphasizes taxes; the pecking order theory emphasizes differences in information.

Although the theoretical differences between the two theories are straightforward, it is not always easy to distinguish them in practice. Fama and French (2002) indicate that these two theories have many common predictions about the determinants of leverage and dividends. One theory can perform better than the other in some certain situations which shows that rendering a verdict on the two is inconclusive.

Even Prasad et al. (2001) find that the evidence on trade-off versus pecking order theories remains inconclusive. As Myers (2001, p.81) says *"There is no universal theory of the debt-equity choice, and no reason to expect one.*" The capital structure puzzle still remains a puzzle. In the following section, the details of capital structure theories will be presented.

1.2. Capital Structure Theories

1.2.1. The Modigliani-Miller's Theorem (Capital Structure Irrelevance Theory)

Modigliani-Miller's theorem (Modigliani and Miller, 1958) capital structure irrelevance theory is the first theory on capital structure. In virtually all papers relating to capital structure, the framework of Modigliani and Miller is discussed. This theory has long been a cornerstone of finance literature. Their study has led to a vast amount of theoretical and empirical research.

This theory assumes the existence of a perfect capital market which has no transaction or bankruptcy costs, and in which people receive perfect information. Therefore, firms and individuals can borrow at the same interest rate without taxes. And their investment decisions are not affected by financing decisions. Based on the assumptions, Modigliani and Miller indicate that the value of a firm is independent from the way it is financed and the value of a firm depends on the profitability of the company. Hence, the firm does not follow an optimal capital structure.

However, under real world conditions, a firm's value is directly related to bankruptcy costs, agency costs, taxes, information asymmetry, and some other factors. Therefore, a firm's value is affected by its capital structure. For this reason, since Modigliani and Miller's irrelevance proposition, many studies have been conducted to investigate how firms shape their capital structure.

1.2.2. Trade-off Theory

The term trade-off theory is used by different authors to describe a family of related theories. The manager of a firm makes the decision by evaluating the various costs and benefits of alternative leverage plans. Often it is assumed that an interior solution is obtained so that marginal costs and marginal benefits are balanced (Eckbo, 2008, p.316).

The original version of the trade-off theory was developed after the Modigliani-Miller theorem which assumes that there are no bankruptcy costs. However, in reality bankruptcy costs exist and they are costly. Firms in bankruptcy face high legal and accounting expenses and also have difficulties in retaining customers, suppliers, and employees. Moreover, the situation can force the firm to liquidate or sell assets (in general for less than their value). Those kinds of bankruptcy-related problems are mostly like to occur when the firm has a high-level of debt usage. In sum, bankruptcy-related costs can be categorized as the probability of financial distress and the costs that would be incurred if financial distress is realized. Therefore, these kinds of problems discourage firms from using excessive amounts of debt. The impact of bankruptcy-related costs can have different impacts on firms with different structures. For example, firms that have volatile earnings are prone to a greater chance of bankruptcy because the volatility in earnings reflects a risk for a firm. Therefore, those firms are expected to use less debt compared to firms that have less volatile earnings. In general, firms which face higher costs in case of financial distress should prefer to use less debt (Brigham and Ehrhardt, 2010, p.613).

In sum, the trade-off theory says that firms have optimal debt-equity ratios, which they determine by trading off the benefits of debt with the costs. In traditional trade-off models, the benefit of debt is the tax advantage whereas the primary costs are related with financial distress.

There are various types of categorization for trade-off models. As discussed above, the traditional trade-off model (tax benefit-bankruptcy cost trade-off model) states that optimal capital structure is obtained when the marginal tax benefit of debt is balanced with the marginal cost of bankruptcy. Thus, the value of the firm will be maximized. If the firm is operating under or above the optimal capital structure, the value of the firm will decline. The agency cost trade-off models (Jensen and Meckling, 1976; Easterbrook, 1984; Jensen, 1986; Harris and Raviv, 1991) consider the possible conflicts of interests between the parties involved in the firm such as managers, shareholders, and bondholders. Under the agency cost trade-off model, firms define their optimal capital structure by balancing the costs and benefits of an additional dollar of debt (Cotei and Farhat, 2008, p.23)

The main two types of Trade-off Models are Static and Dynamic Trade-off Models which will be explained below.

1.2.2.1. Static Trade-off Theory

"A firm is said to follow the static trade-off theory if the firm's leverage is determined by a single period trade-off between the tax benefits of debt and the deadweight costs of bankruptcy" (Eckbo, 2008, p.142). So, according to the static trade-off theory, firms have optimal capital structures, which they determine by trading off the costs against the benefits of the use of debt and equity.

The firm is supposed to substitute debt for equity, or equity for debt, until the value of the firm is maximized and this trade-off is presented in Figure 1.1. It reflects how present value of interest tax shields and the cost of financial distress are considered by firms while determining the target leverage ratios. The straight line represents the value of a firm which uses 100% equity financing. The manager of an all-equity firm can increase the value of firm by replacing equity with debt, when debt is used, interest payments will occur, and those payments are tax deductible.

However, the major cost associated with debt is the cost of financial distress which increases as firms use more debt as a source of finance. At moderate debt levels the probability of financial distress is negligible, but if a firm continues to use more debt, the probability of financial distress increases rapidly with additional borrowings. Moreover, if the firm keeps on increasing debt, the tax advantage of debt will disappear and the firm is likely to go bankrupt. The theoretical optimum capital structure is achieved when the value of additional interest tax advantage and the impact of possible future costs of financial distress are balanced. At the point of equilibrium, the value of the firm is maximized.

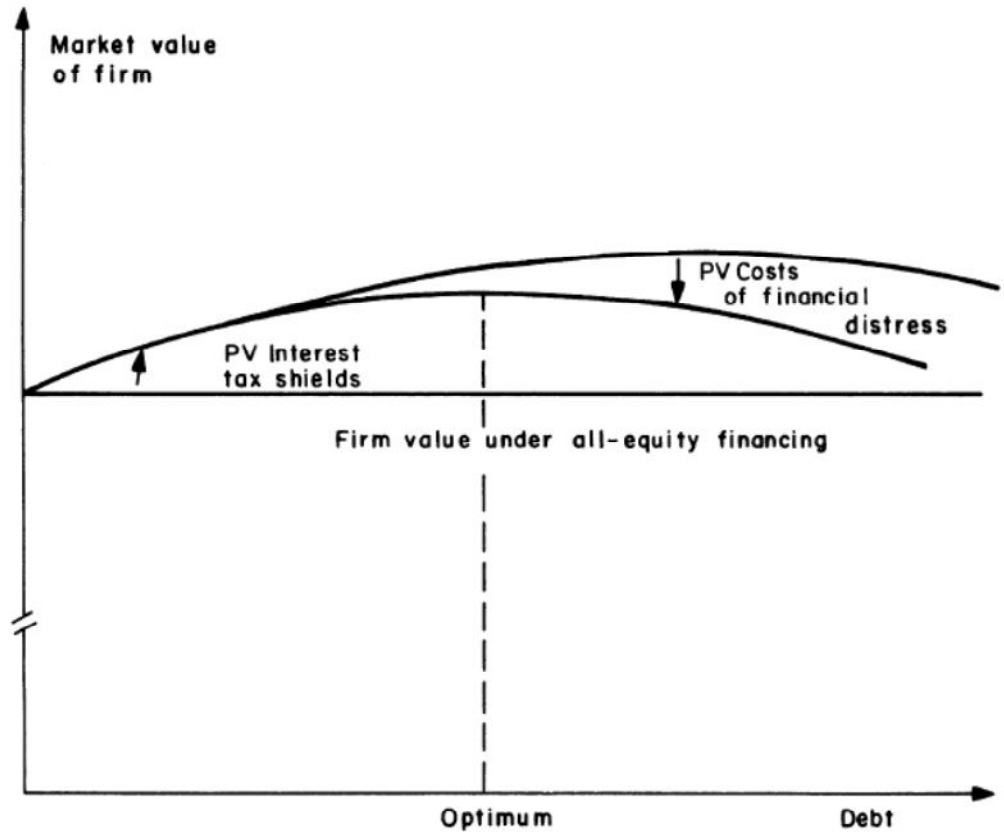

Figure 1.1. The Static-Tradeoff Theory of Capital Structure

Source: Myers (1984)

1.2.2.2. Dynamic trade-off theory

Static trade-off theory predicts a target debt ratio that depends on the tax advantage and the consequences of financial distress. The Dynamic version of the trade-off theory was introduced to explore the trade-off between costs and benefits over time. It was developed in response to the limitations of static trade-off theory which ignores transaction costs. In addition, static trade-off theory is unable to model the constantly changing environment where managers take decisions. Fischer et al. (1989) expanded the static capital structure theory and showed that there is not an optimal outcome, but a range of solutions to optimize the capital structure. This theory is more complex compared to the static trade-off theory model. Managers decide the appropriate capital structure of the firm by continuously trading off the benefits and costs of debt.

According to the dynamic trade-off theory of capital structure, firms make gradual adjustments to achieve an optimal target capital structure. In that process, adjustment costs play an important role. If there is no adjustment cost, the firm would have no incentive to deviate from its optimal target and any adjustment would be instantaneous. However, because of market imperfections firms may temporarily deviate from their optimal target and over time they tend to move back to target leverage ratios. With the existence of adjustment costs, the optimal financing policy of a firm will be adjusted when its leverage ratio reaches a critical upper or lower boundary. How the firm makes the adjustment at the refinancing points depends on their adjustment cost functions. If there are only fixed costs, firms will adjust back to their original optimal level. If adjustment costs are proportional, firms will make very small adjustments and barely return leverage into the optimal range. When the cost is composed of both fixed and proportional costs, firms would optimally adjust the leverage to somewhere inside the optimal range, but not to the original optimal level. As the proportion of fixed costs gets higher, it will be easier for firms to adjust leverage to the optimal level.

Leary and Roberts (2005) indicate that managers dynamically re-balance their leverage to stay within an optimal range rather than aim for a specific target. They allow for adjustments costs and find that they have significant impact in determining the appropriate capital structure level. Kayhan and Titman (2007) also state that debt ratios of firms move within a range around the target debt ratio and thus support the dynamic trade-off theory. In addition, the survey of Graham and Harvey (2001) of CFOs find that over one third of the firms acknowledge that their target debt levels are flexible. Another one third of the CFOs stated that their debt ratio moves within a tight range. More recently, Clark et al. (2009) find evidence in support of dynamic trade-off theory for 26,395 firms from 40 countries. Those firms partially adjust towards target capital structures.

The literature provides evidence for an optimal trade-off between the benefits and costs of debt ratios, but also for possible low costs (transaction/adjustment and market considerations) of deviating from this optimal trade-off. Thus, the leverage ratios can move over time.

1.2.3. Pecking Order Theory

The pecking order theory of capital structure is considered one of the most influential theories of corporate leverage (Frank and Goyal, 2003). The starting point of the pecking-order theory is asymmetric information. Myers' (1984) and Myers and Majluf's (1984) pecking order theory is also known as the information asymmetry theory of capital structure. This theory assumes that firm managers (or insiders) have some private information about the operations, investment opportunities, potential risks, and profit expectations of the firm and this information is not known by outsiders. That means investors do not know the true value of the existing assets and/or the new investment opportunities. Therefore, it is not possible for investors to accurately estimate the value of newly issued securities to finance new investments. This fact

(information asymmetry between managers and outsiders) is the basis of the theory and managers may take advantage of the information they possess.

If a manager offers to sell equity, then investors should consider why a manager is willing to sell equity rather than debt. Mostly, this is understood as the manager of an overvalued firm will be willing to sell equity whereas manager of an undervalued firm will not. Thus, when managers prefer to issue equity, investors discount the firm's stock price.

Recognizing this policy of managers, investors will perceive an equity issue as bad news, making the cost of issuing equity higher. If the firm can use internal financing sources or issue low-risk debt, then the cost of asymmetric information can be minimized. If the manager has better information than investors, it is better to issue debt than equity. That is, firms issue debt first, then possibly hybrid securities such as convertible bonds, then equity as a last resort.

In sum, asymmetric information affects the choice between internal and external financing. This leads to a pecking order, in which investment is financed with first internal funds; then by new issues of debt; and finally with new issues of equity. New equity issues are a last resort when the company runs out of debt capacity (Brealey and Myers, 2003, p.511)[1].

Just as in Modigliani-Miller hypothesis, if firms were active in an efficient market and all of the market actors had a chance to reach the same information under equal conditions, asymmetric information conditions would not occur. So there would not be a significant difference in terms of resource choices of the firms and the pecking

[1] The effect of asymmetric information on financing decision is well explained with a simple example in Brealey R,A, and Myers S,C, "Principles of Corporate Finance", Seventh Edition book. It is suggested for beginners to read this example to get the basic notions. The authors show how asymmetric information can force the financial manager to issue debt rather than common stock. If managers are better informed than investors and both groups are rational, then any company that can borrow will do so rather than issuing fresh equity. In other words, debt issues will be higher in the pecking order.

order theory will not work. But in a real market, these conditions are not satisfied and the asymmetric information is valid. The managers need to follow a choice order from the resources as explained by pecking order theory (Sen and Oruc, 2008, p.20).

Myers (1984, p.581) explains the financing pecking order as follows:

"1. Firms prefer internal finance as information asymmetries are only relevant for external financing.

2. They adapt their target dividend payout ratios to their investment opportunities and dividends are adjusted gradually according to investment opportunities by avoiding sudden changes

3. Sticky dividend policies, plus unpredictable changes in profitability and investment opportunities, mean that internally generated cash flow can be more or less than the investment outlays. If it is more, the firm pays off debt or buys marketable securities. If it is less, the firm first draws down its cash balance or sells its marketable securities.

4. If external finance is required, firms issue the safest security first. That is, they start with debt, then possibly hybrid securities such as convertible bonds, then perhaps equity as a last resort."

So the question is why internal financing is preferred to external financing and why debt dominates equity issuing. First of all, internal funds have no flotation costs and require no disclosure of the financial information which may include a firm's potential investment opportunities and gains (Buferna et al. 2005, p.2). Internally generated funds eliminate the flotation costs and also information problem. Moreover, equity is subject to adverse selection problems while debt has only a minor adverse selection problem.

In contrary to the much of the literature, this theory implies that firms do not have a well-defined target debt–equity mix, because the capital structure decisions are

given depending on the investment requirements and the available funds according to the financing pecking order. Thus "*changes in debt ratios are driven by the need for external funds, not by any attempt to reach an optimal capital structure*" (Shyam-Sunder and Myers, 1994, pp.1-2.). For example, according to this theory, the firms with high profitability use less debt because they have enough internal funds and do not need external financing, not because they follow low target debt ratios. Conversely, the less profitable firms use debt because they do not have the sufficient funds for their needs. According to pecking order theory, debt financing is in the first order of external financing options.

It will be beneficial to keep in mind that the reasoning behind the pecking order theory does not hold all the time because asymmetric information is not always at work and there can be some other factors to be considered. If this theory is assumed to hold, managers would never issue equity when they can use internal funds or debt-instruments. However, in reality, the situation can be more complicated then the pecking order theory suggests. For example, think about a firm which has a high debt ratio and cannot generate internal funds. According to the pecking order theory, the first option (internal funds) is not available. So the next option according to the theory is debt but the firm has used debt intensively and achieved a high debt ratio. As a result, the additional use of debt can push the firm into financial distress. In this case, equity financing is preferred to debt financing. As with any theory, the pecking order theory cannot completely explain all situations in the real world. For example, this theory only considers the choice of debt vs. equity. However, in reality, there are innovative securities such as deferred equity securities and preferred equity redemption certificates. Thus, managers have more options than the pecking order theory presents.

In addition to the problem of asymmetric information, there are other reasons why debt financing is a better way as compared to equity such as the proportion and value of collateral assets that a firm has and tax advantage of debt use preferred, in financing via debt there is no such risk of control loss (Sen and Oruc, 2008, pp.20-21)

1.2.4. Market Timing Theory

A third theory, the market timing theory, questioned both the static tradeoff theory and the pecking order theory. Baker and Wurgler (2002) introduced the "Market Timing Theory of Capital Structure" which is also known as "Windows of Opportunity Theory". According to this theory, firms issue equity when the cost of equity is low. Firms try to minimize their cost of capital, so they are more likely to issue equity when their market values (or share prices) are high, relative to book and past market values, and to repurchase equity when their market values (or share prices) are low (Huang and Ritter, 2004, p.3; Kaya, 2007, p.52). So, in theory if managers are able to time the equity issues, the cost of equity would be relatively lower. Thus, the value of the firm should increase and the overall cost of capital of the firm should decrease. However, this would happen at the expense of new shareholders and the benefit would be transferred to existing shareholders.

Managers consider the current conditions in both debt markets and equity markets. If they need financing, then they will use the market which appears more favorable. If neither market looks favorable, then fund raising may be deferred. Alternatively, if current conditions are unusually favorable, then funds may be raised even if they are not currently required. This theory says nothing about most of the factors that are traditionally considered in studies of corporate leverage. It is argued that past stock returns are considerably more important in explaining debt-equity ratios than all previously identified proxies together (Frank and Goyal, 2004, p.52). The pecking order theory assumes a semi-strong form of market efficiency, while the market timing theory does not rely on this assumption. Therefore, while the pecking order theory predicts equity issues to be rare, the market timing theory does not make such a prediction. In fact, the standard pecking order is just a special case under the market timing theory. The pecking order theory and market timing theory provide ways to understand how managers react to particular aspects of the environment rather than making broader trade-offs (Huang and Ritter, 2004, p.3).

Market timing theory has been examined in recent years. Hovakimian (2005) shows that there is a negative relation between leverage and market-to-book ratio. This provides support for a market timing effect however alternatively; this can be also driven by growth opportunities. Alti (2006) considers the amount of equity issued during periods of "hot" IPO markets versus "cold" IPO markets and investigates whether the firm issues equity in a hot market (high IPO volume in terms of the number of issuers) or a cold market period. It is found that market leverage is low in the short term, but that effect is not persistent. So, market timing appears to be a short-term factor (not important in the long-run) that affects the capital structure, which is in contrast to the proposition of market timing theory. Mahajan and Tartaroglu (2008) investigate the market timing theory in G7 countries. They found that leverage is inversely related to the historical market-to-book ratio, and the effect of market timing is short lived. Welch (2004) finds a weak relationship between firm valuation and issuing activity and indicates that past stock prices affect the capital structure change. His evidence suggests that firms respond to poor stock performance with more debt issues and to good performance with equity issues, which is consistent with market timing. Kayhan and Titman (2007) document that leverage changes are driven by market-timing (next to pecking-order and trade-off behavior). In line with Welch (2004), they confirm that stock price changes have a strong effect on market leverage ratios. In addition, past stock returns influence the ratio of debt to book value of assets.

1.2.5. Summary

The Modigliani-Miller theorem opened a literature on the fundamental nature of debt versus equity. Since then, choices of sources of financing and their effects have been widely discussed both theoretically and empirically. Yet there is little consensus on how firms choose their capital structure. The Modigliani and Miller model which argues that in a perfect capital market the value of the firm is independent of its capital structure, and so debt and equity are perfect substitutes, is widely accepted. However, as

the assumption of perfect capital markets is relaxed, the choice of capital structure becomes an important factor. The literature has shown that a firm can affect its value by changing the proportions of debt and equity. Given that conditions of Modigliani-Miller theorem (1958) do not hold in real world markets, theories of capital structure have been developed. The various theories of capital structure differ in their interpretation of the factors affecting the choice capital structures. Each emphasizes some cost and benefits of alternative financing strategies. According to the standard trade-off theory, taxes and bankruptcy account for the corporate use of debt. According to the standard pecking order theory, adverse selection accounts for the corporate use of debt. In the market timing theory, there is no optimal capital structure, so market timing decisions accumulate over time into the capital structure outcome. Although the theoretical differences between two theories are straightforward, it is not always that easy to distinguish them in practice. As Myers (2001, p.81) says *"There is no universal theory of the debt-equity choice, and no reason to expect one.*" The capital structure puzzle still remains a puzzle.

2. LITERATURE REVIEW

There have been many theoretical and empirical studies investigating the determinants of corporate financing decisions. Some studies focus on a single country, whereas some of them extend the test by including a sample of countries to make international comparison.

The literature investigates the impact of variety of firm-level variables on capital structure of firms. Chiarella et al. (1991) analyze the capital structure determinants in the Australian context. The sample includes 226 Australian companies from 1977 to 1985. They use long-term and short-term debt divided by equity as proxy for leverage. They find that non-debt tax shield and profitability display a negative relationship with leverage. They also claim that larger firms tend to use more debt. This is due to the ability of these firms to diversify their operations and reduce the risk.

Rajan and Zingales (1995) investigate the determinants of the capital structure of listed firms in G-7 countries. They find that book and market leverage are statistically significant and positively related to tangibility almost in all countries. Profitability has a negative impact on firms in the USA, Japan, UK (statistically significant only for market leverage), and Canada whereas no statistically significant relations are found for firms in other countries. For size which is measured by logsale, a positive and statistically significant relation is found for firms in the USA, Japan, UK (only for book leverage), and Canada however, a negative and statistically significant relation is found for Germany for book leverage and market leverage ratios. Market-to-book ratio has a negative impact on the firms in all countries.

Cornelli et al. (1996) find a negative correlation between tangibility and profitability and tangibility whereas a there is a positive correlation between size and leverage for Hungary and Poland. Mramor and Valentincic (2001) analyze the financial

behavior of Slovenian firms. A sample of 51 important Slovenian firms is analyzed using the data from a questionnaire for chief financial officers and financial statement data. A negative relation is found between profitability, tangibility of assets, equity per worker and the ratio of net investment to net income, and leverage. De Haas and Peeters (2004) examine the capital structure dynamics, the target leverage, and the adjustment speed of CEE firms by using firm-level data (1993-2001) from Bureau van Dijk's AMADEUS "top 200,000" database. They find that firms' leverage targets are negatively influenced by their profitability and positively by their age. Firms increased leverage and lowered the gap between actual and target leverage in Estonia, Hungary, Latvia, and Slovenia while in other CEE countries most firms are still under-levered.

Hussain and Nivorozhkin (1997) work on a sample of 17 companies list in Warsaw Stock Exchange which total market capitalization compose 83.3 percent of the whole stock exchange as of 1993. The time period of study is in between 1991-94 which includes the transition period of the country and this resulted in low leverage levels for the sample. They find that large, new, foreign-owned firms and firms with strong cash positions had higher levels of leverage due to better reputations of these companies with banks, whereas domestically owned firms generally have lower debt-equity ratios than foreign owned firms. They find a statistically significant negative effect of firm age on leverage. This shows that older firms use less debt. The ratio of retained earnings to assets, equity, and paid-up capital indicate a strong positive relation with debt-equity. Also, a positive relation between size and leverage is achieved. Large firms are highly leveraged as they decrease the risk of bankruptcy. However, the findings for profitability are mixed. Likewise, there is weak evidence between taxes and debt-equity ratios. Due to lack of sufficient observation, Hussain and Nivorozhkin (1997) make correlation analysis instead of regression for tangibility. Tangibles assets are mostly negatively correlated with leverage.

Shyam-Sunder and Myers (1999) test the static trade-off theory against the pecking order theory by using 157 firms in USA from 1971 to 1989. It is shown that a

significantly large part of firms' financing deficits are filled with debt. The pecking order is an excellent first-order descriptor of financing behavior and also simple target adjustment model that seems to perform well. When two models are tested jointly, the pecking order model continues to perform well; however, the performance of the target adjustment model declines. Also, they ran cross-sectional static trade-off model by actual and simulated data. Plant/Assets and Earnings/Assets have significant coefficients when the model is fitted to actual average debt ratios. This finding shows that firms with more tangible assets tend to borrow more, and more profitable firms borrow less. However, when the cross-sectional model is fitted to the simulated pecking order data, the coefficients are same and significance levels are also same. Therefore, they indicate that the power of this cross-sectional test is questionable.

One of the most comprehensive studies about capital structure decisions is conducted by Booth et al. (2001). They analyze the capital structure choices made by companies from developing countries that have different institutional structures compared to developed countries. Their data includes 10 developing countries namely India, Pakistan, Thailand, Malaysia, Turkey, Zimbabwe, Mexico, Brazil, Jordan, and Korea. Initially, they perform a preliminary test on the relation between aggregate capital structure and institutional characteristics by pooling the data from the developing and developed countries and creating an enhanced sample of 17 countries. Three debt ratios namely Total-debt Ratio, Long-term Book-debt Ratio, and Long-term Market-debt Ratio vary negatively with the equity market capitalization, whereas, with the exception of the long-term market-debt ratio, the debt ratios vary positively with the proportion of liquid liabilities to GDP. As equity markets become more developed, they become a source for corporate financing and firms make less use of debt financing. Similarly, more highly developed debt markets are associated with higher debt ratios. Higher real economic growth tends to cause the two book-debt ratios to increase, and higher inflation causes them to decrease. However, these coefficients are not significant. In the pooled model for developing countries, the more profitable the firm, the lower the

debt ratio, regardless of how the debt ratio is defined. This finding is consistent with the Pecking-Order Hypothesis. It also supports the existence of significant information asymmetries. There is also supportive evidence on the role of asset tangibility in financing decisions. Asset tangibility affects total and long-term debt decisions differently. Generally, the more tangible the asset mix, the higher the long-term debt ratio, but the smaller the total-debt ratio. This indicates that as the tangibility of a firm's assets increases, despite long-term debt ratio increases, the total-debt ratio falls. This means the substitution of long-term for short-term debt is less than one.

