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Summary of the dissertation:

**THE EFFECTS OF THE MARKET CONDITIONS ON THE
FIRMS CAPITAL STRUCTURE**

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KEY WORDS

capital structure, target debt ratio, pecking order theory, market timing, firm-specific determinants of capital structure, panel data, Generalised method of moments

INTRODUCTION

The capital structure refers to the types of long-term financing used by companies (for example, the reinvested profit, equity and long-term debt) and how they are financed through a mix of equity and debt capital.

An optimal capital structure involves taking important decisions on maximizing the firms' value by their managers. These decisions are important not only for the maximization of firms' value, but also for their impact on the firms' capability to face the competition on the market. An optimal capital structure should provide higher returns to shareholders than they would gain from an economic entity entirely funded by equity.

In an attempt to explain how firms finance their assets and the factors that influence these funding decisions, a number of theories and models of capital structure have been proposed over the years. These theories and models try to explain the percentage of debt and equity that one can find in the firms' balance.

Among the theories of capital structure that were imposed over time, the theorem of Modigliani and Miller (1958) can be considered the starting point for explaining the capital structure, although it was later proved to be a theoretical model without a solid

empirical foundation (Ross, Westerfield & Jaffe, 1993). The main idea of this classical theory is that given a perfect market, in the absence of taxation, the value of the firm is not influenced by how it is financed.

The capital structure theories developed later, i.e. the trade-off theory, pecking order theory, agency theory, market timing theory, demonstrated that a firm can change its market value and growth rate by changing the optimal ratio between equity and debt capital. These modern theories of capital structure take into account in determining the optimal capital structure, the taxes, the costs due to lack of cash, agency costs, the information asymmetry, the effects of market imperfections and institutional constraints (Baker & Wurgler, 2002; Jensen & Meckling, 1976; Modigliani & Miller, 1963; Myers, 1984).

The existing stage of research devoted to the capital structure can be described by Myers's statement (2001): „there is no universal theory for the choice of capital structure and no reason to expect one” (p. 1). A general theory of the optimal capital structure is not possible because of the multitude and complexity of factors that explain how the firms are financed.

In the economic literature, the determinants of capital structure have been grouped into two broad categories (Hermanns, 2006): (1) external factors represented by each country's specific economic conditions in which the economic entities operate and (2) firm-specific factors that include some of their performances. Among the external factors that explain the differences arising between the capital structure of enterprises in different countries, the most important are the macroeconomic conditions (economic growth, inflation and the average interest rate). The internal firm-specific factors are represented by profitability, asset tangibility, firms' size, their growth opportunities, financial distress costs, etc.

The determinants of capital structure have been included in the econometric models, which have been empirically validated on the capital markets from different countries,

becoming well-known. These well-known statistic models (Booth, Aivazian, Demircug-Kunt, & Maksimovic, 2001; De Miguel & Pindado, 2000; Rajan & Zingales, 1995) postulated the presence of differences between the financing behavior of firms in developed and developing countries, differences explained by the nature of correlation between the firm-specific factors and the firms debt ratio (Booth et al. 2001; Chen, 2004).

Although some recent studies have focused on the empirical validation of the capital structure models on the capital markets in different countries, they are just a few and problematic. The cause of these problems was firstly related to the fact that the determinants of capital structure can be measured through a number of variables, and there is the possibility to choose the variable that is not the most appropriate one for the research goal. Secondly, it is extremely difficult to identify those variables that measure the determinants of capital structure and not to depend on other factors of interest. More precisely, a certain variable included in the capital structure model can represent more than one factor of influence of the capital structure. Last but not least, as the used variables are imperfect representations of the measured theoretical features, the use of these variables in the regression analysis can lead to measurement errors of the model.

The interest in the validation of an econometric model adapted to the Romanian capital market represented the starting point of the approach proposed by us in this paper.

The goal of the present study is to identify the determinants of capital structure for the listed companies to Bucharest Stock Exchange (BVB) and RASDAQ, to develop an econometric model that includes these factors and to validate it on the Romanian capital market. The analysis carried on by us has sought to validate the assumptions of those capital structure theories that best explain the financing behavior of Romanian firms and the differences regarding some specific financing decisions of firms in the developed versus developing countries.

OVERVIEW OF THE CHAPTERS OF THE DISSERTATION

The dissertation contains four chapters, the first two chapters are dedicated to the theoretical framework, and the last two chapters present the empirical studies conducted in order to validate an econometric model for the Romanian capital market.

In the first chapter, alongside the conceptual clarifications undertaken, we review the main capital structure theories, both traditional (e.g., Modigliani and Miller theorem) and modern ones (e.g., trade-off theory, pecking order theory, agency theory, market timing theory).

The traditional theory of capital structure, Modigliani and Miller theorem (1958) is based on two propositions, the first one is called the irrelevance proposition, and the second one refers to the influence that capital structure has on the cost of equity. According to the proposition 1 of the theorem, the market value of a firm is constant regardless of whether it finances itself with debt or equity. The authors assumed that there are perfect and frictionless markets, individuals and corporations borrow at the same rates, no transaction costs, no default risk, and no taxation.