Ozkan (2001), using the Datastream database, investigates the determinants of target capital structure of firms and the adjustment process toward this target. His data comprises of 390 firms in UK for the period 1984-1996. The coefficient of the lagged leverage is positive and significant at the 1% level. The adjustment coefficient indicates that firms adjust their leverage ratios relatively quickly in an attempt to reach their target debt ratios. The coefficient of growth opportunities proxied by the market-to-book ratio is negative and significant. The coefficient for the lagged growth is positive and significant. Size is found to have a positive effect on leverage ratios and also lagged size coefficient is statistically significant. This means that large firms might be more diversified and fail less often, so past values of firm size may serve as an inverse proxy for the probability of bankruptcy. Second, to the extent that the size of firms is an inverse proxy for the direct costs of bankruptcy, small firms are expected to borrow less than large firms. The coefficient for current non-debt tax shields ratio is negative and significant, however, no evidence is found for the past values of non-debt tax shields. The coefficient estimate of the current liquidity ratio is significant and negative. Current profitability of firms has a negative impact on firms' borrowing decisions. This is in line with the pecking order theory that predicts a preference for internal finance rather than over external finance. The coefficient on the lagged profit is positive and significant. One possible explanation for the positive influence of profitability on leverage might be that more profitable firms can support a higher leverage ratio.

Colombo (2001) identifies two types of variables: supply side variables which include collateral, profitability, growth opportunities, size, market share, and ownership and demand side variables consisting of cash flows and inter-enterprise debt. The dataset comprised of 1,100 manufacturing firms in Hungary for the time period from 1992 to 1996 and a balanced panel data set is constructed. Particular attention is paid to short-term bank debt. According to the cross-section estimates, size (approximated by the logarithm of net sales) is positively related with debt indicating that big firms tend to easily access bank credit with respect to small firms. However, the positive effect of size gets weaker when the number of employees is considered. The employment dummy is positive and significant but only for the years 1992 and 1995. This means that big firms tend to be facilitated in accessing bank debt, because they are more diversified, more than because they are `politically' protected by the concern on their employment level. For Hungary, another important factor is the ownership structure as big firms are mainly state owned firms, and this can be the reason for easy access to higher debt. The results indicate that private firms are the ones that take on more debt, suggesting that private ownership and not state ownership conveys a positive signal to the credit market. The coefficient of tangibility is positive which is in line with the results usually obtained for developed countries. However, in contrast with the results of Cornelli et al. (1996) who find a negative correlation between tangible assets and debt, in Poland and Hungary. Another variable measuring the collateral is the inventories which are also found to have a positive impact on debt. Internal funds have a negative coefficient suggesting that firm substitute external with internal finance when they have the opportunity to do so. The negative coefficient on inter-enterprise debt shows that firms tend to substitute bank with inter-enterprise debt. Finally, the degree of market power does not have any effect on the amount of leverage and the foreign ownership dummy is not significant. The panel results also confirm fully what is found in the cross-section estimates.

Klapper et al. (2002) use the AMADEUS database which includes financial information on over 97,000 private and publicly traded firms in 15 Eastern and Central European countries. A simple regression analysis is implemented to investigate the relations between debt ratios and some firm characteristic. The sample includes Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovakia, Slovenia, Ukraine, and Yugoslavia. The findings show a positive relation between size and leverage (total, short-, and long-term financing) as predicted by the Static Trade-off theory in 15 Eastern and Central European countries. In addition, they find that firms use internal funds before using long-term debt (but not before short-term debt), which may be explained by the relative inaccessibility of long-term debt in the region. Secondly, total debt and short-term debt are positively related to profitability, which might be the most important factor in accessing outside financing in countries with weak collateral laws. When the tangibility is considered, a negative relation with total and short-term debt and a positive relationship with long-term debt are found by Klapper et al. (2002). This is in parallel with most theories on capital structure that suggest that firms without fixed-assets to use for collateral are unable to access long-term financing. A significant relationship between the depreciation to total assets ratio and all debt types is found.

Bancel and Mittoo (2002) using survey data collected from the managers of firms in sixteen European countries examine the link between theory and practice of capital structure. A variety of questions such the factors affecting the amount of debt, factors affecting the debt policy, factors affecting the choice between short- and long-term term and the decision about issuing stock were asked. The sample includes 16 European countries namely Austria, Belgium, Greece, Denmark, Finland, Ireland, Italy, France, Germany, Netherlands, Norway, Portugal, Spain, Switzerland, Sweden and UK. A large proportion of the respondents (over 80 percent) have sales of over $1 billion Euros. About 62 percent of respondent firms have market capitalization of less than 1000 million Euros or between 1000 million to 5000 million Euros. The respondent

firms represent a wide variety of industries with a larger concentration in manufacturing, mining, energy and transportation sectors (about 37 percent), high technology (18 percent), and financial sectors (18 percent). Financial flexibility, credit rating, interest tax savings and volatility of earnings are considered as the most important determinant of debt, respectively. They find moderate support for the trade-off theory, but less for the pecking order theory and show that major determinants of the capital structure choice are similar across European and US managers.

Wanzenried (2002) analyzes the capital structure determinants of 167 European firms for the period 1988-1998 by including both firm-level and macro-economic variables. Considering the firm-level variables, the study find that size and growth have positive effect on leverage however; the coefficient estimate for size is statistically insignificant. The effect of profitability is negative and insignificant for continental Europe. The relation between non-debt tax-shield with leverage is negative and statistically insignificant. The tangibility is positive and statistically significant for firms in UK. The findings of pooled OLS estimation are mostly in parallel with fixed effects model.

Voulgaris et al. (2002) by using dynamic panel data techniques, investigate the determinants of capital structure of large enterprises in the Greek manufacturing. They find that asset utilization, gross and net profitability and total assets growth have a significant effect on the capital structure of firms. Total debt to total assets ratio is found to be negatively related profit margin and positively affected by total assets turnover and total assets growth. When long-term debt is considered, it is shown to be significantly affected by the same variables as total debt; however, it is affected positively by gross profit margins and negatively by asset productivity, sales and assets growth. Short-term debt does not seem to be significantly related with any of the above variables in the fixed effects model. In the random effects model and simple panel model, a negative correlation with net profitability and a positive one with productivity of assets is found.

In terms of Turkey, Gonenc (2003) examines the impact of profitability, asset tangibility, size, and growth opportunities on capital structure decisions of Turkish Industrial firms. The regression estimates show that the characteristics of firms along with equity ownership by managers, financial institutions, government, and stock market activities determine the capital structure choice of Turkish firms. Profitability has a statistically negative impact on both total and long-term debt ratios which implies the importance of pecking-order hypothesis and informational asymmetries for Turkish industrial firms. The coefficient for book-to-market is statistically negative, implying an inverse relationship between debt ratio and growth opportunities. This result is inconsistent with the findings for developed or other developing countries. Gonenc interprets this situation as the capital market of Turkey, the ISE, is a very volatile market because of economic and political upheavals. Under these conditions, it is also very difficult to find external equity rather than internal sources for Turkish companies to support their growth. They rely on banks for their financial needs. The coefficient of size is significantly positive for total debt whereas this relationship is weaker for long-term debt. There is also a significant negative relationship between total debt ratio and asset tangibility, and a positive relationship for long-term debt. It is also found that firms with high equity participation of financial institutions and government use less debt.

Gaud et al. (2003) analyze the determinants of the capital structure for a panel of 106 listed Swiss companies. Both static and dynamic tests are performed for the period 1991–2000 with a total of 967 observations. They find that size has a positive and statistically significant effect on leverage. This relation is consistent with the results of many empirical studies (Rajan and Zingales, 1995; Booth et al. 2001; Frank and Goyal, 2003). For the profitability variable, a negative relationship is achieved with coefficients significant at the 1% level. This finding is also in parallel with Rajan and Zingales (1995), Booth et al. (2001), and Frank and Goyal (2003) and provides support for the pecking order theory. The coefficient of the tangibility is positive and

significant. This result suggests that firms use tangible assets as collateral when negotiating borrowing, especially long term borrowing. The observed sign of the relationship does not confirm the sign that would be expected when using the pecking order theory framework. In such a framework, firms with fewer tangible assets are more subject to informational asymmetries, and are more likely to use debt - principally short term debt - when they need external financing.

Frank and Goyal (2003) test the Pecking order theory on a broad cross-section of publicly traded American firms over the period 1971–1998. The result is contrary to the expectations of Pecking order theory such that debt financing does not dominate equity financing in magnitude. Frank and Goyal (2003) show that Shyam-Sunder and Myers' (1999) conclusions which support the pecking order are not valid when a broader sample of firms or a longer time series is used. Over time, support for the pecking order has declined for two reasons. More small firms were publicly traded during the 1980s and 1990s than during the 1970s. Since small firms do not follow the pecking order, the overall average moves further from the pecking order. When narrower samples of firms are considered the greatest support for the pecking order is found among large firms in earlier years however, the use of a broader sample of firms or a longer time series does not support the pecking order theory. In addition, they run a conventional regression and find that the estimated coefficients on the market-to-book assets ratio, tangibility, firm size, and profitability have the usual signs. The coefficient signs are negative on the market-to-book ratio, positive on tangibility, positive on log of sales, and negative on profitability.

Nagano (2003) investigates the determinants of corporate capital structure in the East Asian countries of Indonesia, Korea, Malaysia, the Philippines and Thailand in the aftermath of the 1997 Asian financial crisis. Cross-country analysis shows that firms appear to have a pecking order in so far as their corporate finance decision-making is concerned. They have the highest preference for internal funds, with its characteristic smaller information cost, and secondarily for short-term bank loans. Profitability (ROA)

has a statistically significant and negative relationship with debt to equity ratio in all the sample countries. The results therefore support our hypothesis that the availability of internal funds in the firm decreases the debt financing. It is argued that East Asian countries have a higher degree of dependency upon internal funds than those of the industrialized countries, as reported by Rajan and Zingales (1995). There is also a significant relationship between firm size and debt to equity ratio in Indonesia (positive) and Malaysia (negative) in both the pre-crisis period and post-crisis period, and in post-crisis Thailand (positive) and in pre-crisis Korea (negative).. There is a positive correlation between debt and corporate collateral represented as the ratio of fixed assets to the book value of total assets. However, the coefficients are not significant at all except for Thailand in the post crisis period of 1997-2001.

Acaravci and Dogukanli (2004) test the determinants of capital structure on manufacturing sector. The sample includes 66 manufacturing firms that are traded in Istanbul Stock Exchange over 1992-2002 by considering the firm specific, financial market specific, and macro-economic variables. Growth has positive (statistically significant) and profitability has negative (statistically significant) relation with long-term, short-term and total debt ratios. There is a negative and statistically significant relation between tangibility and short-term debt.

Deesomsak et al. (2004) investigate the determinants of capital structure of firms operating in the Asia Pacific region in specific Thailand, Malaysia, Singapore and Australia. The annual data is obtained from Datastream to cover the period 1993–2001. The sample includes all non-financial firms listed in the relevant national stock exchanges for which a continuous data set exists over the sample period. Hence, the sample consists of 294 Thai, 669 Malaysian, 345 Singaporean, and 219 Australian firms. The relationship between leverage and tangibility is positive but not statistically significant in any country with the exception of Australia. Profitability and leverage has a negative relation again statistically insignificant for all countries with the exception of Malaysia. Firm size has a positive significant impact on leverage in all countries, with

the exception of Singapore. The estimated coefficient of non-debt tax shield (NDTS) is negative and statistically significant for all countries.

Bauer (2004) analyzes the determinants of the capital structure of listed companies in the Czech Republic. The sample initially includes a total of 74 companies listed on the Prague Stock Exchange within the period from 2000 to 2001. However 2 companies are excluded due to negative book value and unusual changes in balance sheet items between the years 2000 and 2001. Therefore, the final sample includes 72 observations for each year. Bauer (2004) uses two measures of leverage both in book value and in market value and implements unrestricted and restricted models for data for the years 2000 and 2001. Bauer finds that profitability measured as ROA is not highly statistically significant in unrestricted models, however, in restricted models it is significant in five cases and the sign of the coefficient is always negative. This result supports the pecking-order theory rather than static trade-off models. Also, a negative relationship between leverage and tangibility is found however, a positive relationship is expected between leverage and tangibility based on the theory and empirical studies. The relationship between tangibility and leverage is statistically significant in two unrestricted models and in four restricted models. The sign is always negative. Bauer (2004) finds a negative relation between non-debt tax shields and leverage. For Non-debt tax shield is not statistically significant in any unrestricted model. However, it is significant and negative in four restricted models. Size is statistically significant at the 1% level in all the models and the sign is always positive. Thus, the theory that size is an inverse proxy for the probability of bankruptcy is supported by the results.

Chen (2004) explores the determinants of capital structure of Chinese-listed companies. Chen uses two measures namely overall leverage (ratio of book value of total debt to total assets) and long-term leverage (ratio of book value of long term debt to total assets). There is a negative relationship between profitability and debt. According to Chen, a new Pecking order of Chinese-listed firms' leverage appears—retained profit, then equity finance, and lastly debt. A positive relationship exists

between growth opportunity and debt. There is a positive relationship between tangibility and debt. This finding shows that asset tangibility is an important criterion in banks' credit policy, and this is particularly true for long-term loans. This result is consistent with both the trade-off model in terms of financial distress and bankruptcy costs and the Pecking order hypothesis in terms of asset mispricing. Size has a negative relation with long-term debt and has a positive relation with total debt. The negative relationship between size and long-term debt may be due to the fact that large firms have better access to capital markets for equity finance because of their reputation in the markets. In sum, neither the trade-off model nor the Pecking order hypothesis derived from Western settings provides convincing explanations for the capital choices of the Chinese firms.

Bevan and Danbolt (2004) analyze the determinants of the capital structure of 1,054 UK companies from 1991 to 1997. They compare two different methods namely pooled OLS and fixed effects panel estimation. They find significant differences in the results of two models. The OLS results are generally consistent with prior literature however; the results of fixed effects panel estimation contradict many of the traditional theories of the determinants of corporate financial structure. Thus, traditional studies may be biased owing to a failure to control for firm-specific, time-invariant heterogeneity. According to the findings of fixed effects panel estimation, size is positively related with all measures of debt. Profitability is negatively related to all debt elements, except for total current liabilities. Tangibility is positively correlated with short-term bank borrowing, as well as all long-term debt elements. Collateral affects all bank borrowing, whether short-term or long-term. The level of growth opportunities has little effect on the debt level as most of the coefficients are insignificant.

Spremann and Gantenbein (2004) study the determinants of capital structure for a variety of countries namely Brazil, Mexico, India, South Korea, Jordan, Malaysia, Pakistan, Thailand, Turkey, and Zimbabwe. A simple pooling method and fixed effects model is used. A consistent result in both the country and the pooled data is that the

more profitable the firm, the lower the debt ratio in both book and market values. The result shows that external financing is more costly and therefore avoided by the firms. The size variable is mostly positive and highly significant for many of the countries. The sign on the market-to-book ratio is generally positive except for South Korea and Pakistan. However, the impact of asset tangibility on the total and long-term debt ratios is different. The estimated empirical average tax rate does not affect the financing decisions

Berk (2005) analyzes the determinants of leverage in 44 Slovene largest firms listed in Ljubljana Stock Exchange for the period 2000-2001 and 2002-2003. The effect of tangibility of assets, growth rate, future growth opportunities, firm size, earnings volatility, profitability, and value of non-debt tax shields are tested. Profitability negatively impacts leverage and firms with higher growth opportunities use more debt. The negative sign of tangibility is contrary to the expectations. Berk explains this as operations supported by more fixed assets are assumed less risky and less risky operations are financed less with debt and more with equity. In addition, the revaluation of assets is considered as an alternative reason. A very weak positive effect for non-debt tax shield is achieved however the finding for size is mixed.

Nivorozhkin (2005) investigates and compares the determinants of firms' target capital structure and the speed of leverage adjustments for the firms in five EU accession countries of Central and Eastern Europe and the former Soviet Union (Bulgaria, the Czech Republic, Poland, Romania and Estonia). Leverage is measured by the ratio of total debt to the sum of debt and shareholders' equity. The leverage ratio is found to be quite low by western standards throughout the entire period. The cross-country average is stable every year at around 23% however, a high amount of dispersion is observed. The leverage ratios range from 9% in Bulgaria in 1997 to 34% in Estonia in 1998. In general, the lowest mean values of leverage for the period are observed in Bulgaria and Romania (average ratios of 12% and 19%, respectively). On the contrary, Estonia, Poland, and the Czech Republic remain at the top of the range

with the average debt–equity ratios of 24–31%. It is found that the coefficient for profitability variability is positive for Poland and Romania and Estonia and insignificant for the Czech Republic and Bulgaria. This relation is interpreted as the relatively low risk aversion of firms' managers in transition economies. However, it is also noted that results are potentially open to alternative interpretations. The effect of tangibility is mixed across countries. The relationship is negative for Bulgaria and Romania in parallel with Cornelli et al. (1996) and Nivorozhkin (2003 and 2004). However, the coefficient of tangibility is positive for the Czech Republic and Estonia and insignificant for Poland. The results imply that tangible assets remain a poor source of collateral in less advanced transition economies. The profitability has a negative effect on target leverage across all countries and it is significant in all regressions. Firms lacking internal funds prefer higher debt targets. Firm size is positively and significantly related to target leverage in all countries except Estonia and Poland, where the relationship is insignificant. In the transition countries, this positive effect of size on leverage target is explained by the fact that size serves as a stability proxy for creditors. The age variable has a significant and negative effect on target leverage for all countries. Also, net trade credits have a negative effect on leverage targets for all countries, except Bulgaria and Romania. The increase in ownership concentration has no significant effect on the target leverage in all countries, except Estonia and Bulgaria.

The study of Chen and Strange (2005) analyze the determinants of the capital structure of a sample of 972 listed companies on the Shanghai Stock Exchange and Shenzhen Stock Exchange in China in 2003. Profitability and size are negatively related to capital structure. The coefficient estimates for profitability are statistically significant at book value and market value however the coefficient estimate for size is only significant at market value. The risk is positively related to the debt ratio but only in term of market value measures of capital structure. Age of firms is positively related to capital structure, but tax and intangibility do not influence debt ratio. Also, ownership structure has a negative effect on the capital structure.

Gaud et al. (2005) study the determinants of the capital structure for Swiss companies with a sample of 104 firms for the period 1991–2000 in a dynamic panel framework. The results indicate that tangible assets are positively related to leverage, while growth and profitability are negatively associated with leverage. Size and tangible assets have a positive effect (statistically significant) effect on leverage. Also, a negative and statistically significant relationship between profitability and leverage is recorded.

Bouallegui (2006) works on 99 German high-tech firms on the Deutsch Boerse over the period 1996–2002 and explores whether the Trade-Off Theory and Pecking Order Theory can explain the capital structure of these firms. The results clearly indicate the existence of an optimal debt level, which verifies the prediction of the trade off theory. Confirming the pecking order model but contradicting the trade off model, it is shown that more profitable firms use less leverage. Also, large companies tend to use more debt than smaller companies. Tangibility and non-debt tax shield are positively related with leverage.

Crnigoj and Mramor (2006) test the determinants of capital structure on samples of cross-section data consisting of non-financial firms available at AJPES separately for each year of the period from 1999 to 2004. A statistically significant negative relationship between tangibility of assets and leverage is found. This result is in parallel with studies conducted in other CEE transition economies. According to Crnigoj and Mramor (2006), this negative relation is partly explained by revaluation of fixed assets which was required by the accounting standards in force until 2001. In many firms, revaluation has resulted high book value of the fixed assets compared to their collateral value. Besides, high assets tangibility does not always imply lower risk because firm assets might be specific thus possessing low liquidation value. However, a decrease in the negative impact of tangibility on leverage has been observed. The effect of tangibility is found to be less negative in small firms, suggesting that collateral probably played more important role in supply of debt compared to that in medium-

sized and large firms. Firm size is positively correlated to leverage and the coefficients are statistically significant in all years. The impact of size increased during the period in small and especially medium-sized firms, suggesting information asymmetry probably has not decreased, thus suppliers of debt still preferred to supply the funds to larger firms. Earnings volatility and equity capital per employee have negative effect on leverage and positive relation between growth rate and leverage is found.

Eriotis et al. (2007) focus on the determinants of the capital structure of the major Greek firms listed on the Athens Stock Exchange (ASE) for the time period 1997-2001. The data is extracted from the financial statements contained in the ASE database. The final sample, after considering any missing data, consists of 129 firms. It is found that Greek firms use either very little or no long-term debt capital at all. According to the results, the debt ratio of the firm is positively related to size so larger firms use more debt capital in comparison with smaller firms. On the other hand, the findings show that the liquidity and interest coverage ratio of the firm is negatively related to its financial leverage. The negative relation between the growth and leverage is found. As growth is measured by annual change on earnings, high growth means high variation in earnings which can be interpreted as higher risk. Firms that are risky generally find it difficult to raise debt capital, simply because the lenders will demand higher returns making debt capital more expensive.

Mefteh and Oliver (2007) include manager confidence in additional to traditional determinants. The sample consisted of French firms listed on the Compustat database with at least three years of data over the years 1995-2004. They find that the manager confidence negative and statistically significant. Also, they show that traditional determinants of capital structure are significant for French firms. Size and collateral have positive (statistically significant) effect on leverage however the relation between profitability and leverage is negative (statistically significant).

Salawu (2007) investigates the capital structure of 50 quoted nonfinancial companies in Nigeria between 1990 and 2004, and finds that leverage is negatively related with profitability. Tangibility has a positive effect on total debt and long-term debt, but a negative effect on short-term debt. The size is positively related with total-debt and short-term debt.

Drobetz et al. (2007) use a dynamic framework and panel methodology to investigate the determinants of a firms' time-varying capital structure. They analyze the effects of firm-specific characteristics as well as macroeconomic factors on the speed of adjustment to target leverage. Their sample comprised 706 European firms from France, Germany, Italy and the U.K. over the period from 1983 to 2002. The short interest rate, the term spread of interest rates, the credit spread, the run-up average dividend yield and stock market performance are considered as macro-economic variables. As firm level variables, they use tangibility, size, non-debt tax shield, and growth opportunities. They find that larger and faster growing firms adjust leverage ratios more readily. When macroeconomic conditions are favorable such as interest rates are low and the risk of disruptions in global financial system is negligible, firms adjust faster.

Delcoure (2007) investigates whether the determinants of capital structure in emerging Central and Eastern European (CEE) countries are parallel to traditional capital structure theory developed to explain western economies. Thomson Financial's Worldscope database is used. The sample includes publicly traded companies excluding those in heavily regulated financial and utility sectors in four transitional economies: Czech Republic, Poland, Russia, and Slovak Republic. The final sample consisted of an unbalanced panel of 22 Czech, 61 Polish, 33 Russian, and 13 Slovak publicly traded companies for the time period from 1996 to 2002. Panel data method is implemented and Hausman specification test is employed to test the fixed effects model versus random effects model. Delcoure (2007) finds that the relationship between the firm size and total and short-term debt is positive and statistically significant for the Russia, Czech Republic, Poland, and Slovakia. When long term leverage is considered, the

coefficient for size is negative and significant for Czech Republic, Slovakia and Poland whereas it is positive and significant for Russia. The negative sign is interpreted as the existence of information asymmetries suggested by Myers and Majulif (1984) and an underdeveloped state of the bond market in these transitional economies. Also, laws dealing with financial distress are still developing, leaving debt holders unprotected in the event of default and forcing companies to acquire funds through short-term loans. The estimated positive relation between firm size and long-term debt for Russian companies is not surprising. Despite some progress in the transition from a banking economy to a market economy, high Russian government ownership in enterprises along with government directing credit programs to preferred sectors with price control in these sectors may have a significant impact on corporate financing patterns. Delcoure shows that the coefficient for asset tangibility is positive and it is statistically significant for Russia, Czech Republic, Poland, and Slovakia. These results are consistent with the trade-off and the pecking order hypotheses. Lenders view tangible assets as risk-reducing collateral. The study shows that the coefficient for profitability is negative and mostly statistically significant for Russia, Czech Republic, Poland, and Slovakia. At first glance, the empirical evidence supports the pecking order hypothesis in explaining negative and statistically significant relations between firms' leverage and their profitability. However, upon taking another look, the order of external financing choices appears to be different for CEE companies. The bond market in the majority of CEE countries is still developing. Banks provide short-term liquidity loans rather than long-term financing to enterprises, so companies have to rely on equity to finance their capital investments. In addition, shareholders' protection laws are weak. Thus, managers prefer equity to debt financing because it is not binding, and share capital may appear to be a “free” source of capital. Managers may perceive retained earnings to be the quickest and easiest source of financing followed by new equity issuance, bank borrowing, and possible new debt issuance. Thus, these results collaborates Chen's (2004) explanation of the new pecking order hypothesis in corporate capital structure among developing countries. It appears that countries in transition follow a different

"pecking order" in their capital structure decisions—retained earnings, equity, and debt. Delcoure demonstrates a strong direct relation between the total, long-term, and short-term leverage and non-debt tax shield. This result contradicts the trade-off theory that focuses on the substitution between nondebt and debt tax shields. According to Bradley et al. (1984), a possible explanation is that non-tax debt shield may be viewed as a measure of the firm's assets "securability," with more securable assets leading to higher leverage ratio. According to Delcoure, neither the trade-off, pecking order, nor agency costs theories explain the capital structure choices. Companies do follow the modified "pecking order."

Sen and Oruc (2008) find a negative relationship between leverage and profitability, current rate and sales which supports the pecking order theory. However, no meaningful relation is found for firm growth in Istanbul Stock Exchange between the years 1993–2007. A negative relation between asset structure and leverage is achieved.

Daskalakis and Psillaki (2008) explore the capital structure determinants of small and medium sized enterprises (SMEs) of Greece and France. They apply panel data methods to the sample of firms for the period 1998 to 2002. They show that these SMEs in both countries exhibit similarities in their capital structure choices. Asset structure and profitability have a negative relationship with leverage, whereas firm size is positively related to leverage. Growth is statistically significant only for France and is positively related to debt.

Dragota and Semenescu (2008) investigate the determinants of capital structure for the Romanian listed firms. For total debt, the profitability and asset tangibility has a negative impact. When the negative sign for asset tangibility is carefully analyzed, it is seen that Romanian companies have a great proportion of non-banking debt. Size is positively correlated to leverage. Big firms sent a more direct signal to creditors and could obtain credit more easily. Market-to-book-ratio has a negative effect on the market values, however for the book values, the findings are mixed.

Deari and Deari (2009) use data originating from annual reports of the 32 companies listed in Macedonian Stock Exchange and 30 small and medium companies from the Pollog region (Macedonia) for the time period from 2005 to 2007. The leverage of a company is calculated as the ratio of total liabilities to total assets. They show that for listed companies, profitability (measured as the ratio of earnings before tax to total assets) is negatively associated with leverage and positively associated with leverage for unlisted companies. The finding for listed companies is consistent with the Pecking order theory and for unlisted companies with the Statistic trade off theory. For tangibility, a negative relationship with leverage is found and this is consistent with the Pecking Order Theory for both listed and unlisted companies. The authors believe that companies with lower levels of tangible assets are more subject to information asymmetry problems, and consequently, more willing to use debts to finance their activities. Macedonian listed companies are evaluated from lenders not just based on tangibility assets, but also from others perspectives. According to Deari and Deari, size measured as natural logarithm of sales has positive impact on leverage, but is not significant for listed and unlisted companies. They also find that non-debt tax shield measured as depreciation over total assets is negatively associated with leverage at listed companies, and positively at unlisted companies. Non-debt tax shield is found insignificant for listed and unlisted companies, and is verified tested hypothesis for listed, but not for unlisted companies.

Akhtar and Oliver (2009) investigate the capital structure choices of Japanese Multinational and Domestic Corporations. They show that Japanese multinational corporations have significantly less leverage than Japanese domestic corporations. They demonstrate that business risks play an important role for multinationals and for domestic firms. There is a negative relation between leverage and business risks. Size and tangibility are positively related with leverage for both domestic firms and multinationals.

Psillaki and Nikolaos (2009) investigate the determinants of capital structure for France, Greece, Italy and Portugal using panel data methods. Size, but not asset structure is positively related with leverage. Firms that maintain a large proportion of tangible assets in their total assets tend to use less debt than those which do not. Profitability is also negatively related to leverage which is in line with the pecking order theory that argues that firms prefer internal financing to external. Risk has a negative impact on leverage which means that the riskier the firm, the less debt burden is expected to carry. Growth is not statistically significant for any of the four countries. The findings present that there are similarities in the determinants of capital structure across the sample countries. This is due to the fact that the institutional and legal characteristics of the four countries are similar.

Karadeniz et al. (2009) examine the factors affecting the capital structure decisions of lodging companies in Istanbul Stock Exchange (ISE). By using a dynamic panel data approach for five ISE companies for the period of 1994-2006, they discovered that effective tax rates, tangibility of assets, and return on assets are negatively related with the debt ratio, while free cash flow, non-debt tax shields, growth opportunities, net commercial credit position, and firm size do not affect the debt ratio.

Chakraborty (2010) analyzes the determinants of the capital structure of Indian firms using a panel of 1169 non-financial firms listed in either the Bombay Stock Exchange or the National Stock Exchange over the period 1995–2008. In this study that profitability, size, and growth opportunities demonstrate a positive impact on leverage whereas tangibility and non-debt tax shield have a negative impact.

By using a sample of 299 Irish SMEs, Mac an Bhaird and Lucey (2010) study the determinants of capital structure for all firms and for different industries. They find that age, size, level of intangible activity, ownership structure and the provision of collateral are important determinants of the capital structure for SMEs. The impact of those variables is similar across industry sectors, indicating the universal effect of

information asymmetries. More specifically, only owner's collateral and internal collateral are found to have a positive impact on total debt and short-term debt. Results indicate that use of long-term debt financing is positively related with the size of the firm, and negatively related with firm age. The positive relationship between use of retained profits and the age and size of the firm indicates that surviving firms are increasingly reliant on internal equity as accumulated profits are reinvested.

Okuyan and Tasci (2010) focus on the financing choices of the largest 500 and following largest 500 industrial firms determined by Istanbul Chamber of Industry. The data set covered the period of 1993-2007. Size and profitability have negative impact of leverage. They also introduce the use the logarithm of export value of firms in the model to test whether firms' exporting performance affect the financing choice. A positive relation is found between leverage and exporting performance. The foreign share variable does not have any statistically significant impact on leverage.

Shamshur (2010) analyzes the determinants of capital structure for financially constrained and unconstrained firms for a panel of Central and Eastern European countries for 1996-2006. Tangibility and size have a positive impact on leverage for financially constrained firms whereas a negative relation is found between leverage and profitability and age. The macro economic variables don't have statistically significant impact of leverage for those firms. For unconstrained firms, macro economic variables play an important role in financing decision. There is a positive relation between GDP growth and leverage. In addition, expected inflation is negatively related with leverage. For firm level variables, similar findings are achieved except for tangibility. Tangibility does not affect the capital structure choice of unconstrained firms.

Deari and Deari (2010) using the data of 89 listed companies from in Zagreb Stock Exchange for the period of 2002-2006 show that tangibility, profitability, size, and growth have statistically significant and positive impact on debt whereas non-debt tax shield doesn't have any impact on capital structure decisions.

Qiu and La (2010) use an unbalanced panel of 367 firms in Australia from 1992 to 2006. They find that debt–asset ratio is positively related to asset tangibility but inversely related to growth and business risk. However, size does not affect the capital structure choice of firms. Those findings are consistent with the pecking order and the agency cost theories but contradict the trade-off theory.

By focusing on tax-exempt organizations, Smith (2010) finds that debt use is positively related to asset tangibility, growth, and size, and negatively related to age, liquidity, and profitability. Those findings are in line with the empirical predictions of the tradeoff, pecking order, and agency costs theories of capital structure.

Triandafil and Poanta (2011) show that size and tangibility are positive related with leverage for Czech companies and profitability is negatively related with leverage. For firms in Poland, there is a positive relation between leverage and size. For firms in Slovakia, size is negatively associated with leverage and profitability is positive associated with leverage. For firms in Romania, size, tangibility, profitability have positive effect on leverage.

Sheikh and Wang (2011) using a sample of 160 firms listed on the Karachi Stock Exchange during 2003-2007 find that liquidity, profitability, earnings volatility, and tangibility are negatively related to the debt ratio, whereas firm size is positively related to the debt ratio. Non-debt tax shields and growth opportunities do not have a statistically significant impact on debt.

Noulasa and Genimakisa (2011) investigate the determinants of capital structure for listed firms in the Athens Stock Exchange over a 9-year period from 1998 to 2006. They document that there are significant positive correlations among firm's leverage and sales, growth rate, tangibility of assets, depreciation, profit volatility and credit rating. However, profitability and firm's age are significantly inversely related with leverage.

Abu Mouamer (2011) explores the determinants of capital structure over a five-year period (2000-2004) for 28 listed companies in Palestine. Profitability, earnings volatility, tangibility, and liquidity are negatively correlated with the debt ratio. Firm size is positively correlated with the debt ratio. However, no significant relationship is found between the debt ratio and growth opportunities.

For Chinese SMEs, Newman et al. (2012) find that size is positively related with leverage whereas profitability and asset structure are negatively related with leverage. Social capital is positively associated with short-term leverage, but negatively associated with long-term leverage. This is in line with the finding of Chen (2004) as capital structure theories ignore the role played by social capital.

Mateev et al. (2012) explore how firm characteristics affect SMEs' capital structure for micro, small, and medium-sized firms (SMEs) in Central and Eastern Europe (CEE). The data includes a panel data analysis of 3,175 SMEs from seven CEE countries during the period 2001–2005. They find that there is a negative and significant correlation between profitability and leverage (both for short-term and long-term). Also, a positive relation is found for size and leverage (both for short-term and long-term). The relationship between short-term leverage and cash flow ratio is found to be statistically significant. Firms that can generate sufficient internal funds will use less (short-term) debt to finance their investment activities and growth. However, internal funds have no significant effect on a firm's decision to use long-term debt. Long-term leverage is positively correlated with tangibility whereas short-term debt is negatively related with tangibility.

Tamulyte (2012) explores macro-economic and firm-level determinants of capital structure in Estonia, Latvia, Lithuania and Russia. In terms of firm-level variables, tangibility has a positive impact on long-term leverage. There is a negative relation between liquidity and total leverage for the firms in Estonia and Lithuania. Age is negatively related with total leverage for firms in Latvia and Lithuania.

Joeveer (2012) investigates the significance of firm-specific, institutional, and macroeconomic factors in explaining the capital structure choices of firms in nine Eastern European countries namely Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and Slovakia for the period of 1995-2002. The results show that tangibility proxied by fixed assets to total assets ratio and profitability proxied by before-tax profit to total assets ratio have negative impact on leverage for listed firms as well for unlisted firms. Size measured by logarithm of total assets has a positive impact on leverage for listed firms whereas a negative relation is found for unlisted firms.

3. DYNAMICS OF SELECTED EASTERN EUROPEAN ECONOMIES AND FINANCIAL PROFILE OF LISTED FIRMS

In the context of this study, we will investigate the determinants of capital structure for the listed firms in Slovenia, Poland, Hungary, Lithuania, Czech Republic, and Turkey. This section will provide a summary of the economy of those countries and represent the debt ratios of listed firms in those countries for 1996-2010. Firm level data is collected from the WRDS - Wharton Research Data Services Compustat Global Industrials and Commercials database. Macro economic variables are collected from the World Development Indicators & Global Development Finance database of World Bank and UNCTAD.

3.1. Slovenia

3.1.1. Economy of Slovenia

Slovenia was the first among 2004 European Union member countries to adopt the "Euro" in 1 January 2007. Slovenia is a leading country in its region in terms of its economic success and stability in the region. Slovenia has one of the highest GDP per capita in the region. The country managed to sustain positive real GDP growth over 1996-2008 however due to the global financial crisis, Slovenia experienced a decrease of -8% in GDP. In 2010, the country again experienced positive growth of 1.38%. The private sector accounts for less than two-thirds of GDP, a relatively low share, and the state is still active and controls the economy, either directly or indirectly. The public sector plays a major role in industries such as telecom, steel, banking and insurance. The details for some macro-economic variables are presented in Table 3.1.

In common with other transition economies, Slovenia has shifted from manufacturing towards the service sector. With a 65% employment rate, and a

comparatively low unemployment rate of just over 6%, Slovenes have not suffered from industrial restructuring in the way that their counterparts in other transition economies have. However, progress in privatization has been considerably slower than in most other new Member States. Structural reforms which aim to improve the business environment have allowed for greater foreign participation in Slovenia's economy and have helped to decrease unemployment.

In March 2004, Slovenia became the first transition country to move from borrower status to donor partner at World Bank. In December 2007, Slovenia was invited to begin the accession process for joining the OECD. Despite its economic success, foreign direct investment (FDI) in Slovenia remained behind the region average, and taxes are still relatively high. Furthermore, the labor market is still regarded as inflexible. The world recession caused exports and industrial production to decrease by more than 7% and unemployment to rise above 9% (CIA, The World Factbook - Slovenia, 2011).

After the crisis, the economy of the country is recovering. The country managed to cope with the high lending interest rates and lending interest rates decreased from 22.6% (in 1996) to 5.9% by 2007. In 2008 and 2009, Slovenia managed to sustain this lending interest rate. Market capitalization of listed companies to GDP ratio had raised more than 20 times from 1996 to 2007 and financial crisis caused a decrease around 65%. After the 2008 financial crisis in 2009 and 2010, market capitalization to GDP ratio is still far behind its 2007 level. During the period 1996-2010 the banks provided more debt. Since the beginning of 2000s, domestic credit provided by banking sector (% of GDP) has been increasing. In 2010, this ratio reached 97%.

Table 3.1. Macro economic variables for Slovenia

	Inward FDI flow (% of GDP)	GDP growth (%)	Inflation, consumer prices (annual %)	Lending interest rate (%)	Market capitalization of listed companies (% of GDP)	Domestic credit provided by banking sector (% of GDP)
1996	0.82	3.648	9.792	22.599	3.135	32.054
1997	1.63	4.957	8.362	20.024	7.958	31.881
1998	1.00	3.515	7.913	16.085	11.266	36.015
1999	0.47	5.326	6.149	12.376	9.772	38.960
2000	0.69	4.266	8.879	15.768	12.750	42.744
2001	1.80	2.940	8.422	15.050	13.851	45.447
2002	7.01	3.827	7.470	13.171	19.909	43.636
2003	1.05	2.930	5.579	10.750	24.472	47.480
2004	2.44	4.402	3.589	8.650	28.598	56.091
2005	1.65	4.007	2.477	7.800	22.115	65.415
2006	1.65	5.850	2.463	7.408	38.982	73.115
2007	3.20	6.870	3.611	5.913	61.225	81.812
2008	3.57	3.589	5.652	6.658	21.557	87.093
2009	-1.19	-8.008	0.856	5.949	23.985	93.363
2010	1.78	1.380	1.841	-	20.099	97.394

Source: World Development Indicators & Global Development Finance database of World Bank and UNCTAD.

3.1.2. Leverage ratios in Slovenia

Figure 3.1 represents the leverage ratios of Slovenian firms for the period 1996-2010. All three leverage ratios experienced an increase during the period. CLTA was 0.20 in 1997 however, it increased to 0.27 in 2002 and 0.35 in 2008. After 2008, the CLTA ratio remained stable and did not change significantly. During the same period, LTDTA reached to 0.19 in 2009 and 0.21 in 2010 which was observed as 0.05 in 1999 and 0.10 in 2004. This shows that firms in Slovenia started to use more long-term debt over time. Total liabilities to total assets ratio increased in the same period and reached to 0.58 in 2010 which means more than half of the assets are financed by liabilities. This ratio was only 28% and 32% in 1996 and 1997, respectively. The figure shows an increasing trend in TLTA and we can conclude that the firms have started using more debt since 1996.

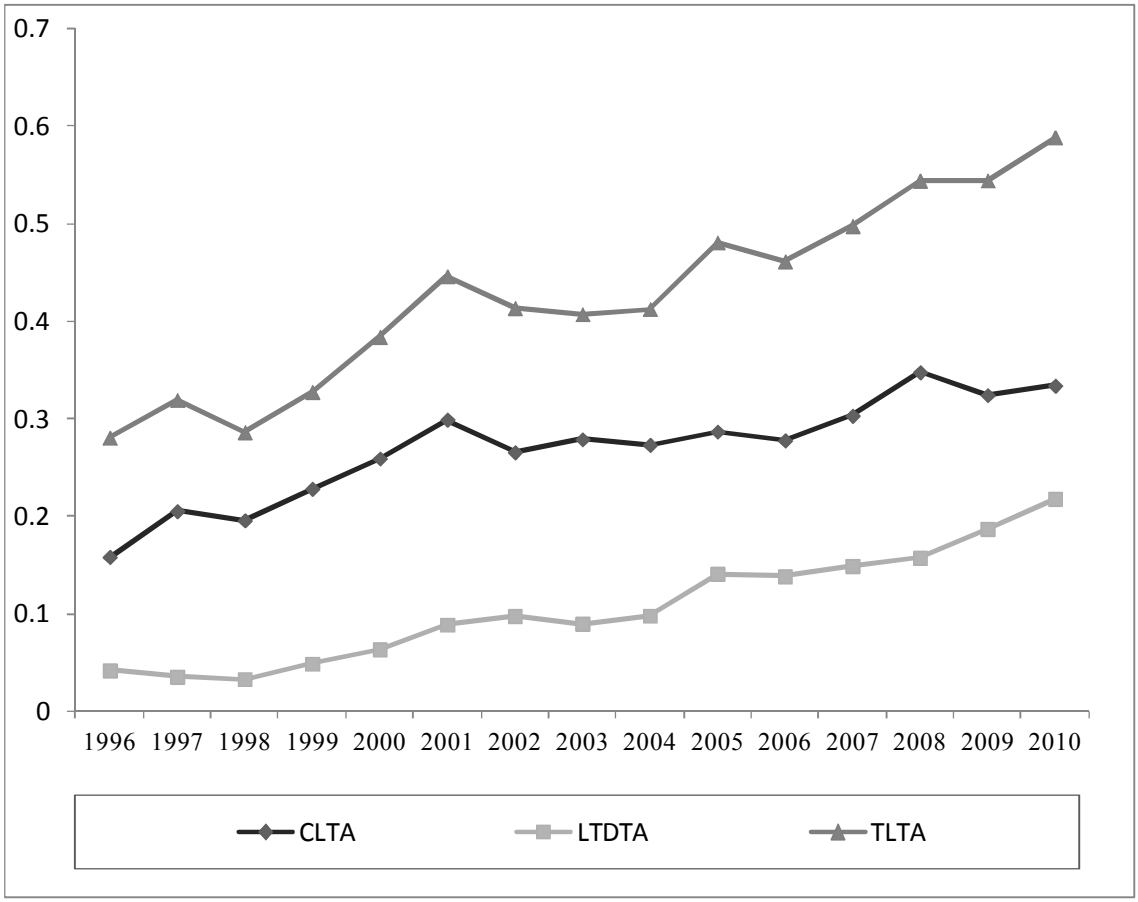

Figure 3.1. Leverage Ratios in Slovenia (1996-2010)

3.2. Poland

3.2.1. Economy of Poland

Poland was accepted to EU in May 2004 five years after joining NATO and fifteen years after the end of communism. Since 1990, Poland has maintained a policy of economic liberalization. After EU membership, the country has managed to create a market economy and attract foreign investments. Poland has been one of the most successful countries among transition economies. Despite the recent global recession, the Polish Economy continued to grow in 2009 due to several factors including

monetary easing, exchange rate depreciation, relatively limited dependence on international trade, a sound banking industry, unleveraged private sector, tax cuts and other fiscal measures, and infrastructure investments for EU transfers as well as the 2012 football championship. The country had the OECD's best growth performance in 2009 (OECD, 2009) and the country is projected to remain one of the EU's fastest-growing economies. Since 1996, the country has managed to keep a positive GDP growth. The GDP reached to 737.5 billion dollars and GDP per capita is 19,400 dollars in 2010 (World Bank). The summary statistics for macro-economic variables are given in Table 3.2

The unemployment rate has increased in recent years (still below the EU average) at a significantly slower pace than in the early 2000s. From 2000-2005 Poland suffered from unemployment which was around 19%. However, the country managed to reduce the unemployment rate to 7.1% in 2008 (OECD, 2009). After the financial crisis of 2008, the unemployment rate again increased to 12%. In 2008, inflation reached 4.3% which is higher than the expectations of the National Bank of Poland however in 2009 and 2010 inflation rate started to decrease.

The value of exports and imports were 162.3 billion dollars and 173.7 billion dollar in 2010, respectively (Poland Central Statistical Office). Poland's main export destinations are Germany, France, and Italy whereas the import sources are Germany, Russia, and China (Australian Government, Department of Foreign Affairs and Trade).

Table 3.2. Macro economic variables for Poland

Year	Inward FDI flow (% of GDP)	GDP growth (%)	Inflation, consumer prices (annual %)	Lending interest rate (%)	Market capitalization of listed companies (% of GDP)	Domestic credit provided by banking sector (% of GDP)
1996	2.87	6.239	19.817	26.075	5.355	31.500
1997	3.12	7.086	15.082	25.205	7.722	32.446
1998	3.70	4.982	11.725	24.479	11.834	33.709
1999	4.33	4.524	7.275	16.937	17.626	36.350
2000	5.51	4.260	10.060	20.005	18.263	34.435
2001	2.99	1.205	5.491	18.360	13.663	36.958
2002	2.08	1.443	1.900	12.032	14.507	37.157
2003	2.12	3.867	0.788	7.304	17.142	38.415
2004	5.09	5.345	3.577	7.565	28.129	37.597
2005	3.39	3.617	2.107	6.831	30.888	37.424
2006	5.74	6.227	1.115	5.484	43.625	42.036
2007	5.54	6.785	2.388	-	48.745	46.275
2008	2.80	5.127	4.349	-	17.044	59.729
2009	3.18	1.606	3.826	-	31.419	61.466
2010	2.06	3.944	2.707	-	40.524	63.578

Source: World Development Indicators & Global Development Finance database of World Bank and UNCTAD.

The main institutions of the Polish capital market are the Warsaw Stock Exchange (WSE) which organizes trading in financial instruments and the National Depository for Securities (NDS) which uses National Bank of Poland (NBP) as its clearing bank. The Warsaw Stock Exchange has made great progress in the recent years. The number of listed companies has risen from 83 in 1996 to 385 in 2010. The domestic market capitalization value has risen to 484.5 billion Polish Zlotych up from 130 billion Polish Zlotych in 2000. However, due to the financial crisis in 2008, market capitalization decreased and in the last two years there has been a recovery period and the market capitalization value almost reached to level in 2008 (The Warsaw Stock Exchange). Also the banking sector has developed well in Poland. Domestic credit

provided by banking sector (% of GDP) moved from 31% to 63% in a time period from 1996 to 2010.

3.2.2. Leverage ratios in Poland

Figure 3.2 represents the leverage ratios of listed firms in Poland over 1996-2010. The LTDTA ratio was steady and did not show high fluctuations in the period of 1996-2010. There is only a slight increase in long-term debt to total assets ratio. The LTDTA ratio was around 0.06 in 1999 and 0.08 in 2004. In 2008 and 2009, it was 0.082. There, the long-term debt use of firms in Poland did not change over time. However, CLTA and TLTA ratios increased until 2002 and then experienced a decline. Mean the CLTA ratio was 0.26 in 1996 and 0.33 in 2002, after that it started to decline and reached 0.26 in 2010. The figure shows that the firms financing choice mostly depends on current liabilities and relies less on long term debt. The TLTA ratio experienced an increase from 0.31 in 1996 to 0.48 in 2002 after that TLTA decreased and reached to 0.41 in 2010. Firms tended to use more debt during the time period.