The second proposition of Modigliani and Miller theorem establishes that a firm's capital structure has no effect on its weighted average cost of capital (i.e., the cost of equity is a linear function of the debt-equity ratio).

Myers (2001) stated that "the Modigliani and Miller (1958) paper is exceptionally difficult to test directly". However, Modigliani and Miller (1958) tried to validate empirically the two propositions of their theorem using the case of petroleum, oil, and electricity industries. Later in Miller and Modigliani (1966), they performed a test using a two-stage instrumental variable approach and found that the value of a firm is

independent of the capital structure, but as Miller (1989) stated “showing what doesn’t matter can also show, by implication, what does” (pag.7).

One of the modern theories of capital structure described in Chapter 1 is trade-off theory, which arose as a result of criticism of Modigliani and Miller theorem. By adding income tax on the capital structure irrelevance principle (in other words, there are benefits to leverage within a capital structure up until the optimal capital structure is reached), trade-off theory recognizes the tax benefit of debt. Since maximizing the business value is a linear function (first degree) and no compensation cost of debt, corporate finance should be made only from debt. To avoid this extreme measure, it takes some of the cost of debt and the most suitable in this respect would be the cost of financial distress (Frank & Goyal, 2005).

The trade-off theory postulates that a firm will borrow up to the point where the marginal value of tax shields on additional debt is balanced by increasing the present value of possible bankruptcy costs (Myers, 2001). Kraus and Litzenberger (1973) provided a classical version of the theory that optimal leverage reflects a trade-off between tax benefits of debt and bankruptcy costs. Increases in leverage increase the probability of bankruptcy and thus increase expected bankruptcy costs. The point at which additional leverage generates an increase in expected bankruptcy costs that just offset the tax subsidy to the incremental debt defines the optimal capital structure.

According to Myers (1984), a firm that follows the trade-off theory sets a target debt ratio and then gradually moves towards target. The target debt ratio is determined by balancing debt tax shields against costs of bankruptcy.

Later, Frank and Goyal (2005) stated that to achieve the target debt ratio will be two phases. In the first phase, called static trade-off theory firms have optimal capital structure, which they determine by trading off the benefits against the costs of the use of debt. In the second phase, called the dynamic trade-off theory (adjustment behavior to the

target debt ratio), a firm exhibits adjustment behavior to the target debt ratio, whether the firm has a target debt ratio and gradually try to reach this target.

The pecking-order theory of Myers and Majluf (1984) and Myers (1984) is based on the assumption that a firm having assets-in-place and a growth opportunity requires additional equity financing. Myers and Majluf (1984) assumed that a firm is undervalued because managers have, but cannot reveal, information concerning new and existing investment opportunities. Investors are aware of this asymmetric information problem, and they discount the firm's new and existing risky securities when stock issues are announced. On the other side, managers avoid issuing undervalued securities by financing projects with retained earnings and with low-risk debt.

Myers (1984) suggested that the costs of issuing risky debt or equity overwhelm the forces that determine optimal leverage in the trade-off model. The result is the pecking order model, which states that firms finance investments first with retained earnings, then with safe debt, then with risky debt, and finally, with equity. According to pecking order theory, more profitable firms borrow less, because they have more internal financing available and the less profitable firms require external financing, and consequently accumulate debt.

The aforementioned theories are based on the assumption that the interests of managers are perfectly aligned with those of shareholders and managers will act in the best interests of the company's existing shareholders. Jensen and Meckling (1976) argued that the interests of managers are not aligned with those of shareholders, and managers tend to waste free cash flow on perquisites and bad investments. The authors defined the relationship between the shareholders (called principal(s)) and managers as an agency relationship, a contract under which one or more shareholders engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent. If both parties to the relationship are utility maximizers there is good reason to believe that the agent (manager) will not always act in the best interests of the principal (shareholders). The principal can limit divergences from his

interest by establishing appropriate incentives for the agent and by incurring monitoring costs designed to limit the aberrant activities, of the agent. However, it is impossible for the principal or the agent at zero cost to ensure that the agent will make optimal decisions from the principal's viewpoint. In most agency relationships the principal and the agent will incur positive monitoring and bonding costs and in addition there will be some divergence between the agent's decisions and those decisions which would maximize the welfare of the principal. According to Jensen and Meckling (1976), agency costs are defined as the sum of the monitoring expenditures by the principal, the bonding expenditures by the agent, and the residual loss, and are explained by the *agency theory*. In order to control the agency costs created by free cash flow, firms with more profitable assets in place use a large fraction of their earnings to debt payments. Thus, controlling for investment opportunities, the leverage is positively related to profitability. The underinvestment and asset substitution problems, which arise when debt is risky and the stockholder-bondholder agency problem exists, lead to the prediction that firms with more investments have less leverage (Jensen & Meckling, 1976; Myers, 1977).