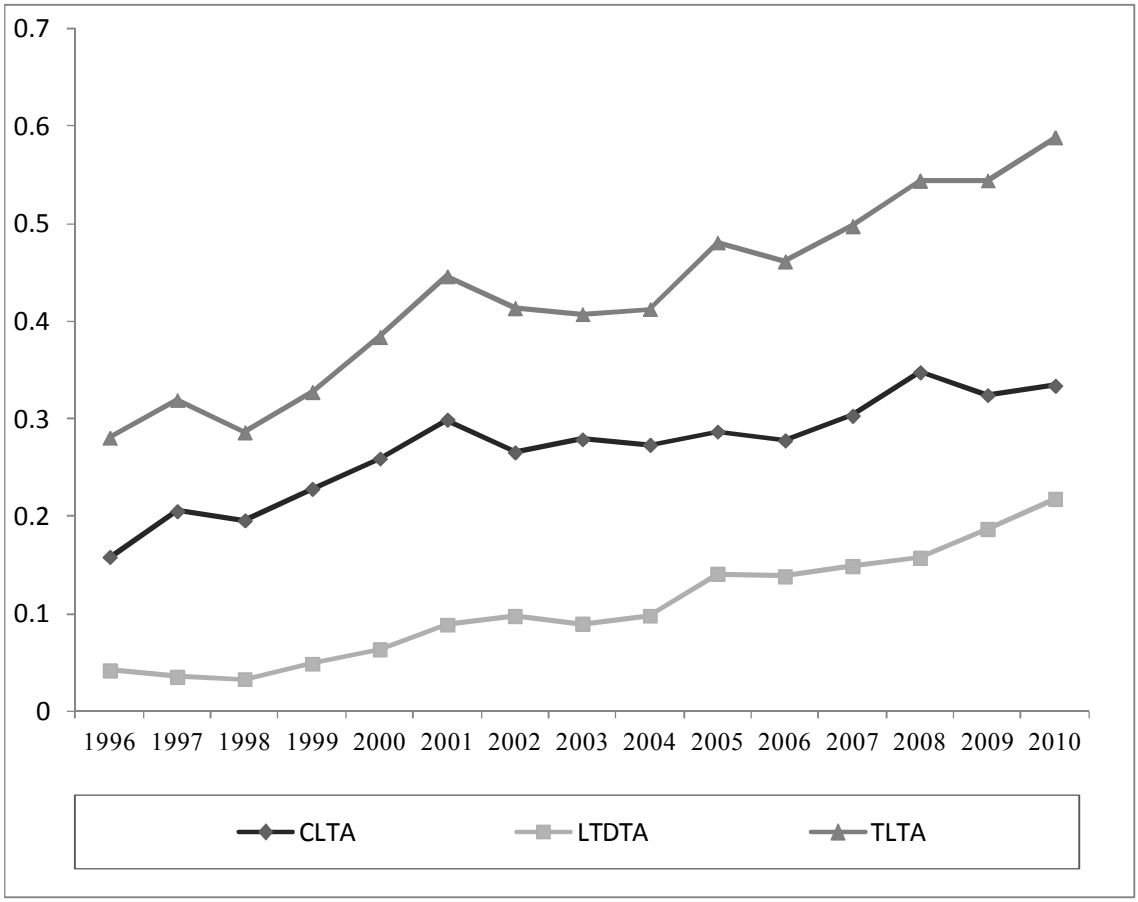

Figure 3.2. Leverage Ratios in Poland (1996-2010)

3. 3. Hungary

3.3.1. Economy of Hungary

Hungary has made the transition from a centrally planned to a market economy like other new members states of EU from Eastern Europe. The private sector accounts for more than 80% of GDP. Foreign ownership and investment in Hungarian firms is widespread, with cumulative foreign direct investment worth more than $70 billion (CIA, The World Factbook – Hungary, 2011). FDI inflows played an important role in the economy. Table 3.3 gives the summary of macro-economic variables.

The global economic downturn, declining exports, low domestic consumption and fixed asset accumulation, dampened by government austerity measures, resulted in an economic decline of 6.8% in 2009. However, in 2010, the new government implemented a variety of policies and managed to achieve positive growth. Unemployment remained high, at more than 10% in 2010 (CIA, The World Factbook – Hungary, 2011). The market capitalization of listed firms to GDP ratio decreased sharply in 2008 as a result the financial crisis. However, in 2009 and in 2010, this ratio started to increase. The domestic credit to GDP ratio was 49% in 2001 but rose to 81% in 2009 and 2010.

Since 1996, Hungary had a positive GDP growth. In 2007 and 2008, there was a slowdown in the GDP growth rate. However, in 2009 the financial crisis of 2008 resulted in negative GDP growth rate of 6.8%. In 2010, Hungary experienced a positive GDP growth of 1.3%.

The lending interest rate in Hungary decreased gradually from 1996 to 2003. In 2004, it rose to 12.8%. After that, it declined again however, during the financial crisis period it increased to 11% in 2009. In 2010, it decreased to 7.6%.

Table 3.3. Macro economic variables for Hungary

Year	Inward FDI flow (% of GDP)	GDP growth (%)	Inflation, consumer prices (annual %)	Lending interest rate (%)	Market capitalization of listed companies (% of GDP)	Domestic credit provided by banking sector (% of GDP)
1996	7.18	0.161	23.428	27.308	11.480	71.275
1997	8.96	3.127	18.314	21.767	32.181	64.492
1998	6.95	4.073	14.175	19.275	29.254	62.021
1999	6.86	3.198	10.031	16.342	33.815	52.945
2000	5.96	4.225	9.783	12.600	25.915	55.329
2001	7.47	3.712	9.149	12.117	19.664	49.601
2002	4.51	4.506	5.528	10.169	19.746	53.116
2003	2.56	3.850	4.389	9.603	20.026	57.486
2004	4.19	4.797	6.780	12.825	28.169	58.078
2005	6.99	3.964	3.550	8.541	29.528	62.267
2006	6.06	3.897	3.879	8.079	37.264	68.381
2007	2.90	0.115	7.935	9.086	35.011	75.651
2008	4.79	0.894	6.066	10.182	12.046	80.930
2009	1.62	-6.799	4.209	11.037	22.339	81.350
2010	1.85	1.258	4.880	7.587	21.541	81.712

Source: World Development Indicators & Global Development Finance database of World Bank and UNCTAD.

3.3.2. Leverage ratios in Hungary

Figure 3.3 presents the average leverage ratios for firms in Hungary. As seen, the long-term debt to total assets ratio was stable for the period from 1996-2010. However, CLTA and TLTA ratios experienced an increasing trend. The LTDTA was around 0.1 on average. The LTDTA ratio was 11% in 2010. The mean total leverage to total asset ratio moved in between the range of 0.3 to 0.4. TLTA ratio was 0.32 in 1996 and it reached to 0.44 in 2010. CLTA ratio moved around 0.25 during the whole period which indicates that those firms relied more on short-term liabilities.

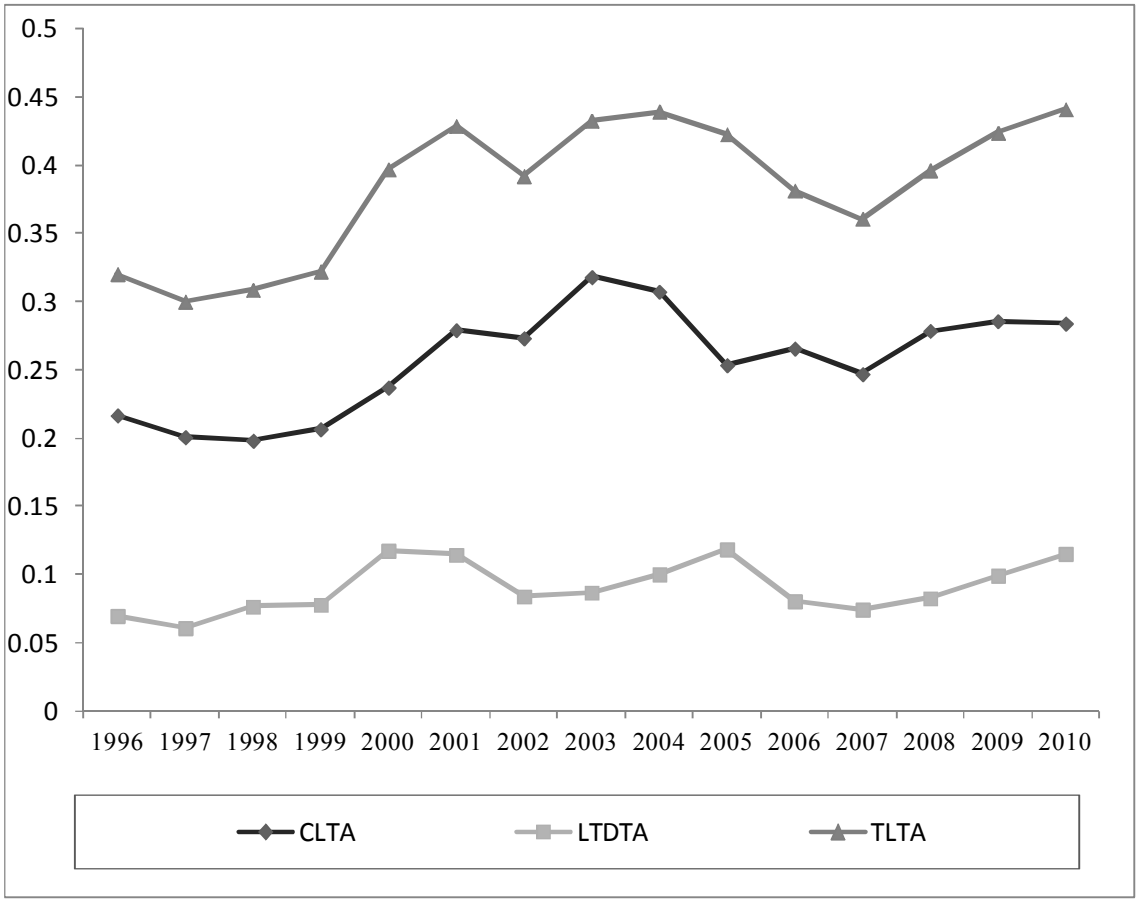

Figure 3.3. Leverage Ratios in Hungary (1996-2010)

3.4. Lithuania

3.4.1. Economy of Lithuania

Lithuania joined the EU in May 2004. Despite Lithuania's EU accession, Lithuania's trade is mostly with its Central and Eastern European neighbors and Russia. Privatization of the large, state-owned utilities is almost complete. Foreign government and business support have helped in the transition from the old command economy to a market economy. Lithuania's economy grew on average around 8% per year for the four years prior to 2008 which is driven by domestic demand and exports. However, GDP

growth decreased from 9.8% to 2.93% from 2007 to 2008 and the country experienced a decline of 15% in GDP in 2009. In 2010, Lithuania achieved positive growth. This growth has been driven by external demand. The main export partners – in particular Germany, the other Baltic states and Russia – have been growing strongly which has a positive impact on economy of Lithuania. Real GDP grow is expected to increase in 2011 due to strong export dynamics and domestic consumption. Inflation fell significantly to around 1.3% in 2010 from 4.4% in 2009. The unemployment rate peaked in 2010 to around 18% and youth unemployment is particularly high.

A sharp decline was observed in market capitalization of listed companies to GDP ratio. These declines occurred due to the 2008 crisis. In 2009, the government launched a high-profile campaign to attract foreign investment and to develop export markets. Currently, the economy of Lithuania is in a recovery period. But, economic growth was flat and unemployment continued upward to 17.9% in 2010 (CIA, The World Factbook – Lithuania, 2011). The summary of some macro-economic variables are given in Table 3.4. Domestics credits provided by baking sector to GDP ratio gradually increased from 15% in 2000 to 70% in 2009. In the same period, the lending interest rate was relatively stable. A slight increase was observed in 2008 and 2009.

Table 3.4. Macro economic variables for Lithuania

Year	Inward FDI flow (% of GDP)	GDP growth (%)	Inflation, consumer prices (annual %)	Lending interest rate (%)	Market capitalization of listed companies (% of GDP)	Domestic credit provided by banking sector (% of GDP)
1996	1.81	5.183	24.618	21.560	10.680	11.098
1997	3.50	7.469	8.878	14.393	16.715	12.622
1998	8.22	7.629	5.075	12.206	9.543	13.348
1999	4.43	-1.073	0.754	13.085	10.376	16.166
2000	3.29	3.251	0.993	12.141	13.885	15.164
2001	3.65	6.736	1.357	9.631	9.864	15.583
2002	5.09	6.864	0.283	6.843	10.326	17.803
2003	0.96	10.247	-1.129	5.843	18.863	23.181
2004	3.41	7.351	1.142	5.743	28.658	30.508
2005	3.94	7.802	2.661	5.272	31.518	43.086
2006	6.01	7.845	3.751	5.113	33.869	48.943
2007	5.12	9.840	5.744	6.863	25.916	59.912
2008	4.30	2.927	10.932	8.409	7.671	64.202
2009	0.47	-14.742	4.451	8.393	12.149	69.999
2010	1.73	1.330	1.318	-	15.592	64.586

Source: World Development Indicators & Global Development Finance database of World Bank and UNCTAD.

3.4.2. Leverage ratios in Lithuania

Figure 3.4 presents the average leverage ratios for firms in Lithuania. As seen, the leverage ratios are volatile in the period of 1996-2010. The TLTA ratio moved in the range of 0.36 to 0.55. In 2003, the TLTA ratio was 0.42 and it reached to 0.47 in 2010 which means that almost half of the assets were finance by debt. The LTDTA ratio was 0.16 in 2001 however, it declined to 0.12 in 2008 and to 0.09 in 2009. The CLTA ratio was relatively stable. It was 0.22 in 2000 and reached to 0.29 in 2010. The listed firms in Lithuania mostly used short-term debt.

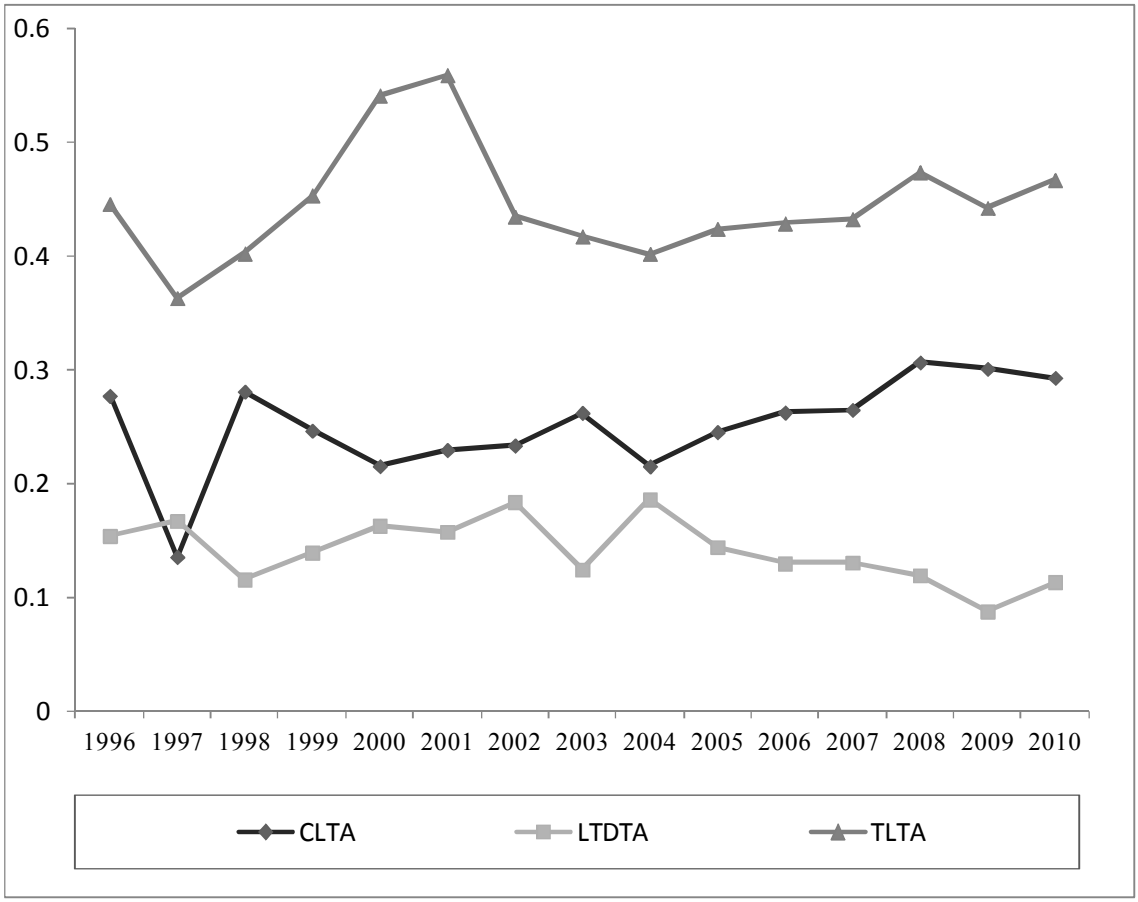

Figure 3.4. Leverage Ratios in Lithuania (1996-2010)

3.5. Czech Republic

3.5.1. Economy of Czech Republic

The Czech Republic is one of the most stable states in Central and Eastern Europe. The laws and regulations were harmonized with those of the EU prior to its EU accession in 2004. The conservative, inward looking Czech financial system has remained relative healthy however the small, open, export-driven Czech economy remains very sensitive to changes in the economic performance of its main export markets, especially Germany. For example, when Western Europe and Germany (which

is the destination of around 30% of Czech exports) fell into recession in late 2008 as most part of the world did, demand for Czech goods decreased sharply which caused dramatic decreases in industrial production and exports (CIA, The World Factbook – Czech Republic, 2011). As a result, real GDP fell by 4.1% in 2009. Currently, the Czech Republic is now in recovery mode. The country experienced positive growth in 2010. GDP in the Czech Republic almost reached its level in the first quarter of 2008 (Rabobank, 2010, p.2). Consequences of lower economic activity are seen in the labor market. The unemployment rate was 4.4% in 2008 and rose to 6.7 % and 7.6% in 2009 and 2010.

The summary of macroeconomic variables is presented in Table 3.5. The impact of the recent financial crisis can be easily observed from market capitalization of listed companies to GDP ratio which decreased by %50 from 2007 to 2008. This ratio had a small increase in 2009. Banks credit provided by banks to GDP ratio increased from 42% in 2002 to 65% in 2010. Inflation rate reached its peak level in 2008 since from 1998. The inflation rate was 6.35% in 2008 and it decreased to 1.04% and 1.41% in 2009 and 2010. The country experienced the negative effects of 2008 financial crisis in many macro-economic variables. However, the lending interest rate in Czech Republic remained stable since 2000s, even in the period of financial crisis only a very slight increase was observed.

Table 3.5. Macro economic variables for Czech Republic

Year	Inward FDI flow (% of GDP)	GDP growth (%)	Inflation, consumer prices (annual %)	Lending interest rate (%)	Market capitalization of listed companies (% of GDP)	Domestic credit provided by banking sector (% of GDP)
1996	2.20	4.027	8.800	12.544	29.151	67.245
1997	2.19	-0.731	8.548	13.204	22.379	67.045
1998	5.82	-0.759	10.627	12.807	19.476	59.106
1999	10.18	1.340	2.143	8.684	19.598	54.609
2000	8.48	3.648	3.903	7.162	19.397	49.399
2001	8.76	2.456	4.706	7.196	15.089	45.692
2002	10.82	1.897	1.785	6.724	21.113	42.255
2003	2.21	3.602	0.108	5.949	19.333	48.595
2004	4.36	4.485	2.827	6.028	28.179	44.703
2005	8.96	6.316	1.846	5.777	30.787	43.496
2006	3.68	6.808	2.528	5.594	34.082	48.545
2007	5.79	6.131	2.927	5.788	42.143	53.124
2008	2.86	2.464	6.351	6.252	22.607	57.985
2009	1.49	-4.149	1.045	5.990	27.701	62.442
2010	3.43	2.346	1.409	5.888	22.421	64.714

Source: World Development Indicators & Global Development Finance database of World Bank and UNCTAD.

3.5.2. Leverage ratios in Czech Republic

Figure 3.5 represents the leverage ratios of firms in Czech Republic for the period 1996-2010. Leverage ratios did not change significantly during this period. TLTA did not fluctuate and moved in the range of 0.40 to 0.45. The TLTA ratio was 0.43, 0.44, and 0.41 in 1996, 2002, and 2010, respectively. The LTDTA ratio was around 0.08 which indicates that the listed firms in Czech Republic mostly use short term debt instead of long-term debt. Considering current liabilities, the CLTA ratio was stable and on average it was around 0.3.

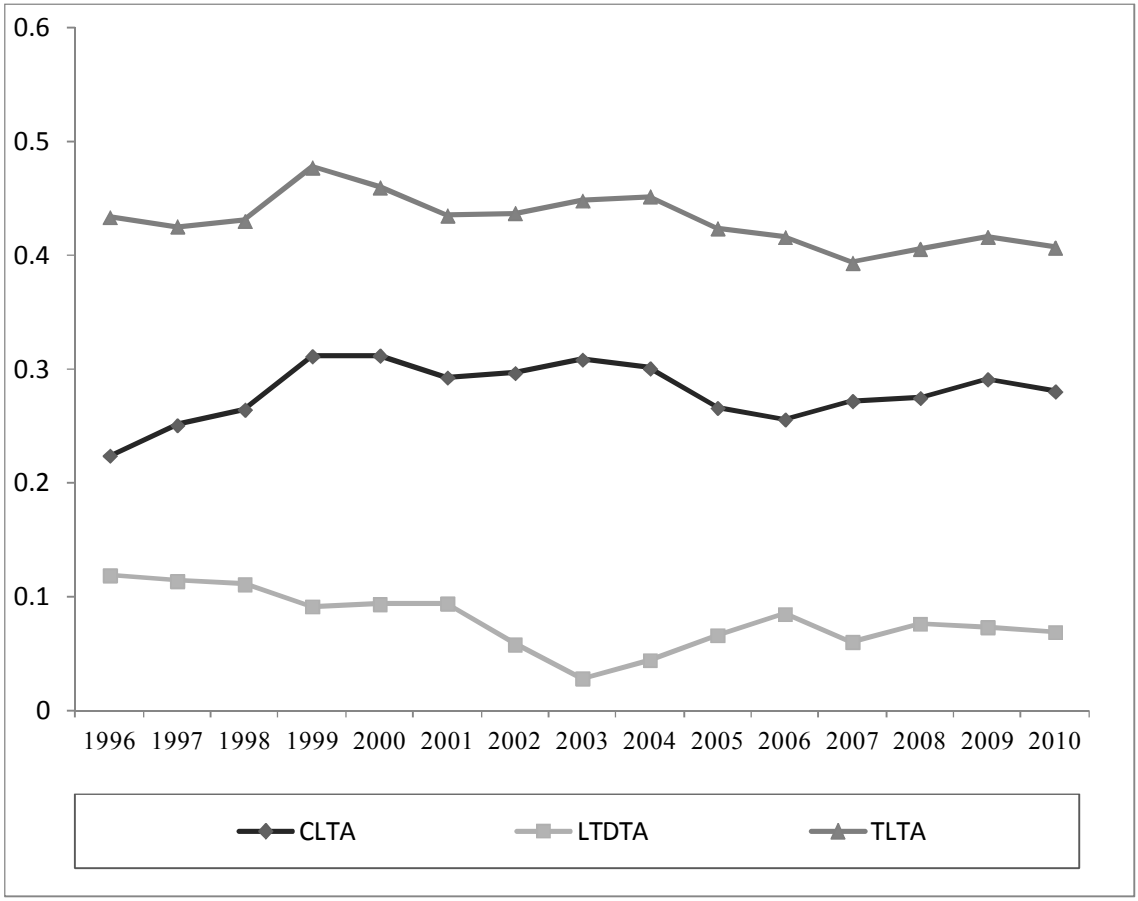

Figure 3.5. Leverage Ratios in Czech Republic (1996-2010)

3.6. Turkey

3.6.1. Economy of Turkey

Turkey has a largely free-market economy which is driven by its industry and service sectors. After stabilizing in 2001, the Turkish economy has been one of the fastest growing economies. The aggressive privatization program has reduced state involvement in basic industry, banking, transport, and communication (CIA, The World

Factbook – Turkey, 2011). The summary of macroeconomic variables is presented in Table 3.6. Turkey has gone through three crises since it opened its capital account in 1989. The first was in 1994, when a misguided attempt to keep domestic interest rates low led to a sudden capital outflow. The second was in 2001 when a minor political crisis damaged the sustainability of an exchange-rate based stabilization program and led to a massive withdrawal of funds. The third was in 2008 after the U.S. sub-prime mortgage crisis however the impact was not as severe as the 1994 and 2001 crises (Rodrik, 2009, pp.4-5). After 2001 crisis, Turkey managed to fix the traditional sources of fragility with financial and fiscal reforms. Monetary policy is governed by an inflation targeting framework and an independent central bank. Fiscal policy has been generally restrained and the public debt-to- GDP ratio stable or declining. Banks have strong balance sheets, and regulation and supervision are much tighter than before. From 2001 to 2008, Turkey managed to grow 6% on average, however negative growth was observed in 2009. Then Turkey recovered and achieved a growth of 9% in 2010. The inflation rate decreased from three digit numbers to 6% in 2007 11% in 2008.

The stock value of FDI was $99 billion at year-end 2011. Inflows have slowed considerably due to the continuing economic turmoil in Europe, the source of much of Turkey's FDI. Further economic and judicial reforms and prospective EU membership are expected to boost Turkey's attractiveness to foreign investors in the near future (CIA, The World Factbook – Turkey, 2011).

Although Turkey’s economy is growing and achieving stability, two main problems are still unsolved: unemployment and current account deficit. Unemployment was 6.6% in 1996 and reached 8.4% in 2001. After that period, it continued increasing and reached 11% in 2008 and 14% in 2009. The foreign trade balance was 20 billion dollars in 1996. However, it rose to 54 billion dollars in 2006 and 105 billion dollars in 2011. Turkey remains dependent on often volatile, short-term investment to finance its large trade deficit. Its main export commodities are apparel, foodstuffs, textiles, metal manufactures, transport equipment and import commodities are machinery, chemicals, semi-finished goods, fuels, transport equipment. The role of automotive, construction, and electronics industries are rising and they have surpassed textiles within Turkey's export mix. Main export partners were EU27, Iraq, Russia, USA, and UAE 46.3%,

5.3%, 4.1%, 3.4%, and 2.9%, respectively in 2010. Major import partners were EU27, Russia, China, and Iran with 39.3%, 11.7%, 9.4%, 6.7%, and 4.2%, respectively in 2010.

Table 3.6. Macro economic variables for Turkey

Year	Inward FDI flow (% of GDP)	GDP growth (%)	Inflation, consumer prices (annual %)	Lending interest rate (%)	Market capitalization of listed companies (% of GDP)	Domestic credit provided by banking sector (% of GDP)
1996	0.30	7.380	80.347	80.7	16.542	34.121
1997	0.32	7.578	85.733	79.5	32.181	34.565
1998	0.35	2.308	84.641	80.1	12.494	27.462
1999	0.31	-3.365	64.867	78.4	45.131	36.757
2000	0.37	6.774	54.915	47.2	26.132	37.907
2001	1.71	-5.697	54.400	74.7	24.055	52.922
2002	0.47	6.164	44.964	50.5	14.603	47.474
2003	0.56	5.265	25.296	37.7	22.567	42.774
2004	0.71	9.363	10.584	24.3	25.066	41.360
2005	2.08	8.402	10.138	20.4	33.446	45.628
2006	3.80	6.893	10.511	21.6	30.589	45.765
2007	3.41	4.669	8.756	22.6	44.282	49.263
2008	2.67	0.659	10.444	22.9	16.147	52.542
2009	1.37	-4.826	6.251	-	36.732	63.017
2010	1.24	9.006	8.566	-	41.759	69.316

Source: World Development Indicators & Global Development Finance database of World Bank and UNCTAD.

3.6.2. Leverage ratios in Turkey

Figure 3.6 represents the leverage ratios of Turkish firms for the period 1996-2010. The TLTA and CLTA ratios moved in a similar fashion and experienced a decline until 2003. After that, they increased until 2010. TLTA ratio was 0.47 in 1996 and declined to 0.34 in 2003, and then it increased to 0.43 in 2010. Total liabilities to total

assets ratio of firms in Turkey decreased sharply from 1996 to 2005. In the recent years, a slight increase has been observed. This is due to the developing stock market in Turkey. Long-term debt to total assets ratio stayed stable. The long-term debt to total assets ratio was around at 0.08. The financing choice of the listed firms in Turkey mostly depends on short-term debt.

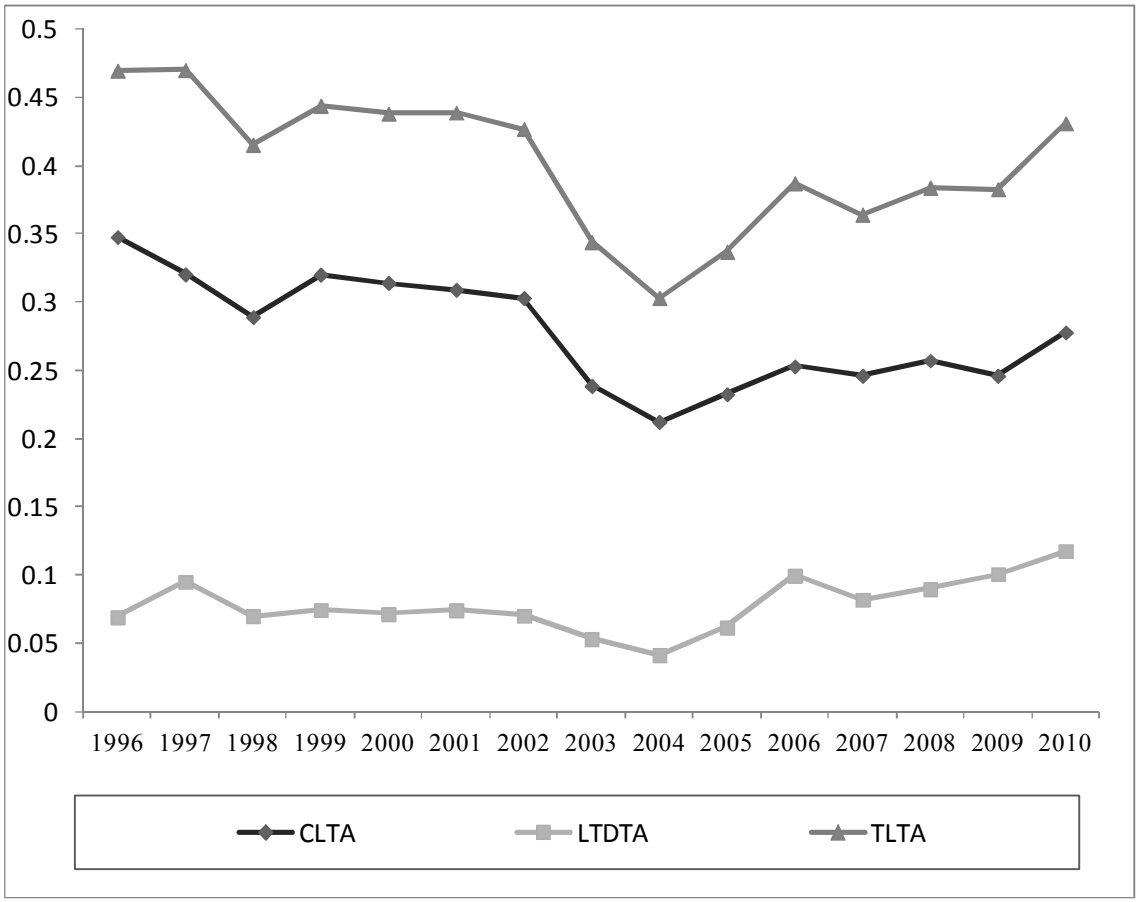

Figure 3.6. Leverage Ratios in Turkey (1996-2010)

4. EMPIRICAL RESEARCH ON THE DETERMINANTS OF CAPITAL STRUCTURE

4.1. Data and Methodology

4.1.1. Data

This thesis investigates the determinants of capital structure in 5 new member states of EU namely Slovenia, Poland, Hungary, Lithuania, and Czech Republic and Turkey for the time period of 1996-2010. We consider 6 firm level variables namely size, asset structure, profitability, non-debt tax shield, growth opportunities, and liquidity. In addition, an EU membership dummy and 2008 financial crisis dummy are introduced.

The study uses firm level data from the balance sheets and income statements of firms in Slovenia, Poland, Hungary, Lithuania, and Czech Republic and Turkey which are collected from the WRDS - Wharton Research Data Services Compustat Global Industrials and Commercials database.[2] Compustat Global provides financial and market data covering publicly traded companies in more than 80 countries. And this database has broad data coverage for new member states of EU. The time period for each country is 1996-2010. The number of firms included in the study varies according to country. If there is any missing observation for any of the variables for a firm in a year, this observation is excluded from the data set and as a result, the final sample set is unbalanced for all countries.

The database allows users access data for active and inactive firms. We include the data for active and inactive firms not to have a survivorship bias. As the structure of

[2] Bulgaria, Estonia, Slovakia, Romania, Latvia, Cyprus, and Malta are not included into the analysis due to lack of enough data in Compustat.

the data for the firms in Financial Services namely banks, insurance companies, broker/dealers, real estate and other financial services differs from non-financial companies, we only use Industrial data which includes companies reporting manufacturing, retail, construction and other commercial operations other than financial services.

4.1.2. Variables

4.1.2.1 Dependent Variables

Three dependent variables are used to measure the capital structure:

- CLTA is the ratio of current liabilities to total assets,
- LTDTA is the ratio of long term debt to total assets,
- TLTA is the ratio of total liabilities to total assets.

According to Compustat Global Industrials and Commercials database, International normalized (industrial) definition of Total Current Liabilities represents debt and other liabilities due within one year. This item includes the current portion of long-term debt. This item is a component of Total Liabilities and it is the sum of:

- Accounts Payable
- Other Current Liabilities
- Debt in Current Liabilities.

Total Liabilities represents the total value of all items reported in the Liabilities section. The contents of Total Liabilities are presented in Table 4.1.

Table 4.1. List of the contents of Total Liabilities

Total Liabilities includes
• Acceptances Outstanding • Accounts Payable/Creditors - Trade • Deposits - Total - Banks • Deposits - Total - Customer • Foreign Exchange Liabilities • Liabilities - Other • Loans From Securities Finance Companies for Margin Transactions • Long-Term Debt - Total • Provisions - Total • Reinsurance Liabilities - Total • Reserves - Total (Insurance) • Reserves - Untaxed • Securities Borrowed and Deposited by Customers • Securities Sold Not Yet Purchased • Separate Account Liabilities • Debt in Current Liabilities - Total
Total Long-Term Debt excludes
• Contingent liabilities reported supplementary to the Balance Sheet • Minority interest, included in Minority Interest (Balance Sheet)

Total Long-Term Debt represents interest-bearing obligations due after the current year. This item is a component of Total Liabilities. Table 4.2 presents the contents of this item.

Table 4.2. List of the contents of Total Long-Term Debt

Total Long-Term Debt includes
• Advances to finance construction • All obligations that require interest payments • Bonds, mortgages, and similar debt • Extractive industries' advances for exploration and development, and production payments and advances for exploration and development • Advances for exploration and development • Production payments and advances for exploration and development • Finance lease obligations • Forestry and paper companies' timber contracts • Indebtedness to affiliates • Industrial revenue bonds • Loans on insurance policies • Long-term lease obligations (capitalized lease obligations) • Notes payable due within one year and to be refunded by long-term debt, when reported as a noncurrent liability • Publishing companies' royalty contracts payable • Purchase obligations and payments to officers
Total Long-Term Debt excludes
• Accounts payable/creditors due after one year • Accrued interest on long-term debt, when a breakout is available • Customers' deposits on bottles, cases, and kegs • Deferred compensation

The book value is used for the calculation of these variables. Data limitations dictate the use of debt book values rather than market values. The data for firm level independent variables are collected from the Compustat Global Industrials and

Commercials database. The following variables are included in the model as firm-level variables.

4.1.2.2. Independent Variables

4.1.2.2.1. Size

Rajan and Zingales (1995) and Titman and Wessels (1988) state that leverage increases with size as larger firms are better diversified and so have less risk for bankruptcy. Lower bankruptcy costs enable them to take on more leverage. Moreover, larger companies have better access to credit markets compared to smaller firms and a diluted ownership structure of the larger firms leads to less control over managerial decisions. Under trade-off theory, size should have a positive impact on the debt. However, on the other hand, size may also be regarded as a proxy for the outsiders' information which can increase their preference for equity relative to debt. Under the pecking order theory, decreased information asymmetry favors equity over debt which indicates a negative relation between size and leverage. So, the effect of size on leverage is not clear. Given the developing CEE stock and corporate bond markets, large and transparent firms are able to get more bank credit, whereas small firms are "forced" to rely on internal financing. The relationship between size and target leverage will then be positive, reinforcing the prediction of trade-off theory (De Haas and Peeters, 2004).

Rajan and Zingales (1995) investigated the determinants of capital structure choice by analyzing the financing decisions of public firms in the major industrialized countries. They found a mixed effect. For book value of debt, there is a positive relation for firms in USA, Japan, UK, and Canada whereas a negative relation is found for firms in Germany. For firms in France and Italy, there is no significant relation. Ozkan (2001)

finds little evidence that firm size (as proxied by the natural logarithm of sales) has a positive effect on their leverage ratios. Bevan and Danbolt (2004) for 1,054 UK companies from 1991 to 1997 show that size is positively correlated with total debt and all long-term debt elements under pooled OLS estimation. In addition, size is positively correlated with total current liabilities. Van der Wijst and Thurik (1993) find both short and long-term gearing to be positively related to company size, although the regression coefficients are much smaller under fixed effects than OLS estimation, and no longer statistically significant. Giannetti (2003) use two measures for size: the total assets and the number of employees. The sample includes firms from eight countries namely Belgium, France, Ireland, Italy, the Netherlands, Portugal, Spain and the U.K. Only in France and the U.K. leverage is positively related to size, both when measured by the number of employees and or by the total assets. The coefficient of size is negative or not significant in all the other countries. Michaelas et al. (1998), Gaud et al. (2005), Antoniou et al. (2002), Voulgaris et al. (2004), and Agca et al. (2007) find positive relation between leverage and size.

We proxy size (SIZE) as the natural logarithm of total assets.

4.1.2.2.2. Profitability

Capital structure theories present different predictions on the effects of profitability on leverage. According to trade-off theory, more profitable companies should have higher leverage. Moreover, external shareholders may force management to increase leverage to reduce the free cash flow from which managers may appropriate perquisites (De Haas and Peeters, 2004). The agency cost of financial structure theory argues that debt will be used to discipline managers and to induce them to pay out cash instead of spending money on inefficient projects or personal empire and so leverage will increase as profitability increases. However, if there exist large information asymmetries between firms and banks, banks can face problems with distinguishing

good from bad firms and so may then increase their interest rates (De Haas and Peeters, 2004). Profitable firms with internal sources of finance will choose to use first internal funds and demand less credit, since the external finance premium is relatively high. The pecking-order theory suggests that firms prefer internal financing to external and indicates a negative relationship.

Myers and Majluf (1984) show that more profitable firms will have lower leverage. However, most of the empirical studies find a negative relationship between leverage and profitability. Giannetti (2003) found that profitability is negatively correlated with leverage for firms in Belgium, France, Ireland, Italy, the Netherlands, Portugal, Spain and the U.K. Voulgaris et al. (2004) shows that despite a negative sign in all regressions, asset profitability (measured as net profit before tax over total assets) is found to have a significant effect on short-term and total debt gearing ratios. Feidakis and Rovolis (2007) show that size of firm and leverage is positively related. This positive relationship is very significant in total debt, long-term debt as well as short-term debt, both in book and market values for large listed European construction firms from 1996 to 2004. Rajan and Zingales (1995), Friend and Lang (1988), Booth et al. (2001), Titman and Wessels (1988), Chen (2004), Michaelas et al. (1998), Gaud et al. (2005), Antoniou et al. (2002), and Bevan and Danbolt (2004) also show that profitability is negatively related with leverage.

Profitability (ROA) is calculated as the ratio of earnings before interest and taxes to total assets.

4.1.2.2.3. Asset Tangibility

When there is asymmetric information, the asset structure of a firm has an effect on its capital structure as tangible assets are highly important as collateral for banks. Trade-off theory suggests that companies use tangible assets as collateral to provide lenders with security in the event of financial distress. Rajan and Zingales

(1995) argue that lenders will be willing to supply loans as the firms have higher proportion of tangible assets on the balance sheet and a positive relation between leverage and tangibility is expected. Tangible assets are used as debt collateral and usually decrease the risk of lender. Jensen and Meckling (1976) suggest that collateral protects lenders from the moral hazard problem caused by the shareholder-lender conflict. Firms with more intangible assets will have higher liquidation costs and so firms with higher tangible assets will have lower liquidation costs and will issue more debt (Myers, 1977; Choate, 1997). The pecking order theory demonstrates that since tangible assets can be used as collateral, they will decrease the potential problems of informational asymmetries. Chen (2004) using data from the annual report of 88 Chinese public-listed companies for the period 1995–2000 found that there is a positive relation between asset tangibility and long-term debt and total leverage. Bevan and Danbolt (2004) analyzed the determinants of the capital structure of 1,054 UK companies from 1991 to 1997. They show that tangibility (proxied by the ratio of fixed to total assets) is positively correlated with all long-term debt elements and negatively correlated with all types of short-term debt. Collateral explanation in the case of long-term debt and maturity matching principle in the case of short-term debt are supported. However, total debt is found to be negatively correlated with tangibility. Gaud et al. (2005) by using a panel of 104 Swiss companies listed in the Swiss stock exchange for the period 1991–2000, found that the importance of tangible assets is positively related to leverage with market values only. They use the ratio of the sum of tangible assets and inventories to total asset as a proxy for collaterals. Titman and Wessels (1998) use two indicators for the collateral value attribute: The ratio of intangible assets to total assets and the ratio of inventory plus gross plant and equipment to total assets. Their data set includes 469 relatively large firms over the 1974 through 1982 time period. Due to data limitations, debt is measured in terms of book values rather than market values. It is found that firms with assets that have high collateral value choose high debt levels. Agca et al. (2007), Michaelas et al. (1998), and Antoniou et al. (2002) provide evidence that firms with assets that have high collateral value choose high debt levels. Rajan and Zingales (1995) investigate the determinants of capital structure choice by analyzing the

financing decisions of public firms in the major industrialized countries. Tangibility has a positive impact on leverage (for book and market value) for firms in USA, Japan, Germany and UK. For firms in France and Canada, this relation is significant only for book value whereas for firms in Italy, this relation is significant only for market values.

On the contrary, Booth et al. (2001), Hutchinson (2003), Buferna et al. (2005), and Huang and Song (2002, p.14) provide evidence for a negative relation between tangibility and leverage. Booth et al. (2001) defined tangibility as total assets minus current assets, divided by total assets. For total debt ratio, tangibility tends to be associated with decreases in the debt ratio but for the long debt ratio, it is positively related for firms in developing countries.

De Haas and Peeters (2004) argue that the case for (some) CEE countries may be different. According to trade-off theory, firms which mainly have (tangible) long-term assets may want to match these with long-term financing only, which is, however, relatively scarce in most transition countries. This can result in no or even a negative relationship between tangibility. Pecking order mechanisms may also weaken or neutralize the positive effect of tangibility on leverage. This will be the case if asset tangibility does not alleviate the potential negative consequences of informational asymmetries. This may be due to an ineffective legal system or to the fact that tangible assets are mostly very specific assets and thus "sunk" (De Haas and Peeters, 2004).

NFATA (asset tangibility) is measured as net property, plant, and equipment to total assets.

4.1.2.2.4. Non-debt tax shield

Trade-off theory argues that a major motivation for using debt instead of equity is to save corporate tax. However, firms can use other non-debt tax shields such as depreciation to reduce corporate tax. Thus, a higher non-debt tax shield reduces the

potential tax benefit of debt and thus it should be negatively related to leverage (Deesomsak et al. 2004, p.394). According to DeAngelo and Masulis (1980, p.21): "Ceteris paribus, decreases in allowable investment-related tax shields (e.g., depreciation deductions or investment tax credits) due to changes in the corporate tax code or due to changes in inflation which reduce the real value of tax shields will increase the amount of debt that firms employ. In cross-sectional analysis, firms with lower investment related tax shields (holding before-tax earnings constant) will employ greater debt in their capital structures. Non-debt tax shields such as depreciation decrease the advantage of debt financing. Thus, firms with large nondebt tax shields will issue less debt. However, in the literature there is evidence for both negative and positive effect of nondebt tax shield on leverage. For example Bradley et al. (1984) and Wald (1999) indicate a negative relationship between non-debt tax shields and leverage whereas DeAngelo and Masulis (1980) and Titman and Wessels (1988) provide some evidence in favor of the positive relation. Delcoure (2007) documents a mixed finding as non-debt tax shield and all leverage ratios namely total leverage, long-term leverage, and short-term leverage are positively related for firms in Czech Republic, Poland, Russia, and Slovakia. Klapper et al. (2002) finds a negative relation between non-debt tax shield and all leverage ratios for 97,107 enterprises from 15 Eastern and Central European countries. Ozkan (2001) argue that firms with a high level of non-debt tax shields are expected to have less debt than other firms ceteris paribus. He finds a negative relation between leverage and non-debt tax shield which confirms that claim. Dincergok (2010) finds no relation between leverage and non-debt tax shield for firms in Turkey and Mexico whereas a positive relation between short-term debt and non-debt tax shield is found for firms in Brazil. For firms in Indonesia, a negative relation is found.

NDTS (Nondebt tax shield) is the ratio of depreciation to total assets.

4.1.2.2.5. Liquidity

The liquidity ratio may have a mixed effect on the capital structure of firms. Firms which have a higher liquidity ratio might follow a relatively higher leverage ratio as they are able to meet the short-term obligations when they are due. Therefore, a positive relationship between a firm's liquidity position and leverage is expected. On the contrary, firms with higher proportions of liquid assets may prefer to use those assets to finance investments. In that case, there should be a negative relation between leverage and liquidity (Ozkan, 2001).

Eriotis et al. (2007) using the data of major Greek firms listed on the Athens Stock Exchange (ASE) for the time period 1997-2001 found that there is a negative relation between liquidity and financial leverage. Ozkan (2001) also finds that the coefficient estimate of the current liquidity ratio is significant and negative for firms in UK for the period 1984-1996. Sheikh and Wang (2011) using a sample of 160 firms listed on the Karachi Stock Exchange during 2003-2007 show that liquidity is negatively related to the debt ratio. Feidakis and Rovolis (2007) find no significant relationship between liquidity and total debt both in book and market values. However, there is a positive relationship between long-term debt and liquidity, and there is a negative association between short-term debt and liquidity. Therefore, firms with adequate liquidity do not need to raise debt and hence have lower leverage. Nevertheless, if firms need more finance, they prefer to raise long-term debt than short-term debt. Mateev et al. (2012) showed that firms which keep higher liquidity levels rely mainly on long-term debt to support their growth, whilst firms with higher proportion of current liabilities in their capital structure use more short-term debt.

Liquidity is measured as the ratio of current assets to current liabilities (Deesomsak et al. 2004).

4.1.2.2.6. Growth Opportunities

Another factor which affects the capital structure of firms is growth potential. According to the trade-off theory, firms which have future growth opportunities (in the form of intangible assets) tend to borrow less than firms holding more tangible assets. This is, in part, because those growth opportunities cannot be used as collateral values (Chen, 2004). Therefore a negative relation is expected between growth opportunities and leverage. According to Agency Theory, the managers of firms which have future growth opportunities can expropriate wealth from debtholders to shareholders because of the asset substitution effect (Jensen, 1986; Myers, 1977). Growth opportunities create a problem between debt and equity interests. Therefore, a negative relationship is expected between debt and growth opportunities. Theoretical studies argue that there is a negative relationship between growth opportunities and leverage. The findings of Titman and Wessels (1988), Gonenc (2003), Rajan and Zingales (1995), Ooi (1999), Ozkan (2001), Gaud et al. (2005) and Padron et al. (2005) indicate a negative relationship between growth opportunities and leverage. On the contrary, a limited number of studies such as Chen (2004) and Berk (2005) find a positive relationship between growth opportunities and debt.

The literature considers several indicators to measure growth opportunities such as the ratio of the market value of common stocks to total liabilities (Padron et al. 2005), the firm's annual growth rate in total assets (Titman and Wessels, 1988; Ooi, 1999), ratio of capital expenditures over total assets (Titman and Wessels, 1988; Almazan and Molina, 2005), the ratio of advertising expenses to sales (Graham, 2000), research and development expenses to sales (Graham, 2000), the ratio of market value of assets to book value of assets (Myers, 1977; Rajan and Zingales, 1995; Ozkan, 2001).

In this study, we measure growth opportunities as total assets growth[3] in line with Chen (2004), Titman and Wessels (1988), and Durukan (1998).

[3] When we use sales growth instead of total assets growth, the results do not change.

4.1.2.2.7. Financial Crisis of 2008

During 2008, the world economy experienced a severe crisis. Many banks in the USA and Europe went bankrupt, were taken over, or were rescued by governments. It caused the collapse of financial institutions, the bailout of banks, downturns in stock markets and a general decline in economic activity. The 2008 Financial crisis is considered as one of the most severe crisis in the world.