The more recent capital structure theory, *the market timing theory* was first introduced by Baker and Wurgler (2002). This theory suggests that managers are able to identify certain time periods during which equity issuance is less costly due to the high valuation of company's stock. When managers time the equity market and issue equity when its value is high, this lowers the firm's cost of equity and benefits current shareholders at the expense of new shareholders. In addition, this theory suggests that the managers' ability to time the equity market affects a company's security issuance decision and ultimately the capital structure of that company.

Baker and Wurgler (2002) suggests that firms issue securities depending on the relative costs; if cost of equity is low relative to the cost of other forms of capital, they are more likely to issue equity. In other words, according to this theory, firms 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. This also implies that, for external financing decisions, firms prefer external equity when the cost of equity is low, and prefer debt otherwise.

Finally, according to the market timing theory, the market timing of equity issuances has long-lasting effects on capital structure. Baker and Wurgler (2002) found that low leverage firms are those that raised funds when their market valuations were high, as measured by the market-to-book ratio, while high leverage firms are those that raised funds when their market valuations were low.

As a conclusion of the first chapter, we present the practical implications, strengths and weaknesses of the main theories of capital structure (see Table 1).

Table 1: Theories of capital structure

<i>Theories</i>	<i>Practical implications</i>	<i>Strengths</i>	<i>Weaknesses</i>
Modigliani and Miller theorem (Modigliani & Miller, 1958)	<ul style="list-style-type: none"> - the market value of the firm is not affected by the choice of financing the investments or on the decisions of distributing the dividends - each firm's cost of capital is a constant, regardless of the debt ratio 	<ul style="list-style-type: none"> - it specifies conditions under which various financing decisions are irrelevant for the firm's value (Ross et al., 1993) - it forms the basis for modern thinking on capital structure (it is a cornerstone of modern corporate finance) 	<ul style="list-style-type: none"> - it does not take into account taxes, bankruptcy costs, and other agency costs (Stiglitz, 1969) - it is based on the assumption that investors and firms have equal access to financial markets
The trade-off theory (Kraus & Litzenberger,	<ul style="list-style-type: none"> - safe firms with a large proportion of tangible assets tend to borrow 	<ul style="list-style-type: none"> - sets a target debt ratio and then gradually moves 	<ul style="list-style-type: none"> - in practice, it is very difficult to set a target debt ratio

1973)	<p>more than small, risky firms with mostly intangible assets</p> <ul style="list-style-type: none"> - firms with high profitability and valuable growth opportunities tend to borrow less and firms with more profitable assets in place, fewer investments, less volatile earnings and net cash-flow have higher leverage (Myers, 2003); 	<p>towards target (a firm's capital structure is formed by its gradual movement toward its optimal debt ratio)</p> <ul style="list-style-type: none"> - firms managers try to find a debt/equity ratio that balances the risk of bankruptcy (i.e., a high ratio) 	<ul style="list-style-type: none"> - the results that validate the trade-off theory may equally support the assumptions of the other theories of capital structure - there are many profitable firms (which it expected to have more debt) that have a low debt ratio (Myers, 2003)
<p>The pecking-order theory (Myers, 1984. Myers & Majluf, 1984)</p>	<ul style="list-style-type: none"> - more profitable firms borrow less, because they have more internal financing available and less profitable firms require external financing, and consequently accumulate debt (Myers, 2003) 	<ul style="list-style-type: none"> - it predicts that information asymmetry between managers and investors creates a preference ranking over financing sources (Myers, 2001) - it indicates that more profitable firms borrow less, because they have more internal financing available and less profitable firms require external financing, and consequently 	<ul style="list-style-type: none"> - it can not explain why financial decisions are not able to avoid the consequences of the additional information that managers have (Myers, 2003) - it is based on the assumption that the interests of managers are perfectly aligned with those of shareholders

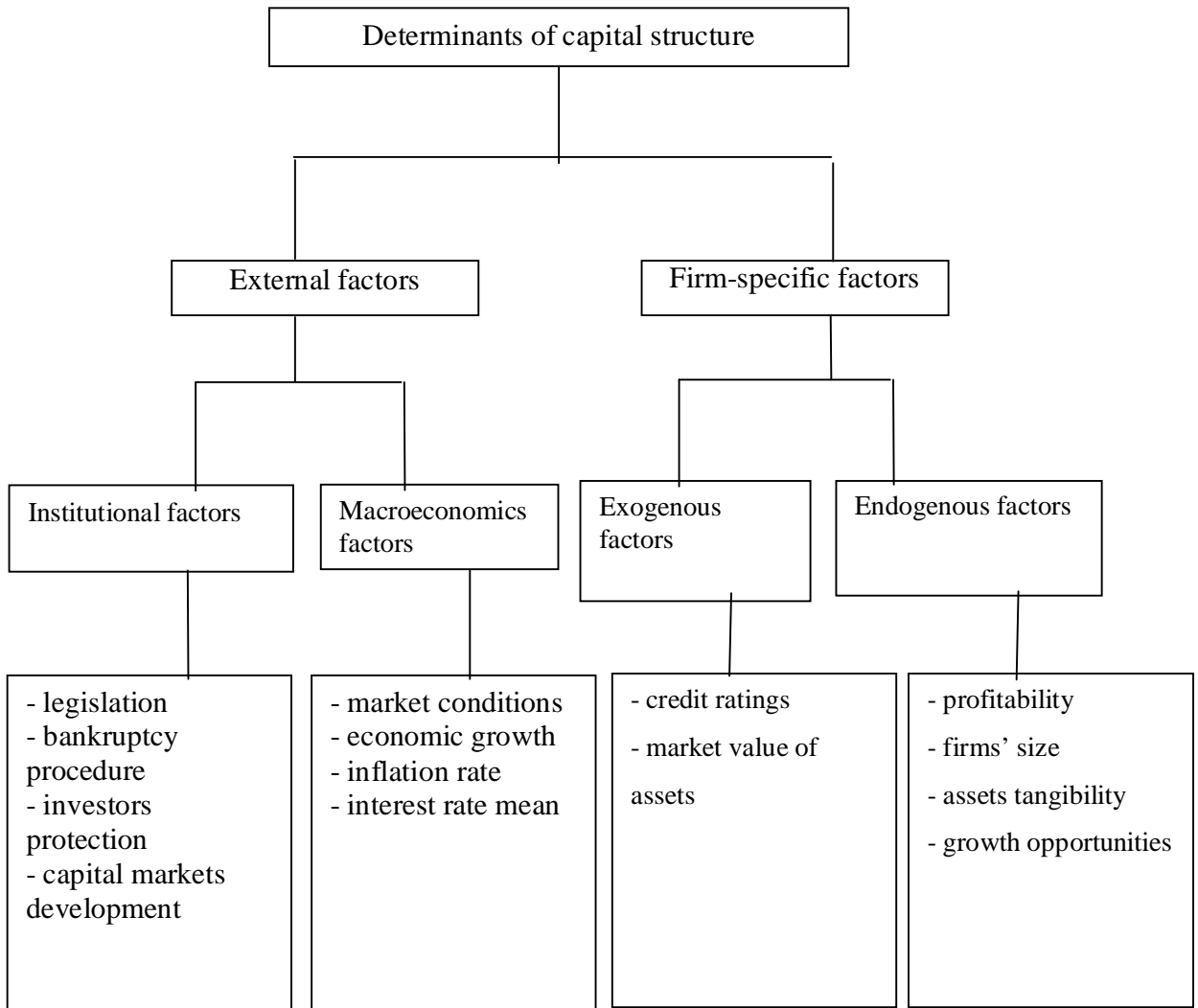
		accumulate debt	
The agency theory (Jensen & Meckling, 1976)	<ul style="list-style-type: none"> - leverage is positively associated with firm value, default probability, extent of regulation, free cash flow, extent to which the firm is takeover target and the importance of managerial reputation (Harris & Raviv, 1990; Stulz, 1990). - leverage is negatively associated with the extent of growth opportunities, interest coverage, the cost of investing firm prospects, and the probability of reorganization following default (Harris & Raviv, 1990) 	<ul style="list-style-type: none"> - it explains the financing behavior of companies when the interests of managers are perfectly aligned with those of shareholders - it provides explanations for numerous institutional regulations: monitoring rights, reply right, and contractual obligations for credits (Hax, Hartmann-Wandels & von Hinten, 1988) 	<ul style="list-style-type: none"> - abordează teme foarte diferite, determinând astfel obținerea unor rezultate parțial controversate care nu pot explica structura capitalului întreprinderilor - it approaches very different aspects, thereby the contradictory results obtained can not explain firms capital structure - it does not provide practical recommendations
The market timing theory (Baker & Wurgler, 2002)	<ul style="list-style-type: none"> - capital structure changes are strongly and positively related to their market timing measure, so, the capital structure of a firm is the cumulative outcome of past attempts to time the equity market; -it argues that firms time 	<ul style="list-style-type: none"> - it proves that macroeconomics factors and firm-specific factors influence the capital structures of the listed companies 	<ul style="list-style-type: none"> - it does not define an optimal capital structure - there are no sufficient studies to empirically validate the assumptions of this theory (Frank & Goyal, 2004)

	<p>their equity issues in the sense that they issue new stock when the stock price is perceived to be overvalued, and buy back own shares when there is undervaluation.</p>		
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Based on the theories of capital structure, researchers in the finance domain identified a number of determinants of capital structure, which were investigated using different econometric models and panel data specifications in many economies. These explorations enable to test for validity of some of the capital structure theories, more specifically on predictions of how leverage varies with these determinants. Chapter 2 of the dissertation presents the main determinants of financing decisions suggested by the capital structure theories and the most important econometric models used in capital structure investigations.

Hermanns (2006) classified the determinants of firms' capital structure in two broad categories: (1) external factors and (2) firm-specific factors (see Figure 1).