Financial crises also affect firms in many aspects. The sales, number of employees, leverage ratios, and productivity can be affected adversely during the period of crisis. Jones (2011) shows that the recent financial crisis has caused the capital structure of UK companies to consist of less debt. Kim et al. (2006) show that the 1997 Asian Crisis led to a decrease in the leverage ratios of firms in Korea. Financial crisis had a debt tightening effect on financial markets in Korea. Klapper and Love (2010) investigated the impact of 2008 financial crisis on the number of new firm registrations in 95 countries. They found that nearly all countries experienced a sharp drop in business entry during the crisis of 2008.

We introduce a dummy variable to measure the impact of 2008 financial crisis on the capital structure of firms.

4.1.2.2.8. EU Membership

Over the past two decades, the transition economies of Central and Eastern Europe have integrated rapidly into international markets. They have liberalized their economies and have opened up to foreign capital. In addition, laws and regulations have been adjusted to international standards, in particular to the standards of the European Union. Accession countries not only have to liberalize fully their foreign trade relations with all EU partners and open up to capital flows, but they also must adopt the entire institutional framework of the EU. Moreover, some of the new member states have

started using the Euro (Buch and Piazolo, 2000, p.4). Muradoglu et al. (2010) argue that EU Membership helps firms to access higher equity financing and higher long term debt due to more favorable international capital market conditions as a result of European Integration. Buch and Piazolo (2000) find that EU membership has a significant effect on international asset holdings and trade flows. Accordingly they expect rising capital and trade flows to new members for most of the EU candidates as the actual values are still far below expected ones. Clausing and Dorobantu (2005) analyzed the ability of the Central and Eastern European countries to attract foreign direct investment during the first decade of transition. They considered the effect of key European Union announcements regarding the accession process. They revealed that the announcements had statistically significant and quantitatively important effects on foreign direct investment in the Central and Eastern European candidate countries. In parallel with Muradoglu et al. (2010), it is possible to observe EU accession effect on the capital structure of firms. Joeveer and Toth (2006) explored the effect of European currency unification on financing choices of firms from 14 Western European countries. It was found that after the introduction of the euro in 1999, Eurozone firms are more likely to issue debt, and issue equity rather than debt if they belong to industries with higher external finance dependence. Firms in EMU are more likely to use debt finance as compared to other firms after the euro introduction which shows that credit market conditions have improved in EMU. Moreover, the introduction of the euro has decreased the cost of capital to firms.

4.1.3. Summary of Variables

Table 4.3 presents the summary of determinants of capital structure. Also theoretical predicted signs and the results of some empirical studies are shown.

The expected sign for profitability (measured as ROA) is controversial. The literature finds supporting relation for both positive and negative relation. The case of size is similar to profitability (ROA). The studies indicate both positive and negative relations between size and leverage. However the expected sign for tangibility is positive due to its role as collateral in accessing debt financing. Non debt tax shield effect is expected to have a negative impact on leverage as it is an alternative for debt-financing in terms of tax deductibility. Liquidity ratio may have a mixed effect on the capital structure of firms there expected sign is both positive and negative. Liquidity is measured as the ratio of current assets to current liabilities. Empirical studies argue that there is a negative relationship between growth opportunities and leverage.

Table 4.3. Summaries of determinants of capital structure, theoretical predicted signs, and results of previous empirical studies

Determinants	**Definition**	**Expected Sign**	**Empirical Evidence**
Profitability	ROA (profitability) is calculated as the ratio of earnings before interest and taxes to total assets	-/+	(-): Chen (2004), Friend and Lang (1988), Baskin (1989), Griner and Gordon (1995), Shyam-Sunder and Myers (1999), Gaud et al. (2005). (+): Bowen et al. (1982), Dammon and Senbet (1988); Givoly et al.(1992)
Size	SIZE (size) is the natural logarithm of total assets	-/+	(-): Kester (1986), Titman and Wessels (1988). (+) Marsh (1982), Rajan and Zingales (1995), Ozkan (2001), Gaud et al. (2005),
Tangibility	NFATA (asset tangibility) is measured as net property, plant, and equipment to total assets.	+	(-): Booth et al. (2001), Hutchinson (2003), Buferna et al. (2005). (+): Agca et al. (2007), Bevan and Danbolt (2004), Gaud et al. (2005).
Tax shield effects	NDTS (Nondebt tax shield) is the ratio of depreciation to total assets.	-	(-): Bradley et al. (1984), Wald (1999). (+):DeAngelo and Masulis (1980)
Growth Opportunities	GROWTH (growth in total assets)	-	(-) Titman and Wessels (1988), Gonenc (2003), Rajan and Zingales (1995), Ooi (1999), Ozkan (2001), Gaud et al. (2005) and Padron et al. (2005)
Liquidity	LIQ (current assets to current liabilities)		(-) Eriotis et al. (2007), Ozkan (2001), Sheikh and Wang (2011)
2008 Financial Crisis Dummy	F_{2008}	-	(-) Jones (2011), Kim et al. (2006)
EU Membership Dummy	EU	-/+	(-) Muradoglu et al. 2010

Prepared based on: Chen (2004); De Haas and Peeters (2006); Huang and Song (2002); Acaravci and Dogukanli (2004); Dincerkok (2010)

Note: "+ " means that leverage increases with the factor whereas "-" means that leverage decreases with the factor. "+/-" means that both positive and negative relations between leverage and the factor are possible.

4.1.4. Methodology

4.1.4.1. Panel Data Methodology[4]

A longitudinal, or panel, data set is one that follows a given sample of individuals over time, and so provides multiple observations on each individual in the sample (Hsiao, 2003, p.3). A panel data set contains n cases, over t time periods, for a total of n × t observations. Without any missing observations, a data set of n × t observations is named as balanced data. However, due to missing observations which is mostly the case, researchers face unbalanced data sets.

Panel data sets have several major advantages over conventional cross-sectional or time-series data sets. Panel data gives the researcher a large number of data points, increasing the degrees of freedom and reducing the collinearity among explanatory variables. More importantly, longitudinal data allow a researcher to analyze a number of important economic questions that cannot be addressed using cross-sectional or time-series data sets. Another important advantage of panel data is that it deals with the omitted (mismeasured or unobserved) variables that are correlated with explanatory variables. By utilizing information on both the intertemporal dynamics and the individuality of the entities being investigated, panel data control the effects of missing or unobserved variables. Finally, panel data also provide the possibility of generating more accurate predictions for individual outcomes than time-series data alone (Hsiao, pp-3-4, 2003).

There are different estimation techniques for panel data approach. One could implement a fixed effects model, or alternatively one could estimate a random effects model. Moreover, there are other models to deal with the problems of panel data structures which can affect the efficiency and explanatory power of the coefficients and/ or standard errors.

[4] Detailed information about panel data methodology can be found in "Econometric Analysis of Panel Data" book of Baltagi (2005).

In general terms, a linear model can be specified as

$$y_{it} = \alpha_i + x_{it}^I \beta + \varepsilon_{it}$$

,where x_{it} is K-dimensional vector of explanatory variables. This indicates that the effects of a change in x are the same for all units and all periods, but that the average level for unit i may be different from that for unit j. The α_i thus capture the effects of those variables that are peculiar to the i-th individual and that are constant over time. In the standard case, ε_{it} is assumed to be independent and identically distributed over individuals and time, with mean zero and variance σ_ε^2. If the α_i is treated as N fixed unknown parameters, the model is referred to as the standard fixed effects model. The fixed effects model is simply a linear regression model in which the intercept terms vary over the individual units i.

$$y_{it} = \alpha_i + x_{it}^I \beta + \varepsilon_{it}, \qquad \varepsilon_{it} \sim \text{IID } (0, \sigma_\varepsilon^2),$$

where it is usually assumed that all x_{it} are independent of all ε_{it}. It is possible to write this model in the usual regression form by including a dummy variable for each unit i in the model. Essentially, the fixed effects model focuses on differences within individuals (Verbeek, 2004, p.342).

An alternative approach assumes that the intercepts of the individuals are different but that they can be treated as drawings from a distribution with mean μ and variance σ_α^2. The essential assumption here is that these drawings are independent of the explanatory variables in x_{it}. This leads to the random effects model, where the individual effects α_i are treated as random. The error term in this model consists of two components: a time-invariant component α_i and a remainder component ε_{it} that is uncorrelated over time. The random effect model can be written as

$$y_{it} = u + x_{it}^I \beta + \alpha_i + \varepsilon_{it}, \qquad \varepsilon_{it} \sim \text{IID } (0, \sigma_\varepsilon^2);\ \alpha_i \sim \text{IID } (0, \sigma_\alpha^2);$$

Where $\alpha_i + \varepsilon_{it}$ is treated as an error term consisting of two components: an individual specific component, which does not vary over time, and a remainder component, which is assumed to be uncorrelated over time. That is, all correlation of the error terms over time is attributed to the individual effects α_i. It is assumed that α_i and ε_{it} are mutually independent and independent of x_{js} (for all j and s). This implies that the OLS estimator for u and β from the random effect model is unbiased and consistent (Verbeek, 2004, pp.342-343.).

The generally accepted way of choosing between fixed and random effects is running a Hausman test. Statistically, fixed effects are always a reasonable thing to do as they always give consistent results however they may not be the most efficient model. Random effects will give better P-values as they are a more efficient estimator, so random effects model can be run if it is statistically justifiable to do so. The Hausman test checks a more efficient model against a less efficient but consistent model to make sure that the more efficient model also gives consistent results. Hausman test is available in Stata 11. To compare the fixed effects with random effects, first the fixed effects model will be estimated and the findings will be stored. After that the random effects model will be estimated and then Hausman test will be run to do the comparison. The Hausman test tests the null hypothesis which assumes that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator. If they are (insignificant P-value, Prob>chi2 larger than .05) then it is safe to use random effects. If you get a significant P-value, however, you should use fixed effects (Princeton University, 2010)

Fixed effects/random effects model are widely used in capital structure literature. These models can be implemented in Stata 11 by "xtreg dependent variable independent variable 1 independent variable 2 …., fe" command and "xtreg dependent variable independent variable 1 independent variable 2, re" command. However, these methods do not take into account serial correlation and this problem often occurs when panel regressions are run. If autocorrelation exists, standard errors will be underestimated and the t-values will be overestimated. In Stata 11, xtserial command which can be installed by typing "sscinstall xtserial" implements a test for serial

correlation in the idiosyncratic errors of a linear panel-data model discussed by Wooldridge (2002). This command tests the null hypothesis of no first-order autocorrelation. If serial correlation is detected, instead of "xtreg" command "xtregar" command should be used. This command estimates fixed– and random–effects models with AR(1) error structures.

A panel data approach is used for the empirical test of the firm-level determinants of capital structure in 6 countries as the sample contains data across firms and over time for each country. Two dummy variables are also introduced to control the effect of EU membership and the financial crises of 2008 on the ratio of current liabilities to total assets, the ratio of long term debt to total assets and the ratio of total liabilities to total assets.

4.1.4.2. The Models

The empirical models are specified as follows in parallel with the literature (Ozkan, 2001; Colombo, 2001; Chen, 2004; Wanzenried, 2002)

$$CLTA_{it} = \alpha + \beta_1 NFATA_{it} + \beta_2 ROA_{it} + \beta_3 SIZE_{it} + \beta_4 NDTS_{it} + \beta_5 GROWTH_{it} + \beta_6 LIQ_{it} + \beta_7 EU_t + \beta_8 F_{2008} + \varepsilon_{it}$$

$$LTDTA_{it} = \alpha + \beta_1 NFATA_{it} + \beta_2 ROA_{it} + \beta_3 SIZE_{it} + \beta_4 NDTS_{it} + \beta_5 GROWTH_{it} + \beta_6 LIQ_{it} + \beta_7 EU_t + \beta_8 F_{2008} + \varepsilon_{it}$$

$$TLTA_{it} = \alpha + \beta_1 NFATA_{it} + \beta_2 ROA_{it} + \beta_3 SIZE_{it} + \beta_4 NDTS_{it} + \beta_5 GROWTH_{it} + \beta_6 LIQ_{it} + \beta_7 EU_t + \beta_8 F_{2008} + \varepsilon_{it}$$

i = 1, ……,N ; t = 1, ……,T and i denotes the cross-section dimension and t denotes the time-series dimension. *CLTA, LTDTA*, and *TLTA* represent current liabilities to total assets ratio, long-term debt to total assets ratio, and total liabilities to total assets ratio, respectively. $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, and\ \beta_6$ stand for tangibility, profitability, size, non-debt tax shield, growth opportunities, and liquidity. β_7 represents the coefficient of

European Union membership dummy variable (Muradoglu et al. 2010). The dummy variable takes the value of 0 if the year is before the EU membership year (before 2004) and 1 if it is after EU membership year (2004 and after). β_8 represents the dummy for the 2008 financial crisis.

As Turkey is not a member of EU, we run the models without EU dummy. Therefore, the empirical models are specified as follows for the firms in Turkey. When we pooled the data with Turkey, EU dummy is not included in the model.[5]

$$CLTA_{it} = \alpha + \beta_1 NFATA_{it} + \beta_2 ROA_{it} + \beta_3 SIZE_{it} + \beta_4 NDTS_{it} + \beta_5 GROWTH_{it} + \beta_6 LIQ_{it} + \beta_7 F_{2008} + \varepsilon_{it}$$

$$LTDTA_{it} = \alpha + \beta_1 NFATA_{it} + \beta_2 ROA_{it} + \beta_3 SIZE_{it} + \beta_4 NDTS_{it} + \beta_5 GROWTH_{it} + \beta_6 LIQ_{it} + \beta_7 F_{2008} + \varepsilon_{it}$$

$$TLTA_{it} = \alpha + \beta_1 NFATA_{it} + \beta_2 ROA_{it} + \beta_3 SIZE_{it} + \beta_4 NDTS_{it} + \beta_5 GROWTH_{it} + \beta_6 LIQ_{it} + \beta_7 F_{2008} + \varepsilon_{it}$$

STATA 11 is used to implement the panel estimation procedure. We estimate fixed– and random–effects models with AR(1) error structures and present the suggested model by the Hausman test. The correlation matrices for the variables of firms in 6 countries are presented in Appendix. Multicollinearity presents a potential statistical problem only when the correlation coefficient exceeds 0.80 (Gujarati 2004, p.359). It can be seen that most cross-correlation terms for the independent variables are below the limit and so there is no cause for concern about the problem of multicollinearity among the independent variables.

[5] We decreased the number of observations of Turkey and Poland to create a more balanced data in terms of number of observations for each country. We include the firm data which is almost complete over the years.

4.2. Empirical Findings

4.2.1. Descriptive Statistics

Table 4.4 gives the descriptive statistics for all firm-level variables. In terms of profitability, Slovenian firms had the lowest ROA with 4.4%. Firms in Turkey with a mean ROA of 12% were in first place in terms of profitability. Firms in Poland with a mean ROA of 8% follow the firms in Turkey. The ROA of firms in Lithuania and Czech Republic was 5.6% and 5.9% respectively Turkish firms have been very profitable compared to the other 5 countries in the period of 1996 to 2010.

NFATA (asset tangibility) which is measured as net property, plant, and equipment to total assets shows asset structure more specifically than the percentage of fixed assets in total assets. Firms in new member countries of the EU had a higher proportion of fixed assets in their total assets compared to Turkish firms. More than half of the assets were composed of fixed assets. This indicates the firms' need to keep high NFATA ratios for collateral values and those firms have less intangible assets. Turkish firms have intangible assets and in today's world, those assets are vital for success in both local and global markets. NFATA ratio for firms in Lithuania and Czech Republic was 0.58 and 0.59, respectively.

NDTS (Nondebt tax shield) is the ratio of depreciation expenses to total assets. It is seen that on average the firms have a NDTS ratio of 5.5% and no significant differences among countries was observed. The highest NDTS ratio was observed for firms in Lithuania with a value of 6.8%.

Liquidity ratio (LIQ) is measured as the ratio of current assets to current liabilities which measure the ability of firms in meeting the short-term obligations. Slovenian firms had the highest liquidity ratio with 2.2. Then, it is followed by firms in Turkey and Hungary. The lowest liquidity ratio is observed for firms in Lithuania. As Table 4.4 shows, firms in those 6 countries did not face problems in terms of meeting short term obligations.

Growth opportunities are significantly higher for firms in Turkey. This reflects the growth trend among Turkish firms for the period 1996-2010. Turkish firms grew significantly more than the firms in other countries. Firms in Slovenia, Poland, Hungary, and Lithuania grew around 12%.

Table 4.4 also presents the mean leverage ratios for the 6 countries in this study. Firms in Hungary used less debt compared to firms in other countries. The mean value for TLTA ratio is 38% in Hungary. Firms in Slovenia had the highest TLTA ratio (45%) which means that those firms financed almost half of their assets with debt. Firms in Slovenia and Lithuania used more long-term debt. The mean value of the LTDTA ratio is 12% for firms in Slovenia and 13.4% in Lithuania. In terms of CLTA, there are no significant differences among the firms in these 6 countries. On average, the CLTA ratio was 26% for all firms in the 6 countries.

Table 4.4. Descriptive Statistics of Variables

Country	# of Obs.	LTDTA	CLTA	TLTA	ROA	NFATA	SIZE	NDTS	GROWTH	LIQ
Slovenia	250	0.120	0.284	0.452	0.044	0.488	7.231	0.048	0.117	2.201
Poland	250	0.070	0.297	0.422	0.080	0.458	6.520	0.059	0.142	1.979
Hungary	250	0.091	0.256	0.386	0.069	0.486	5.908	0.061	0.123	2.079
Lithuania	250	0.134	0.264	0.438	0.055	0.584	5.727	0.068	0.125	1.673
Turkey	250	0.078	0.277	0.401	0.117	0.382	7.288	0.061	0.452	2.158
Czech Republic	250	0.081	0.283	0.434	0.059	0.589	7.296	0.054	0.064	1.891

The data is collected from the Compustat Global Industrials and Commercials database. The CLTA ratio is the ratio of current liabilities to total assets. The LTDTA is the ratio of long term debt to total assets. The TLTA is the ratio of total liabilities to total assets. NFATA is the ratio of net fixed assets to total assets. SIZE is the log of Total Assets. ROA is the ratio of EBIT to Total Assets. NDTS is the ratio of depreciation to Total Assets. GROWTH is the growth in total assets. LIQ is the ratio of current assets to current liabilities.

Table 4.5 presents the descriptive statistics for the Pre-EU membership period and Post-EU membership period for the firms in 5 new member countries of the EU. Those countries have been a member of the EU since 2004. So, the post-EU membership period includes the years 2004 to 2010 whereas pre-EU membership period covers the years from 1996 to 2003. Data for the firms in Turkey is not included in this table as Turkey is still not a member of EU. Membership negotiation between Turkey and the EU have been on-going for decades..

The profitability of firms in Slovenia did not change during the EU membership period. The ROA of firms in Poland rose from 6.8% to 9.7%. An increase is also observed for firms in Poland and Czech Republic. Firms in Hungary experienced a decrease in profitability. ROA declined from 7.7% to 5.9% in the post-EU membership period. Likewise, the profitability of firms in Lithuania declined from 6.7% to 5.3%.

Firms in Slovenia (from 0.52 to 0.47), in Hungary (from 0.5 to 0.46), in Czech Republic (from 0.61 to 0.55), and in Lithuania (from 0.67 to 0.57) experienced a decline in asset tangibility (NFATA). This shows that the importance of collateral value of fixed assets in terms of accessing to debt is increasing. Firms tend to keep less fixed assets and more intangible assets. For firms in Poland, there is a slight increase in NFATA. Those firms raised the share of fixed assets in total assets from 0.45 to 0.47 in the post-EU membership period.

While the size of firms in all Slovenia, Poland, and Hungary increased in the post-EU membership period, the size of firms in Lithuania and Czech Republic declined. The average size of firms in Poland rose by 9.7% whereas the average size of firms declined by 6.6% in Lithuania.

The liquidity ratios of firms in Slovenia, Poland, and Hungary decreased in the post-EU membership period. Especially for firms in Slovenia, there is a sharp decline from 3.4 to 1.3. However, the liquidity ratio of firms in Czech Republic and Lithuania increased.

The growth of firms changed significantly in the post-EU membership period. The growth of firms in all countries (except Czech Republic) declined. The growth ratio of firms in Hungary decreased from 18.9% to 3.8%. There is an increase of 5.9% in growth rate of firms in Poland in post-EU membership period. The non-debt tax shield ratio of firms did not change significantly in Post-EU membership period compared to Pre-EU membership period.

When the focus is on the changes in leverage ratios in post-EU membership period compared to pre-EU membership period, it is seen that the LTDTA ratio of firms in all countries except Czech Republic and Lithuania increased. The long-term debt to total assets ratio of firms in Slovenia increased from 6.9% to 15.6%. Firms in Poland and Hungary also used more long-term in Post-EU membership period. The LTDTA ratio of firms in Czech Republic decreased from 8.9% to 6.7%. Likewise, we observe a decline from 15.8% to 13% for firms in Lithuania. CLTA ratio of firms stayed almost same in the post-EU membership period compared to pre-EU membership period.

CLTA ratio of firms in Slovenia rose from 25.1% to 30.8%. While long-term debt use of firms in 3 countries increased significantly, short-term debt use of firms did not change significantly.

Total liabilities to total assets ratio of firms in all countries except the Czech Republic increased. The TLTA ratio of firms in Slovenia increased from 37.7% to 51%. However, for firms in Poland, Lithuania, and Hungary, we observe only a slight increase.

Table 4.5. Descriptive Statistics of variables (Pre- and Post-EU Period)

PANEL A – Pre EU Membership Period (1996-2003)										
Country	# of Obs.	LTDTA	CLTA	TLTA	ROA	NFATA	SIZE	NDTS	GROWTH	LIQ
Slovenia	95	0.070	0.251	0.377	0.043	0.515	6.858	0.057	0.146	3.373
Poland	142	0.069	0.300	0.413	0.068	0.452	6.259	0.061	0.138	2.215
Hungary	122	0.086	0.242	0.364	0.077	0.505	5.722	0.060	0.189	2.162
Lithuania	150	0.158	0.244	0.432	0.067	0.667	6.061	0.079	0.168	1.256
Czech Republic	129	0.089	0.286	0.444	0.049	0.608	7.365	0.056	0.098	1.493
PANEL A – Post EU Membership Period (2003-2010)										
Country	# of Obs.	LTDTA	CLTA	TLTA	ROA	NFATA	SIZE	NDTS	GROWTH	LIQ
Slovenia	155	0.156	0.308	0.506	0.044	0.468	7.505	0.041	0.096	1.339
Poland	108	0.072	0.292	0.434	0.097	0.466	6.864	0.056	0.146	1.667
Hungary	128	0.097	0.275	0.415	0.059	0.461	6.145	0.063	0.038	1.973
Lithuania	100	0.130	0.268	0.439	0.053	0.567	5.660	0.066	0.116	1.756
Czech Republic	121	0.067	0.277	0.417	0.075	0.554	7.174	0.051	0.004	2.595

After the descriptive statistics for firm-level variables, the movement of leverage ratios namely CLTA, LTDTA, and TLTA ratios over time will be investigated in more detail. Figure 4.1 presents the movement of the CLTA ratio for the 6 countries under investigation. The current liabilities use of firms in those 6 countries is similar to each other and had a tendency to increase in the period 1996-2010. On average, the CLTA ratio is around 30%. The CLTA ratio of firms in Slovenia rose gradually during the period 1996-2010. The CLTA ratio was 0.16 and 0.20 in 1996 and 1997, respectively and it reached to 0.33 in 2010. For the firms in Turkey, the CLTA ratio experienced a decrease during 1996 to 2003 and after 2003 it increased again.

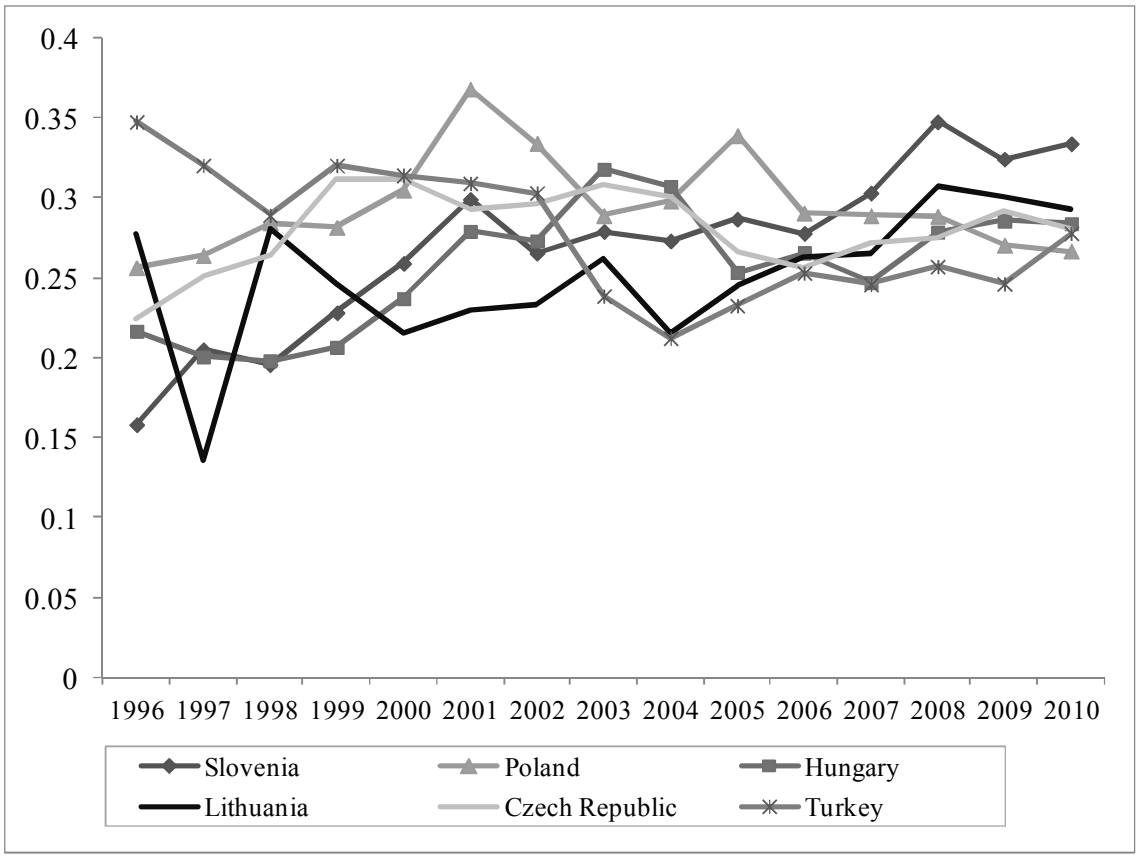

Figure 4.1. CLTA for all countries (1996-2010)

Prasad et al. (2007) investigate whether capital structure of firms in 10 European Union countries is becoming more homogenous over time and whether a dominant-country effect exists. They find that there is a movement toward convergence

in capital structure across EU economies. This evidence is particularly true for industrial firms. They use standard deviation and the coefficient of variation. A decreasing standard deviation and/or coefficients of variation over time support the convergence in capital structure.

In parallel with Prasad et al. (2007), we also calculate the standard deviation and coefficient of variation as follows:

$$CV = \frac{\sigma}{\mu}$$

The coefficient of variation (CV) is defined as the ratio of the standard deviation to the mean. The coefficient of variation is useful as the standard deviation of data should be interpreted in the context of the mean of the data. Instead, the actual value of the CV is independent of the measurement of the unit, thus it allows for comparison between data sets with different units or widely different means. A decreasing coefficient of variation of leverage ratios will show that the cross-sectional variation of average leverage ratios of 6 countries decreases over time.

When coefficients of variation values (yearly) are calculated for the CLTA, it is seen that the CV value decreased especially until 2006. After 2006, observe a slight increase in coefficient of variation can be observed. The CV value was 0.17 in 1998 and 0.15 in 2001. Then it reached to 0.10 in 2003 and 0.05 in 206. This shows that the current liability use of the listed firms in 6 countries converged. The dispersion among the current liability use of firms in those 6 countries declined over time.

Figure 4.2 presents the average long-term debt to total assets ratios for firms in the 6 countries. It is observed that long-term debt use of firms in those 6 countries is relatively different from each other. On average, we observe an increasing trend. Firms in Hungary, Lithuania, and Slovenia had the highest values for LTDTA ratio. When we focus on the convergence of LTDTA (by outlining the firms in Slovenia as LTDTA ratio in Slovenia is very volatile), it is seen that there is a convergence especially after 2004. CV value was 0.6 and 0.38 in 2004 and 2005. Then, in 2008 and 2009, it

decreased to 0.19. The results show that there is a slight convergence in long-term debt use of firms in those countries.

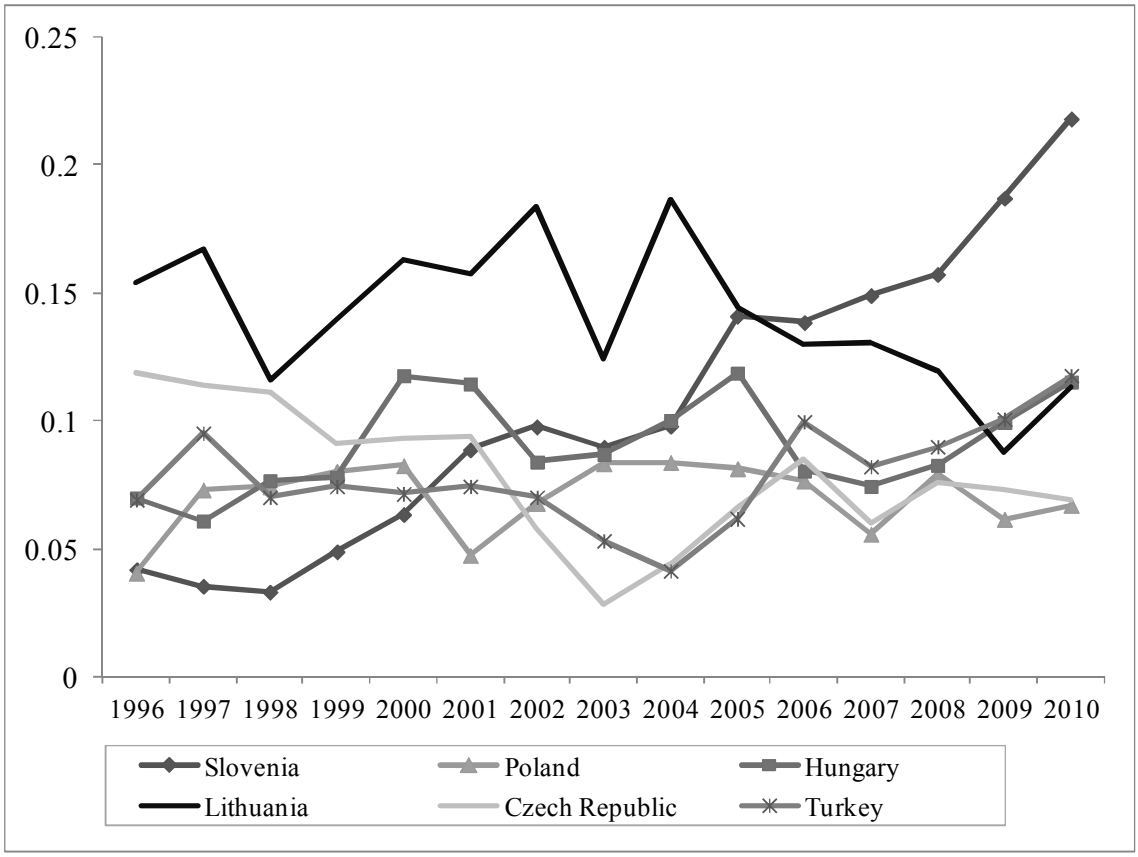

Figure 4.2. LTDTA for all countries (1996-2010)

Figure 4.3 presents the average total liabilities to total assets ratio of firms in 6 countries. Debt use of firms in 6 countries moved almost in the similar way and did not fluctuate significantly. For 2010, the firms in Slovenia used more debt compared to the firms in other countries. The TLTA ratio was 0.59 which indicates that more than half the assets are financed by debt. The debt use of firms in other countries is around 0.45. For the TLTA, it is not possible to provide evidence for the convergence after 2004. Since 2004, we observe a convergence among the TLTA ratio of firms in those countries. The coefficient of variation values were 0.17 in 1997, 0.13 in 2000, and 0.9 in 2003.

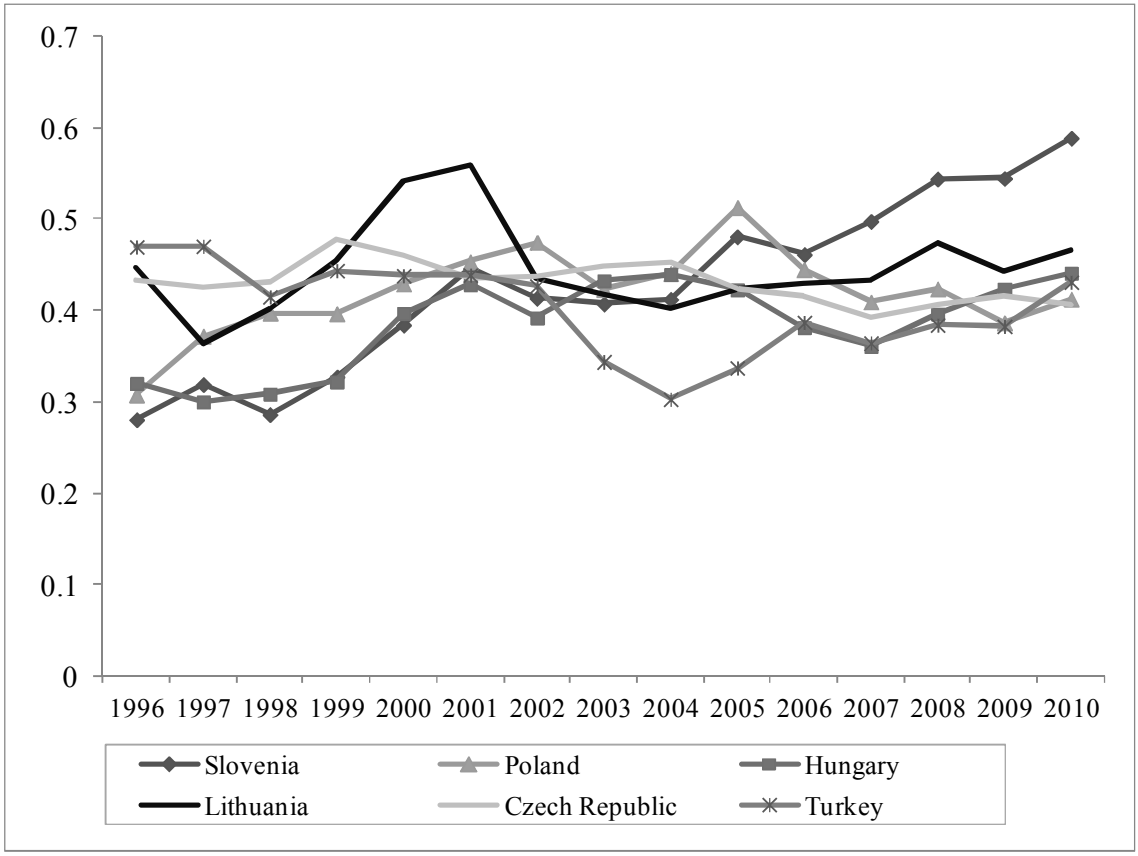

Figure 4.3. TLTA for all countries (1996-2010)

As the data for countries includes firms from different industrial sector, there is a limitation on the findings for the convergence of debt ratios. Due to limited data for Eastern European Countries, it is not possible to make sector based analysis. However, this finding can be regarded as preliminary and can be supported with studies which have a richer dataset.

4.2.2. Regression Estimates

4.2.2.1. Current Liabilities to Total Asset

The first two columns of Table 4.6 present the coefficient estimates for the CLTA for the pooled firm data in 5 new members of the EU and Turkey. A Hausman test was performed between fixed and random effects model to decide which is more efficient. The Hausman test results are in favor of fixed effects model for the CLTA. The first column includes the data of firms in all countries. Therefore, the EU membership dummy is not included in the model. The second column excludes Turkey and we introduce the EU membership dummy for 5 new member countries of the EU.

The coefficient estimates for profitability (ROA) are -0.1191 (statistically significant at 1%) and -0.1189 (statistically significant at 5%) in the first column and second column respectively. Firms prefer to use internal sources of funding when profits are high. Given the information asymmetries between the firm and outsiders, firms have a preference for inside financing over outside financing, as the cost for outside funds are be higher for the firm. Therefore, profitable firms, which have access to retained profits, can use these for firm financing rather than accessing outside sources. Even though more profitable firms would be more likely to get access to such capital, these firms will prefer inside funds to finance their operations and investments (Cassar and Holmes, 2003). Voulgaris et al. (2004) examined 143 SMEs and 75 LSEs in Greece finding a negative relation between the ROA and short term debt. Feidakis and Rovolis (2007) also show that profitability is negatively associated with leverage in total debt and short-term debt, both in book and market values. This finding provides evidence for the pecking order theory. It also supports the existence of information asymmetries and agency costs. Dincerkok (2010) documents a negative relation between profitability and current liabilities for Turkey. Nivorozhkin (2003) for firms in Czech Republic and Bulgaria and Delcoure (2007) for Poland, Czech Republic, Russia,

Slovakia found a negative relation between short term leverage and the ROA. Muradoglu et al. (2010) finds a significantly negative impact of ROA on CLTA for a pooled data of firms from Cyprus, Czech Republic, Estonia, Hungary, Lithuania, Poland, Slovakia, and Slovenia. Delcoure (2007) using a pooled data of firms in Russia, Slovenia, Czech Republic, and Poland documents a negative relation both in fixed effects, random effects, and OLS. When we consider Table 4.7 for separate regressions, it is seen that the impact of ROA is higher for firms in Slovenia and Hungary whereas, the lowest coefficient estimate is achieved for Turkey. The impact of ROA on CLTA is negative in all countries.

The coefficient estimates for tangibility are statistically significant and negative. The coefficients for NFATA are -0.0764 (statistically significant at 5%) and -0.0432 (statistically significant at 10%) in Table 4.6. This indicates that firms with higher proportions of fixed assets use less short-term debt. This supports the maturity matching principle (Bevan and Danbolt, 2004). Muradoglu et al. (2010) and Klapper et al. (2002) also confirm that tangibility has a negative impact on current liabilities. Muradoglu et al. (2010) also find a statistically significant and negative relation between the CLTA and the NFATA for firms in 8 accession firms. However Delcoure (2007) illustrates a positive relationship for all measures of leverage for firms in Russia, Slovenia, Poland, and Czech Republic for the period of 1996-2002. The negative relation implies that firms with more collateral value use less current debt. The impact of NFATA is higher for firms in Lithuania, Czech Republic, and Turkey. The coefficient estimates for NFATA are negative for firms in each country.

We find a positive relation between the CLTA and size. The coefficient estimates for size are 0.0155 (statistically significant at 5%) in first column and 0.0472 (statistically significant at 1%) in second column of Table 4.6. As the stock and corporate bond markets are underdeveloped in those countries, large, transparent firms are able to get more bank credit, whereas small firms are forced to rely on internal financing (De Haas and Peeters, 2006). Delcoure (2007) finds a positive relation between the CLTA and size for the firms in Czech Republic, Poland, Russia, and

Slovenia whereas Muradoglu et al. (2010) find no statistically significant relation. The positive relation between the CLTA and size is also documented by Bevan and Danbolt (2004). This result is explained by a further level of disaggregation. They find a negative and significant correlation between short-term bank debt and size which indicates that lenders do indeed appear to minimize the risk of lending to smaller companies by restricting maturity. On the country based regressions, the lowest coefficient value is found for firms in Turkey. The highest impact of size on CLTA is observed for firms in Poland and Hungary.

The coefficient estimates for liquidity (LIQ) are -0.0131 (statistically significant at 1%) and -0.0109 (statistically significant at 1%) in first column and second column in table 4.6, respectively. Firms with higher liquidity ratios tend to use less current liabilities. As the ability of firms in terms of meeting current liabilities increases, firms tend prefer to use less current debt. When we interpret this relation together the positive relation between liquidity and long-term debt, we can conclude that when firms can meet their short-term obligations, the use of current liabilities decreases while the use of long-term increases. Eriotis et al. (2007) and Ozkan (2001) find that there is a negative relation between liquidity and financial leverage. Mateev et al. (2012) for 3,175 SMES from 7 Central and Eastern Europe during the period 2001–2005, find a negative relation between current liabilities and liquidity.

The coefficient estimates for growth opportunities are not statistically significant. Therefore, we can conclude that the growth opportunities do not affect the short-term debt use of firms. Likewise, the NDTS has no impact on the CLTA.

The EU dummy has a negative impact on the CLTA in the second column of Table 4.6 where we run the model by excluding Turkey. The coefficient estimate is -0.0229 (statistically significant at 5%). This indicates that firms tend to use less current liabilities as a result of membership of countries to the EU. We find no statistically significant relation between the CLTA and 2008 financial crisis.

4.2.2.2. Long-term debt to total assets

The third and forth columns of Table 4.6 present the coefficient estimates for the LTDTA for the pooled firm data in 5 new members of EU and Turkey. We run a Hausman test between fixed and random effects model to decide which is more efficient. The Hausman test results are in favor of fixed effects model for the LTDTA. The first column includes the data of firms in all countries. Therefore, the EU membership dummy is not included in the model. The second column excludes Turkey and we introduce the EU membership dummy for 5 new member countries of the EU. Country based findings for the LTDTA are presented in Table 4.8.

The coefficients estimates for ROA are -0.0652 (statistically significant at 10%) and -0.0704 (statistically significant at 10%) in column three and four, respectively. Profitability has a negative impact on long-term leverage. The negative sign of profitability is consistent with the pecking order theory that predicts a preference for internal finance rather than over external finance. While profitable firms may have better access to debt finance than less profitable firms, the need for debt finance may possibly be lower for highly profitable firms if retained earnings are sufficient to fund new investments. Gonenc (2003) by using a dataset of Turkish industrial companies listed in the Istanbul Stock Exchange (ISE) for the period 1990 to 1999 finds that profitability has a statistically significant and negative impact on long-term debt. Delcoure (2007) also documents a negative relation between long-term debt and profitability for firms in Czech Republic, Poland, Russia, and Slovakia. Cassar and Holmes (2003), Booth et al. (2001), and Bevan and Danbolt (2004) also find a negative relation between profitability and leverage. When we focus on country based regression estimates in Table 4.8, it is seen that the impact of profitability is higher for firms in Slovenia and Hungary.

The coefficient estimates for size are 0.0055 (statistically significant at 5%) and 0.0134 (statistically significant at 10%) in column three and four in Table 4.6. Big firms tend to be more diversified which reduces the risk of bankruptcy. Moreover

reputational reasons induce big firms to be more averse to bankruptcy compared to small firms (Colombo, 2001). In addition, large firms may be able to exploit economies of scale in issuing securities. Smaller firms are likely to face higher costs for obtaining external funds, because of information asymmetries (Chen and Strange, 2005). Cassar and Holmes (2003), Muradoglu et al. (2010), Daskalakis and Psillaki (2008) also find a positive relation between leverage and size. The impact of size is higher for firms in Slovenia and Lithuania. On the contrary, Chen (2004) documents a negative relation between size and long-term debt. Size has a significant impact on long-term use of firms especially in Slovenia and Lithuania.

Although the coefficient estimates for asset tangibility (NFATA) are positive in column 3 and 4 of Table 4.6, tangibility has no statistically significant impact on long-term leverage. This is in contrast to expectations. According to trade-off theory, firms with higher proportions of tangible assets may want to match these with long-term financing only. However, access to long-term debt is scarce in most transition countries. This can result in no relationship between tangibility. For example, Noulasa and Genimakisa (2011), Mateev et al. (2012), Cassar and Holmes (2003), and Bevan and Danbolt (2004) find a positive relation between long-term debt and leverage. However, Muradoglu et al. (2010) find no significant relation between the LTDTA and the NFATA.

Non-debt tax shield has a negative impact on the LTDTA. The coefficient estimates are -0.2404 (statistically significant at 5%) and -0.3694 (statistically significant at 1%) in column three and four of Table 4.6. Firms can use other non-debt tax shields such as depreciation to reduce corporate tax. Thus, a higher non-debt tax shield reduces the potential tax benefit of debt and thus it should be negatively related to leverage. Bradley et al. (1984) and Wald (1999) indicate a negative relationship between non-debt tax shields and leverage. The impact of the NDTS on the LTDTA is very significant for firms in Poland and Hungary.

Growth opportunities don't have any statistically significant impact on long-term debt to total assets ratios. This is in line with Cassar and Holmes (2003).

Liquidity has a positive impact on the LTDTA ratio for firms in 6 countries. The coefficient estimates are 0.0025 (statistically significant at 10%) and 0.0030 (statistically significant at 10%) in column 3 and 4 of Table 4.6. Mateev et al. (2012) and Feidakis and Rovolis (2007) also indicates a positive relation between liquidity and long-term debt to total asset ratios. Firms with higher liquidity ratios change their debt maturity. When the firms are capable of meeting short-term obligations, they tend to prefer long-term over short-term and decrease their total leverage. In terms of country based estimates, liquidity plays a significant role on long-term debt use of firms in Poland and Turkey.

4.2.2.3. Total liabilities to total assets

The fifth and sixth column of Table 4.6 presents the coefficient estimates of the TLTA and country based findings are presented in Table 4.9. It is found that for all listed firms in 6 countries, profitability (proxied by ROA) has a statistically significant and negative impact on leverage. The coefficient estimates are -0.3103 (statistically significant at 5%) and -0.3272 (statistically significant at 1%) in column 5 and 6. This finding is in line with Mramor and Valentincic (2001), Chen (2004), Acaravci and Dogukanli (2004), and Bauer (2004). On the contrary, Fan et al. (2012) find a positive relation between leverage and profitability. Firms which can generate internal funds choose to use less liabilities compared to firms which cannot generate internal funds. As the external funds are costly compared to internal funds, firms with higher profitability ratios tend to use internal funds. According to Myers and Majluf's (1984) financing hierarchies approach, high-quality firms can reduce the cost of informational asymmetries by resorting to external financing only if it cannot be generated internally. If external financing is needed, the same argument implies that the firm issue debt before considering external equity. High-profit-making firms can generate more internal

financing. Therefore, the negative relationship between leverage and profitability indicates that profit-making firms have lower debt ratio. Our finding for a negative relationship is consistent with the pecking order hypothesis and supports the existence of information asymmetries. The impact of ROA on capital structure is highly strong. The country based regressions show that this impact is highest for firms in Hungary with a coefficient value of -0.5458 (statistically significant at 1%).

Asset tangibility (NFATA) has a negative effect on leverage. This result is on the contrary to the findings of Titman and Wessels (1998), Michaelas et al. (1998), Chen (2004), and Agca et al. (2007) who provide evidence that firms with assets that have high collateral value choose high debt levels. However, Booth et al. (2001), Hutchinson (2003), Deari and Deari (2009), Daskalakis and Psillaki (2008), and Buferna et al. (2005) support the negative relation between tangibility and leverage. Especially, De Haas and Peeters (2004) argue that the case for (some) CEE countries can be different. According to trade-off theory, firms which mainly have (tangible) long-term assets may want to match these with long-term financing only, which is, however, relatively scarce in most transition countries. This can result in no or even a negative relationship between tangibility. Pecking order mechanisms may also weaken or neutralize the positive effect of tangibility on leverage. This will be the case if asset tangibility does not alleviate the potential negative consequences of informational asymmetries. This may be due to an ineffective legal system or to the fact that tangible assets are mostly very specific assets and thus "sunk" (De Haas and Peeters, 2004). Another possible interpretation on the negative relation between tangibility and leverage can be made on the importance of intangible assets in those economies. In today's world, intangible assets play an important role in the success of companies especially in developed economies. Therefore, the importance of collateral value of fixed assets can decrease. When we focus on country based findings, it is seen that the impact of NFATA on TLTA is highest for firms in Slovenia.

We find no statistically significant relation between NDTS and TLTA in line with Ozkan (2001), Deari and Deari (2009), Chen (2004), and Bauer (2004).

Size has a positive impact on TLTA. We show that there is a positive relation between size and all three leverage ratios. The coefficient estimates for Size are 0.0442 (statistically significant at 1%) and 0.0784 (statistically significant at 1%) in column 5 and 6, respectively. As Rajan and Zingales (1995) and Titman and Wessels (1988) state that leverage increases with size because larger firms are better diversified and so have less risk for bankruptcy. Lower bankruptcy costs enable them to take on more leverage. In addition, large firms have lower agency costs of debt, smaller monitoring costs, less volatile cash flows, easier access to credit market, and require more debt to fully benefit from the tax shield. Bigger firms could have easier access to capital markets and borrow at more favorable interest rates, perhaps because they are more diversified in their investments and therefore have a lower risk of default than smaller firms (Ferri and Jones, 1979). The positive impact of size on leverage is also supported by Fan et al. (2012), Psillaki and Nikolaos (2009), Ozkan (2001), Muradoglu et al. (2010), Huang and Song. (2002), Eriotis et al. (2007), Deesomsak et al. (2004), Deari and Deari (2009), Daskalakis and Psillaki (2008), Chen (2004), Cassar and Holmes (2003), and Bevan and Danbolt (2004).