Figure 1: Determinants of capital structure



(Source: Hermanns, J. 2006: 166)

Most of the determinants of capital structure, shown in Figure 1, have been included in various econometric models in order to test the relationship between macroeconomics conditions and firm-specific factors and the adjustment speed of capital structure. For revealing potential differences in financial decisions of companies between developed

and developing countries, in Chapter 2, we analyzed the following categories of econometric models: (1) econometric models of the United States; (2) econometric models of the developed countries; (3) econometric models of Asian countries; (4) econometric models in developing countries; and (5) econometric models for Romania.

Most theoretical and empirical studies of capital structure examined the case of U.S. companies. The cross section analysis by Rajan and Zingales (1995) is one of the first attempts to test for the G7 countries the theoretical and empirical lessons learnt from the U.S. studies. These authors find similar levels of leverage across countries, thus refuting the idea that firms in bank-oriented countries are more leveraged than those in market-oriented countries. The results of this study indicated that the determinants of capital structure that have been reported for the U.S. (size, growth, profitability, and importance of tangible assets) are important in other countries as well. In other words, capital structure decisions of the developed countries companies are similar to those of the U.S., and support the assumptions of several modern theories of capital structure (e.g., the trade-off theory, the pecking order theory). However, Asian companies financing decisions support the assumptions of so-called new pecking order theory (Chen, 2004; Delcours, 2007), which states that firms use as financing sources first retained earnings, the equity, and finally debt. These differences are caused by the different macroeconomics and firm-specific factors in developing and developed countries (there are large differences in all aspects of the financial system).

Only a limited number of studies on capital structure have been conducted on the financing decisions of the East European emerging countries, including Romania (De Haas & Peeters, 2004; Klapper, Sarria – Allende & Sulla, 2002).

The results of the existing studies regarding the determinants of capital structure for Romanian companies and the correlations between these determinants and leverage are presented in Table 2.

Table 2: Studies regarding the determinants of capital structure for Romanian companies

Studies	Period of time	Sample	The determinants of leverage					
			<i>prof</i>	<i>tang</i>	<i>age</i>	<i>size</i>	<i>grow</i>	<i>income var</i>
Klapper et al. (2002)	1999	25.535 (IMM)	_-***	_-***	_-**	_+***	_+***	
De Haas & Peters (2004)	1993-2001	24.007	_-***	_-***	_+***			
Nivorozhkin (2005)	1997-2001	2477	_-***	_-***	_-***	_+**		_+**
Dragotă et al. (2008)	1997-2005	43-60 listed on BVB	_-*	_-*		_+*	_-*	

(i) *prof* represents firm's profitability and is the ratio of earnings before interest and taxes to total assets; (ii) *tang* is the ratio of tangible assets plus inventories to total assets using book values; (iii) *age* is measured as the number of years since firms incorporation; (iv) *size* represents firm's size and is the natural logarithm of sales in real terms; (v) *growth opportunities* are measured as the market-to-book ratio or the ratio of book value of assets plus market value of equity less book value of equity to book value of assets; (vi) *income var* represents the income variability and is the standard deviation of operating income; (vii) +, - represents a positive correlation, and a negative correlation, respectively between debt ratio and determinants of capital structure; (viii) ***, **, * significant at 1%, 5%, and 10% level, respectively.

As indicated in Table 2, the average debt ratio for Romanian firms is lower compared to a mean of 66% for the G7 countries (Rajan and Zingales, 1995) and it is quite similar to a mean of 50% for firms in developing countries (Booth et al., 2001). In addition, the determinants of Romanian firms statically significant for debt ratio are: profitability, tangibility, firm's size, growth opportunities, age and income variability.

Furthermore, as all the studies that have examined financing decisions of Romanian firms, are performed over the time span 1993-2005, it is necessary to conduct a more

recent study (an extended period) in order to reveal capital structure of the Romanian listed companies since 2005 (incorporating recent developments).

Investigations from *Chapter 3* concentrates on examining the influence of capital market on Romanian firms capital structure. In the absence of data on the market-to-book ratio (which reflects the market timing opportunities), we used in this chapter a descriptive analysis of market timing behavior of Romanian firms by comparing the mean of price-earnings ratio (PER) for Bucharest Stock Exchange with the number of Romanian listed firms that have conducted share capital increase through new contributions in cash by the period 2000-2009. PER index is calculated as the ratio between the market price of shares and earnings per share and represents the number of years over which the investment of the net benefits of the issuing firm is recovered. PER index provides, also, an overview about how properly is valued a capital market business. By calculating the correlation coefficient between PER index and the number of Romanian listed firms that have conducted share capital increase through new contributions in cash, there is a strong positive correlation between the two variables, which indicates the existence of a market timing behavior in the financing decisions of Romanian listed firms. Despite the result, we believe that more empirical evidence is needed in order to validate the market timing theory for Romanian capital market.

Chapter 4 of the paper assesses the impact of determinants of capital structure on the debt ratio of Romanian firms through use and estimate of a panel data regression model. In order to validate the regression model with debt ratio as dependent variable we used financial data from 109 firms during the period 2004-2008.