The coefficient estimates for liquidity (LIQ) are -0.0078 (statistically significant at 1%) and -0.0055 (statistically significant at 1%) in column 5 and 6, respectively. Eriotis et al. (2007), Deesomsak et al. (2004), Sen and Oruc (2008), and Ozkan (2001) find that there is a negative relation between liquidity and financial leverage. Liquidity ratio shows the ability of the firm to cover its short-term liabilities. The more debt the firm uses the more current liabilities this will imply and the fewer current assets will remain after dealing with the liabilities. Nevertheless, the fact that a firm employs more current assets implies that it can generate more internal inflows which can then use to finance its operating and investment activities. The negative relation confirms that firms finance their activities following the financing pattern implied by the ‘‘pecking order’’ theory (Eriotis et al. 2007).

Growth opportunities (GROWTH) have a negative impact on TLTA. The coefficient estimates for GROWTH are -0.0073 (statistically significant at 5%) and -

0.0273 (statistically significant at 1%) in column 5 and 6, respectively. The findings of Titman and Wessels (1988), Gonenc (2003), Rajan and Zingales (1995), Ooi (1999), Gaud et al. (2005) and Padron et al. (2005) indicate a negative relationship between growth opportunities and leverage whereas Shamshur (2010), Noulasa and Genimakisa (2011), Ozkan (2001), and Acaravci and Dogukanli (2004) document a positive relation. Asymmetric information can be used to relate growth opportunities of a firm with its capital structure. Growth causes variations in the value of a firm. Larger variations in the value of the firm are often interpreted as greater risk. Therefore firm with higher growth opportunities will be considered as a risky firm and will h044ave problems in raising debt capital with favorable terms. Thus, it will use less debt. On the other hand, the cash flows of a firm which value is most likely to remain stable in the future are predictable and its capital requirements can be financed with debt more easily than these of a firm with growth potential (Eriotis et al. 2007, p.324). According to Ozkan (2001), firms with greater growth opportunities might have lower leverage ratios due to the fear of debtholders that firms might pass up valuable investment opportunities (Ozkan, 2001).

The EU membership dummy and the 2008 financial crisis dummy do not have any statistically significant impact on leverage.

Table 4.6. Panel Data Estimations (pooled data)

	Pooled	Pooled (Excluding Turkey)	Pooled	Pooled (Excluding Turkey)	Pooled	Pooled (Excluding Turkey)
	CLTA	**CLTA**	**LTDTA**	**LTDTA**	**TLTA**	**TLTA**
ROA	-0.1191***	-0.1189**	-0.0652*	-0.0704*	-0.3103**	-0.3272***
	(0.0433)	(0.0503)	(0.0332)	(0.0377)	(0.0402)	(0.0452)
NFATA	-0.0764**	-0.0432*	0.0154	0.0500	-0.0767**	-0.0013**
	(0.0374)	(0.0437)	(0.0291)	(0.0332)	(0.0369)	(0.0419)
SIZE	0.0155**	0.0472***	0.0055**	0.0134*	0.0442***	0.0784***
	(0.0069)	(0.0099)	(0.0057)	(0.0077)	(0.0095)	(0.0115)
NDTS	0.2469	0.1940	-0.2404**	-0.3694***	-0.0872	-0.1888
	(0.1250)	(0.1833)	(0.0957)	(0.1372)	(0.1149)	(0.1646)
GROWTH	-0.0039	-0.0160	0.0082	-0.0022	-0.0073**	-0.0273***
	(0.0065)	(0.0082)	(0.0050)	(0.0062)	(0.0062)	(0.0075)
LIQ	-0.0131***	-0.0109***	0.0025**	0.0030**	-0.0078***	-0.0055***
	(0.0014)	(0.0016)	(0.0011)	(0.0012)	(0.0014)	(0.0014)
EU		-0.0229**		0.0130		-0.0057
		(0.0110)		(0.0084)		(0.0110)
F_{2008}	0.0094	0.0093	0.0023	0.0020	0.0083	0.0057
	(0.0075)	(0.0086)	(0.0057)	(0.0064)	(0.0067)	(0.0075)
CONS.	0.2076***	-0.0905**	0.0558***	-0.0326	0.1330***	-0.2080***
	(0.0277)	(0.0413)	(0.0209)	(0.0298)	(0.0232)	(0.0300)
Hausman Test	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects
No. of obs.	1500	1250	1500	1250	1500	1250
R^2 (within)	0.09	0.1	0.02	0.03	0.1	0.12
F Statistic	15.26	12.72	3.15	3.06	18.18	16.38
Probability>F	0.000	0.000	0.002	0.002	0.000	0.000
Wald chi2						
Prob > chi2						

Standard errors are given in parentheses. * Significant at 10% level, * * Significant at 5% level, * * * Significant at 1% level.

Table 4.7. Panel Data Estimations for CLTA (country based)

	Slovenia	Poland	Hungary	Lithuania	Czech Republic	Turkey
ROA	-0.4133*	-0.1443**	-0.3068***	-0.1547*	-0.1022**	-0.0324**
	(0.2128)	(0.1167)	(0.0935)	(0.0853)	(0.0806)	(0.0696)
NFATA	-0.0846**	-0.0534**	-0.1001**	-0.2995***	-0.4360***	-0.2880***
	(0.0767)	(0.1045)	(0.0718)	(0.0665)	(0.0697)	(0.0541)
SIZE	0.0390***	0.0614***	0.0579***	0.0281*	0.0212*	0.0054**
	(0.0132)	(0.0233)	(0.0132)	(0.0391)	(0.0264)	(0.0083)
NDTS	-0.6197	0.8133	0.6126	0.1599	-0.0062	0.0283
	(0.3837)	(0.4903)	(0.4489)	(0.3621)	(0.2800)	(0.1128)
GROWTH	-0.0629	-0.0380	0.0064	0.0110	-0.0237	-0.0010
	(0.0288)	(0.0309)	(0.0156)	(0.0148)	(0.0121)	(0.0075)
LIQ	-0.0026*	-0.0912***	-0.0203***	-0.0191***	-0.0186***	-0.0531***
	(0.0014)	(0.0100)	(0.0030)	(0.0059)	(0.0044)	(0.0051)
EU	-0.0039*	-0.0542**	-0.0127*	-0.0765**	-0.0243**	
	(0.0180)	(0.0232)	(0.0139)	(0.0301)	(0.0208)	
F_{2008}	0.0305	-0.0213	0.0046	0.0011	0.0020	0.0125
	(0.0129)	(0.0271)	(0.0155)	(0.0155	(0.0186)	(0.0109)
CONS.	-0.1346*	0.0650	-0.3066***	0.2031***	0.4041***	0.5412***
	(0.0849)	(0.1083)	(0.0857)	(0.0702)	(0.1259)	(0.0229)
Hausman Test	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects
No. of obs.	250	250	250	250	250	250
R^2 (within)	0.16	0.34	0.35	0.14	0.27	0.39
F Statistic	3.84	12.64	12.15	3.88	8.39	19.92
Probability>F	0.000	0.000	12.15	0.000	0.0000	0.000
Wald chi2						
Prob > chi2						

Standard errors are given in parentheses. * Significant at 10% level, * * Significant at 5% level, * * * Significant at 1% level.

Table 4.8. Panel Data Estimations for LTDTA (country-based)

	Slovenia	Poland	Hungary	Lithuania	Czech Republic	Turkey
ROA	-0.2432*	-0.1650**	-0.2128*	-0.1050**	-0.1438**	-0.1264**
	(0.1550)	(0.0698)	(0.1094)	(0.0852)	(0.0637)	(0.0771)
NFATA	0.0640	-0.0867	-0.0082	0.0074	0.1264	-0.1186
	(0.0565)	(0.0679)	(0.0830)	(0.0987)	(0.0513)	(0.0597)
SIZE	0.0489***	0.0173**	0.0012**	0.0503*	0.0132**	0.0016**
	(0.0120)	(0.0225)	(0.0154)	(0.0302)	(0.0187)	(0.0088)
NDTS	-0.2034**	-0.9530***	-0.9289*	-0.4485**	-0.1024*	-0.0892**
	(0.2656)	(0.3105)	(0.5223)	(0.3159)	(0.2263)	(0.1256)
GROWTH	-0.0476	-0.0178	-0.0209	-0.0283	0.0259	0.0311
	(0.0196)	(0.0185)	(0.0183)	(0.0132)	(0.0095)	(0.0087)
LIQ	0.0021**	0.0070**	0.0038**	0.0003**	0.0083**	0.0019**
	(0.0009)	(0.0061)	(0.0036)	(0.0049)	(0.0033)	(0.0057)
EU	0.0424	-0.0128	0.0155	0.0500	-0.0339	
	(0.0140)	(0.0181)	(0.0161)	(0.0277)	(0.0143)	
F_{2008}	-0.0162	0.0229	-0.0065	-0.0028	0.0122	0.0047
	(0.0103)	(0.0144)	(0.0184)	(0.0141)	(0.0152)	(0.0122)
CONS.	-0.4503***	0.2953***	0.1646	-0.1904**	-0.1295	0.1293***
	(0.1392)	(0.0482)	(0.1042)	(0.0913)	(0.1182)	(0.0254)
Hausman Test	Random effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects	Fixed effects
No. of obs.	250	250	250	250	250	250
R^2 (within)	0.39	0.1	0.05	0.06	0.16	0.1
F Statistic		5.04	3.07	8.39	4.29	15.03
Probability>F		0.000	0.001	0.000	0.000	0.000
Wald chi2	49.930					
Prob > chi2	0.000					

Standard errors are given in parentheses. * Significant at 10% level, * * Significant at 5% level, * * * Significant at 1% level.

Table 4.9. Panel Data Estimations for TLTA (country-based)

	Slovenia	Poland	Hungary	Lithuania	Czech Republic	Turkey
ROA	-0.3717**	-0.3589***	-0.5458***	-0.2141**	-0.3142***	-0.1783**
	(0.1825)	(0.1005)	(0.0958)	(0.0867)	(0.0711)	(0.0817)
NFATA	-0.4077***	-0.2045**	-0.1376*	-0.0053*	-0.1714***	-0.3254***
	(0.0823)	(0.0870)	(0.0730)	(0.1062)	(0.0565)	(0.0641)
SIZE	0.0638***	0.0021*	0.0825***	0.1199***	0.0501***	0.0062**
	(0.0160)	0.0021	(0.0219)	(0.0359)	(0.0153)	(0.0107)
NDTS	-0.3263	-0.7673	-0.8364	-0.1302	-0.3852	-0.0610
	(0.3079)	(0.3951)	(0.4978)	(0.3288)	(0.2470)	(0.1314)
GROWTH	-0.0201**	-0.0185*	-0.0040**	-0.0318**	-0.0212**	-0.0324***
	(0.0247)	(0.0269)	(0.0158)	(0.0133)	(0.0102)	(0.0092)
LIQ	-0.0142**	-0.0966***	-0.0062**	-0.0170***	-0.0134***	-0.0504***
	(0.0012)	(0.0086)	(0.0030)	(0.0054)	(0.0032)	(0.0061)
EU	-0.0090	-0.0098	-0.0025	-0.0216	-0.0083	
	(0.0179)	(0.0254)	(0.0168)	(0.0268)	(0.0178)	
F_{2008}	0.0167	-0.0012	-0.0018	0.0034	0.0082	0.0171
	(0.0101)	(0.0228)	(0.0142)	(0.0140)	(0.0175)	(0.0127)
CONS.	-0.3799***	0.7710***	-0.3535***	-0.1938***	0.1585	0.6928***
	(0.0458)	(0.1178)	(0.0649)	(0.0543)	(0.1456)	(0.0269)
Hausman Test	Fixed effects	Random effects	Fixed effects	Fixed effects	Random effects	Fixed effects
No. of obs.	250	250	250	250	250	250
R^2 (within)	0.25	0.31	0.25	0.17	0.32	0.36
F Statistic	6.57		7.56	4.84		17.31
Probability>F	0.000		0.0000	0.0000		0.000
Wald chi2		149.39			88.21	
Prob > chi2		0.000			0.000	

Standard errors are given in parentheses. * Significant at 10% level, * * Significant at 5% level, * * * Significant at 1% level.

CONCLUSION

Modigliani and Miller (1958) argue that the capital structure decisions are irrelevant under some restrictive assumptions including perfectly efficient capital markets. Since then, choices of sources of financing and their effects have been widely discussed both theoretically and empirically. Yet, there is little consensus on how firms choose their capital structure. According to Modigliani and Miller (1958), in a perfect capital market the value of the firm is independent of its capital structure and so debt and equity are perfect substitutes. However, as the assumption of perfect capital markets is relaxed, the choice of capital structure becomes an important factor as a firm can affect its value by changing the proportion between debt and equity. Given that conditions of Modigliani-Miller theorem (1958) do not hold in real world markets, the literature on capital structure has been studied and expanded by many theoretical and empirical contributions especially by relaxing the assumptions of MM.

There is a rich literature on the capital structure choice of firms in developed countries. The majority of the studies on capital structure have focused on analyzing the financing behavior of firms in developed countries particularly the US, however, in the last decade capital structure studies has become increasingly international (Chen, 2004). The differences in institutions and financial markets between developed and developing countries merits the need to consider the capital structure choice of firms from the perspective of developing economies, especially within the context of new members of the EU (Abor and Biekpe, 2007). There are a limited number of studies on the determinants of capital structure focusing on firms in the Eastern Europe Countries.

This thesis contributes to the literature by analyzing the impact of 6 firm-level variables on the capital structure choices of listed firms in 5 new member countries of the EU namely Slovenia, Poland, Hungary, Lithuania, and Czech Republic and Turkey. The impact of a series of firm characteristics variables namely size, asset structure, profitability, non-debt tax shield, growth opportunities, and liquidity is analyzed. In

addition, an EU membership dummy and 2008 financial crisis dummy are introduced. The study uses the firm level data from the balance sheets and income statements of firms in Slovenia, Poland, Hungary, Lithuania, and Czech Republic and Turkey which is collected from the WRDS-Wharton Research Data Services Compustat Global Industrials and Commercials database. The time period for each country is 1996-2010.

When we investigate the descriptive statistics of firm-level variables, it is seen that Slovenian firms had the lowest ROA with 4.4%. Firms in Turkey with a mean ROA of 12% were in first place in terms of profitability. Firms in new member countries of the EU had a higher proportion of fixed assets in their total assets compared to Turkish firms. It is seen that, on average, firms have a NDTS ratio of 5.5% and no significant differences among countries are observed. Slovenian firms had the highest liquidity ratio with 2.2. Then, it is followed by firms in Turkey and Hungary. Firms in those 6 countries did not face problems in terms of meeting short term obligations. Growth opportunities are significantly higher for firms in Turkey. Firms in Hungary used less debt compared to firms in other countries. The mean value for the TLTA ratio is 38% in Hungary. Firms in Slovenia had the highest TLTA ratio (45%) which means that those firms financed almost half of their assets with debt. Firms in Slovenia and Lithuania used more long-term debt. The mean value of the LTDTA ratio is 12% for firms in Slovenia and 13.4% in Lithuania. In terms of the CLTA, there were no significant differences among the firms in those 6 countries. On average, the CLTA ratio was 26% for all firms in the 6 countries.

First, regressions were run with the pooled data and then separate regressions for firms in each country. A Hausman test was employed between fixed and random effects model to decide which is more efficient. According to the regression estimates, it is found that that profitability (ROA), asset tangibility (NFATA), and liquidity (LIQ) have a negative impact on current liabilities to total assets ratio whereas size (SIZE) has a positive impact on CLTA. For long-term debt to total assets, profitability and non-debt tax shield (NDTS) are found to have negative impact. On the contrary, liquidity and size variables have a positive impact. We also show that profitability, tangibility, growth

opportunities, and liquidity negatively affect total liabilities to assets ratio of listed firms in the 6 countries. There is a positive association between TLTA and size. European Union membership dummy has a negative impact on CLTA whereas no impact is observed for LTDTA and TLTA. The 2008 Financial crisis dummy does not have any statistically significant impact on leverage ratios.

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Table 1a. Correlation matrix for Slovenia

	CLTA	LTDTA	TLTA	ROA	NFATA	SIZE	NDTS	LIQ	GROWTH	EU	F_{2008}
CLTA	1										
LTDTA	0.3938	1									
TLTA	0.8777	0.7539	1								
ROA	-0.3431	-0.2642	-0.3343	1							
NFATA	-0.3402	-0.0254	-0.2346	0.0083	1						
SIZE	0.4023	0.4866	0.4661	-0.0676	0.0332	1					
NDTS	-0.4235	-0.2027	-0.3649	0.1668	0.2516	-0.1784	1				
LIQ	-0.3289	0.1535	-0.3233	0.1281	-0.1054	-0.2872	0.1529	1			
GROWTH	-0.0409	-0.0977	-0.0581	0.0376	0.023	0.0592	-0.0416	-0.0518	1		
EU	-0.1902	0.3951	0.3088	0.014	-0.1517	0.3142	-0.3392	-0.1781	-0.1233	1	
F_{2008}	0.1411	0.1128	0.1451	-0.0166	-0.0841	0.1073	-0.101	-0.0602	-0.1139	0.2783	1

Table 1b. Correlation matrix for Poland

	CLTA	LTDTA	TLTA	ROA	NFATA	SIZE	NDTS	LIQ	GROWTH	EU	F_{2008}
CLTA	1										
LTDTA	-0.0394	1									
TLTA	0.7669	0.5125	1								
ROA	-0.0912	-0.1451	-0.1914	1							
NFATA	-0.3184	0.1252	-0.2002	0.0593	1						
SIZE	0.035	0.167	0.1702	0.0079	0.0734	1					
NDTS	-0.176	-0.0025	-0.2061	0.0241	0.4324	-0.1564	1				
LIQ	-0.3696	0.1637	-0.5604	0.045	-0.0426	-0.2629	-0.0776	1			
GROWTH	0.0558	0.0618	-0.0641	0.2229	-0.2194	-0.0525	-0.2252	-0.0567	1		
EU	-0.0206	0.0165	0.0456	0.1616	0.0444	0.2639	-0.0789	-0.2198	0.0159	1	
F_{2008}	-0.011	0.0195	0.002	0.023	0.0592	0.1138	-0.0393	-0.0951	0.0427	0.2897	1

Table 1c. Correlation matrix for Hungary

	CLTA	LTDTA	TLTA	ROA	NFATA	SIZE	NDTS	LIQ	GROWTH	EU	F_{2008}
CLTA	1										
LTDTA	-0.1862	1									
TLTA	0.6555	0.54	1								
ROA	-0.3129	-0.1476	-0.3494	1							
NFATA	-0.3107	0.3467	-0.0686	0.1494	1						
SIZE	0.1867	0.4626	0.2427	0.1441	0.4119	1					
NDTS	0.0633	-0.1414	0.1736	0.1574	0.3821	0.2386	1				
LIQ	-0.4374	0.2309	-0.4116	0.0301	-0.3902	-0.2299	-0.4181	1			
GROWTH	-0.1306	-0.0169	-0.1134	0.2002	-0.008	0.0038	-0.2665	0.1209	1		
EU	-0.1241	0.0495	0.1597	-0.1241	-0.1079	0.1412	0.0673	-0.0481	-0.2444	1	
F_{2008}	0.0409	-0.019	0.0157	-0.006	-0.0741	0.0448	-0.0432	-0.0341	-0.0871	0.2762	1

Table 1d. Correlation matrix for Lithuania

	CLTA	LTDTA	TLTA	ROA	NFATA	SIZE	NDTS	LIQ	GROWTH	EU	F_{2008}
CLTA	1										
LTDTA	0.0183	1									
TLTA	0.7661	0.5964	1								
ROA	-0.0261	-0.0445	-0.0946	1							
NFATA	-0.4263	0.1017	-0.2288	-0.2214	1						
SIZE	0.4317	0.0421	0.2515	0.0553	0.4734	1					
NDTS	-0.0642	-0.0746	-0.0474	-0.0944	0.2778	-0.0005	1				
LIQ	-0.2884	0.2186	-0.4207	0.1468	-0.3002	-0.0377	-0.0918	1			
GROWTH	-0.0702	-0.0514	-0.0877	0.0669	0.0156	0.0675	-0.1673	0.0384	1		
EU	-0.0498	-0.0736	0.0147	-0.049	-0.1574	-0.1227	-0.1306	0.1058	-0.0389	1	
F_{2008}	0.0869	-0.0395	0.0607	-0.1598	-0.0313	0.0318	-0.0275	-0.069	-0.0639	0.1597	1

Table 1e. Correlation matrix for Czech Republic

	CLTA	LTDTA	TLTA	ROA	NFATA	SIZE	NDTS	LIQ	GROWTH	EU	F_{2008}
CLTA	1										
LTDTA	-0.1303	1									
TLTA	0.8012	0.3434	1								
ROA	-0.1296	-0.0107	-0.1628	1							
NFATA	-0.118	0.1578	-0.033	0.0652	1						
SIZE	0.1074	0.2225	0.1245	0.2697	0.3683	1					
NDTS	-0.1055	-0.0258	-0.0902	-0.0763	0.3694	0.3362	1				
LIQ	-0.3383	0.1177	-0.4084	-0.2951	-0.4179	-0.4974	-0.2403	1			
GROWTH	0.0519	0.1235	-0.1526	0.0383	-0.0477	0.1179	-0.1387	-0.1319	1		
EU	-0.0253	-0.1079	-0.0694	0.1386	-0.1266	-0.0571	-0.088	0.1404	-0.1115	1	
F_{2008}	-0.0103	-0.0116	-0.0344	-0.0261	-0.0789	-0.0396	-0.023	0.1191	-0.0677	0.2974	1

Table 1f. Correlation matrix for Turkey

	CLTA	LTDTA	TLTA	ROA	NFATA	SIZE	NDTS	LIQ	GROWTH	F_{2008}
CLTA	1									
LTDTA	0.1293	1								
TLTA	0.8545	0.6035	1							
ROA	-0.2232	-0.2155	-0.3082	1						
NFATA	-0.5322	0.0907	-0.3521	-0.1189	1					
SIZE	0.1248	0.2685	0.2281	-0.5296	0.0925	1				
NDTS	-0.081	-0.0814	-0.0568	0.1534	0.2189	-0.3625	1			
LIQ	-0.4345	0.3608	-0.3091	0.3432	0.0741	-0.2588	-0.0089	1		
GROWTH	0.2278	0.1199	-0.2555	0.0933	-0.0977	-0.389	0.1538	-0.1516	1	
F_{2008}	-0.0405	0.0323	-0.0298	-0.0414	0.0081	0.1822	-0.1402	0.023	-0.2164	1

Table 1g. Correlation matrix for 5 EU countries

	CLTA	LTDTA	TLTA	ROA	NFATA	SIZE	NDTS	LIQ	GROWTH	EU	F_{2008}
CLTA	1										
LTDTA	-0.0087	1									
TLTA	0.771	0.5437	1								
ROA	-0.1317	-0.1182	-0.2002	1							
NFATA	-0.3103	0.1582	-0.1001	-0.0284	1						
SIZE	0.0711	0.0937	0.0411	0.013	0.1082	1					
NDTS	-0.1301	-0.0348	-0.1127	0.0087	0.377	-0.0849	1				
LIQ	-0.3143	0.1406	-0.3538	-0.0328	-0.2472	-0.0983	-0.0889	1			
GROWTH	-0.0237	0.0037	-0.0092	0.1033	-0.0411	0.0077	-0.1601	-0.0266	1		
EU	-0.0354	0.11	0.0953	0.0133	-0.0574	-0.1007	-0.0496	-0.0451	-0.0733	1	
F_{2008}	0.0475	0.0276	0.0484	-0.0569	-0.0326	-0.0116	-0.0331	-0.0198	-0.0532	0.269	1

Table 1g. Correlation matrix for 5 EU countries and Turkey

	CLTA	LTDTA	TLTA	ROA	NFATA	SIZE	NDTS	LIQ	GROWTH	F_{2008}
CLTA	1									
LTDTA	0.009	1								
TLTA	0.7816	0.5527	1							
ROA	-0.1414	-0.1464	-0.2225	1						
NFATA	-0.3276	0.162	-0.1169	-0.105	1					
SIZE	0.0454	0.1306	0.0756	-0.1569	0.1847	1				
NDTS	-0.1185	-0.01	-0.1017	0.0546	0.3195	-0.137	1			
LIQ	-0.3293	0.1537	-0.371	0.009	-0.2229	-0.1088	-0.0743	1		
GROWTH	0.0226	0.0016	-0.0251	0.1717	-0.1269	-0.1603	-0.0621	-0.0265	1	
F_{2008}	0.0343	0.0287	0.0366	-0.0538	-0.0239	0.0168	-0.0559	-0.0163	-0.0841	1