Total debt ratio of Romanian firms (calculated as the ratio of book value of total debt to total debt plus equity and the ratio of total debt to total assets) has an average value of 35%, much lower than the value registered in developed countries (66% for G7 countries - Rajan & Zingales, 1995) and quite similar with those in developing countries (51% - Booth et al., 2001). Total debt ratio varies by economic activity of firms (e.g., commerce/services, construction, transport, industry, etc.) and ownership structure (e.g.,

firms with majority shareholder, firms with minority shareholders). The long-term debt ratio is defined as ratio of long term debt to total debt plus equity has an average value of 10% , which is lower than those for developed countries (41% - Rajan & Zingales, 1995) and for developing countries (22% - Booth et al., 2001).

As we aforementioned the total and long-term debt ratios of Romanian firms are lower than those of developed countries. This fact is due to the following macroeconomic conditions: (a) a positive economic growth in Romania during the period 2004-2008, that favored the use of equity as financing sources because their high market value during economic growth periods, (b) inflation uncertainty which increases the firm's business risk, the volatility of the firm's operating income and the probability of insolvency (Hatzinikolaou et al., 2002). This means that when a firm decides the capital structure must take into account the inflation uncertainty and must choose to issue equity capital which results in a low debt ratio, and (c) a high reference interest rate established by the National Bank of Romania which imposes to firms a high level of interest rates for debt. The firms which are forced in this case to pay more for debt financing, use other financing resources: reinvested net result and issuance of equity.

During the period 2004-2008 there are significant differences between minimum and maximum debt ratio, which indicates that financing decisions of Romanian firms are influenced rather by the firm-specific factors than by macroeconomic conditions. Among these firm-specific factors there are profitability, firm size, tangibility of assets, growth opportunities, financial distress costs, non debt tax shields (Chen, 2004; Delcoure, 2007; Rajan & Zingales, 1995).

Based on the previous empirical results and the availability of the Romanian data, in this paper we analyze the influence of profitability, firm size, assets tangibility and growth opportunities on the total and long-term debt ratios of Romanian listed firms.

Profitability (Prof) is the first explanatory variable which is mentioned in both theories of capital structure (i.e., trade-off and pecking order). Following assumptions of these

theories and approaches initiated by Rajan and Zingales (1995) and Nivorozhkin (2005), we use the ratio of earnings before interest and taxes to total assets as a proxy for profitability ($Prof_t = Earnings\ before\ interest\ and\ taxes_t / Total\ assets_t$).

In the financial literature (Diamond, 1991; Rajan & Zingales, 1995; Titman & Wessels, 1988) *firm size* is one of the most important factors which influence the debt ratio (*Size*). In Romania, the firms size can be measured either through the number of employees or through net sales. Because net sales are a more appropriate proxy for our goal, we use in this paper the natural logarithm of net sales as a proxy for firm size ($Size_t = \ln(NS_t)$).

Another determinant of optimal capital structure used in many studies (Cornelli, Portes, Shaffer, 1998; Nivorozhkin, 2002; Daskalakis & Psillaki, 2008) is *assets tangibility* (*Tang*) calculated as the ratio between tangible fixed assets and total assets ($Tang_t = Tangible\ assets_t / Total\ assets_t$). Tangible assets serve as collateral and this hypothesis suggests a positive relationship between tangibility and debt ratio of firms (Rajan & Zingales, 1995; Titman & Wessels, 1988).

According to the trade-off theory, firms with great *growth opportunities* tend to borrow less than firms which hold more tangible assets, because growth opportunities cannot serve as tangible assets (Myers, 2003). Following the Chen (2004) approach, we used the ratio of sales growth to total assets growth as a measure for growth opportunities ($Growth_t = (\ln NS_t - \ln NS_{t-1}) / (\ln Total\ assets_t - \ln Total\ assets_{t-1})$).

Using firm-specific factors mentioned above, we developed a regression model having as dependent variables total debt ratio and long-term debt ratio. As regression model is used a two-way dynamic panel data model, because we analyze the financing behavior of Romanian firms in the sample (N=109) over a period of five years (T = 5). In general, a dynamic model requires the use of first order lag of dependent variable as explanatory variable. In our dynamic model, we eliminated the variable Growth opportunities, because the coefficient for this variable is not statistically significant.

The dynamic panel data model is as follows:

$$GI_{it} = c + aGI_{it-1} + b_1 Prof_{it} + b_2 Size_{it} + b_3 Tang_{it} + \mu_i + \eta_t + \varepsilon_{it} \quad (19)$$

where $i = 1,2,\dots,109$; $t = 1,2,\dots,5$.

The dependent variable GI_{it} represents one of the three variables, namely total debt ratio computed as the ratio of total debt to total debt plus equity, total debt ratio calculated as the ratio of total debt to total assets and long-term debt ratio computed as the ratio of long-term debt to total debt plus equity. GI_{it-1} is the first order lag of dependent variable.

μ_i denotes the entities-specific random, η_t denotes the time-specific fixed effects (those macroeconomic conditions that influence firms capital structure) and ε_{it} denotes the disturbance term.

In the case of our model the period of time is limited (5 years) compared with the number of firms in the sample (109) and therefore we applied the Arellano and Bond (1991) dynamic panel data estimator. This strategy involves the use of second order lags of the explanatory variables as instrumental variables (De Miguel & Pindado, 2001).

Applying Arellano and Bond estimator (1991) to our data resulted in the results presented in Table 3.

Table 3: Dynamic model estimation results

Dependent variable: Total debt ratio (ratio of total debt to total debt plus equity)

Independent variables	Estimated coefficients
Profitability	-0,463* (0.000)
Firms size	0,078* (0.000)
Assets tangibility	-0,383* (0.000)
Debt ratio (-1)	0,364* (0.004)
Wald (7) (i)	81,04 (0.000)
Number of instrumental variables	12
Number of observatios (ii)	327

* Significant at 1% level.

(i) Wald test is a test of the overall significance of the parameters of the model with χ^2 distribution. The null hypothesis is the lack of correlation between coefficients.

(ii) Number of observations decreases from 505 to 327 means that lags of explanatory variables up to order 2 were used as instrumental variables.

The empirical results suggest that the correlation between *profitability* and total debt ratio is negative and statistically significant. The estimated coefficient shows that an increase of 10 percent in the profitability of Romanian firms is associated with a decrease of 5 percent of total debt ratio. This result supports the pecking order theory which states that more profitable firms use less debt since these firms can use available internal financing resources (Myers & Majluf, 1984).

Another explanation for this result could be related to the assumptions of the “new pecking order theory” (Chen, 2004). According to this theory, banks from the developing countries provide short-term loans rather than long-term loans, thus firms have to finance their investments with equity. However, in these countries shareholders’ protection laws are weak and managers prefer retained earnings as financing resource.

Concerning the relationship between *firm size* and total debt ratio, it can be noted that this is positive and statistically significant, which suggests that large firms are more diversified, less prone to bankruptcy, and implicit they have a higher debt ratio. The value of the coefficient suggests that an increase of 10 percent in the firm size of Romanian firms is associated with an increase of one percent of total debt ratio.

Firms with high proportions of *tangible assets* have a lower debt ratio which is opposed to the assumptions of the trade-off theory and to the results obtained for developed countries (Rajan & Zingales, 1995; Titmann & Wessels, 1988). According to the trade-off theory, the tangible assets are used as collateral for debt. However, in developing countries the use of tangible assets as collateral for debt is impeded by certain factors, such as underdeveloped legal systems, illiquid secondary market, etc. As consequence, the studies of these countries indicate negative correlation between assets tangibility and debt ratio (Booth et al., 2001; Nivorozhkin, 2005). An increase of 10 percent in the assets tangibility of Romanian firms is associated with an increase of 4 percent of total debt ratio

Another objective of this paper was the analysis of determinants of long-term debt ratio of Romanian firms. We started from the hypothesis that the correlation between firm-specific factors and long-term debt ratio will be different from that of the determinants of capital structure and total debt ratio of Romanian firms.

Table 4 presents the estimation results for the model with long-term debt ratio as dependent variable.

Table 4: Dynamic model estimation results

Dependent variable: Total debt ratio (ratio of total debt to total debt plus equity)

Independent variables	Estimated coefficients
Profitability	-0,018 (0.841)
Firms size	-0,043** (0.04)
Assets tangibility	0,111** (0.042)
Growth opportunities	0,001 (0.55)
Debt ratio (-1)	0,517* (0.000)
Wald (8) (i)	38,07 (0.000)
Number of instrumental variables	13
Number of observations (ii)	327

* Significant at 1% level. ** Significant at 5% level.

(i) Wald test is a test of the overall significance of the parameters of the model with χ^2 distribution. The null hypothesis is the lack of correlation between coefficients.

(ii) Number of observations decreases from 505 to 327 means that lags of explanatory variables up to order 2 were used as instrumental variables.

As can be noted in table 4, the coefficients for firm size and assets tangibility are statistically significant. The coefficient of variable firm size suggests that an increase of 10 percent in the firm size of Romanian firms is associated with a decrease of a half a percent of long-term debt ratio. On the other hand, an increase of 10 percent in the assets tangibility is associated with an increase of one percent of long-term debt ratio of Romanian firms.

The differences that arise between the correlations between determinants of capital structure and total debt ratio and determinants and long-term debt ratio are related with the variables firm size and assets tangibility. Regarding the firm size coefficient, we found that this is positive and statistically significant for the total debt ratio, but negative for the long-term debt ratio. About the assets tangibility coefficient, we noticed that this is negative for the total debt ratio and positive, but not statistically significant for the long term debt ratio. In other words, the large listed- firms prefer short-term loans as financing sources rather than long-term loans, and when they use long-term loans the tangible assets may be used as collateral.

The fact that our data required a dynamic panel data model can be explained by the firms attempt to achieve optimal capital structure, that is, capital structure that maximizes firm's value. Thus, Romanian firms adjust their debt ratios towards target debt ratio, and this process is a dynamic one and involves some adjustment costs. Adjustment costs represent the speed with which firms reach the target debt ratio. The adjustment costs for Romanian listed firms are low and that means that the speed of adjustment to the target debt ratio is high for Romanian firms. A possible explanation for this high speed of adjustment is given by the high costs due to deviation from the target debt ratio and to attempt to reach as soon as possible the target debt ratio.

CONCLUSIONS

Determination of an optimal capital structure has frustrated theoreticians for decades. Starting with the seminal work of Modigliani and Miller (1958) showing 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. The basic assumption of these theories and models is that capital structure is relevant to the firm's value when taxes, transaction costs, bankruptcy costs, and information asymmetry exist.

The extensive review on the main theories of capital structure from the literature (Chapter 1) revealed the fact that there is no universal theory of capital structure, and no reason to expect one. However, we could notice the coexistence of capital structure theories in the literature. Each of these theories and models are useful for explaining certain aspects of the financing behavior for some firms or in some circumstances, yet unimportant elsewhere (Myers, 2002).

Unifying capital structure models into a universal theory of capital structure is far from being achieved (Myers, 2001), given the different financial systems and economic traditions of different countries on capital structure choice. Cross-country comparisons are essential for understanding the difference in leverage choices across countries. In addition, cross-country comparisons can be used to suggest linkages between institutional differences and empirical results about capital structure.

The empirical results the determinants of capital structure (Chapter 2) vary and sometimes are contradictory in many studies. Moreover, comparisons of capital structure across countries reveal that institutional differences may affect the cross-sectional relation between leverage and factors. In some cases, the empirical evidence seems to support one, two or more capital structure theories, in other words more models are relevant in explaining firms' financing decisions.

Also, research in this area have yielded results consistent with the assumptions of one of the theories of capital structure, even if the decisions made by the enterprises have been generated by another theory (Frank & Goyal, 2005). Firms analyses some determinants of capital structure and depending on these determinants establishes an optimal capital structure.

The vast majority of the studies on capital structure indicated that profitability is the most important determinant of capital structure. The correlations between profitability and debt ratio support the assumptions of one of the two theories of capital structure: trade-off

theory and the pecking order theory. While trade-off theory suggests a positive correlation between profitability and the level of debt, pecking order theory suggests an inverse relationship between profitability and the level of debt. Firms are assumed to prefer internal financing to external financing in a pecking order framework. This preference leads firms to use retained earnings first as investment funds and move to external financing only when retained earnings are insufficient. Concerning the other determinants of capital structure, the most studies indicate a tendency of debt ratio increase with increasing firm's size, its growth opportunities and its assets tangibility (Rajan & Zingales, 1995; Titman & Wessels, 1988).

Regarding the financing behavior of Romanian listed firms, they use in a lesser extend debt as financing sources. The total debt ratio of the Romanian firms (35%) is much lower compared to that of the developed countries (66% for the G7 countries) and less lower than that in the developing countries (51%).

For the period 2004-2008, we noticed a significant difference between the maximum and the minimum debt ratio, indicating that the capital structure of the Romanian firms is influenced in a higher proportion by the firm-specific factors. Among these factors, profitability, firm size, and tangibility influence the total debt ratio of the Romanian firms, while profitability, firm size and growth opportunities influence the long-term debt ratio.

Regarding the firm size coefficient, we found that this is positive and statistically significant for the total debt ratio, but negative for the long term debt ratio. About the tangibility coefficient, we noticed that this is negative for the overall debt ratio and positive, but not statistically significant for the long term debt ratio. In other words, the large listed- firms prefer short-term loans as financing resources rather than long-term loans, and when they use long-term loans the tangible assets may be used as collateral.

Based on the results of the correlations between debt ratio and the specific-firm factors, we can state that, from the capital structure theories, the „new pecking order theory”

(Chen, 2004), is the one which explains the financing behaviour of the Romanian listed-firms. This theory states that firms use as financing resources first retained earnings, then equity and, finally, debt.

The results regarding the extend to which Romanian firms are trying to rich the target debt ratio, showed that the speed of adjustment towards the target debt ratio is quite high for Romanian firms, suggesting that deviation from the target debt ratio is costly for these firms.

In conclusion this paper provides a detailed analysis of the financing behaviour of the Romanian firms, by extending the period of analysis captured by previous studies. Although some questions remained unanswered and that many questions have been generated, the paper consists in a first study in Romania, which validates the “new pecking order theory” of financing behavior of Romanian listed firms and which includes a two-way panel data dynamic model with time-specific effects (macroeconomic conditions).

This paper has some limitations related to the lack of recent data (2009 and 2010) and to consideration of a variable in order to capture the influence of 2008 financial crisis on the financing decisions of the Romanian firms. Of great interest would be a study on the firms financing behavior based on questionnaires sent to firms managers.

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